The Sound of Silence

Non-transparent technical regulations as obstacles to trade

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Workshop SIEPI, January 30, 2020

Motivation

- *We are no longer negotiating just the reduction of tariffs, but also of* **non-tariff barriers**, *which have gained enormous importance* (Pascal Lamy, former DG of the WTO on July 24th, 2013).

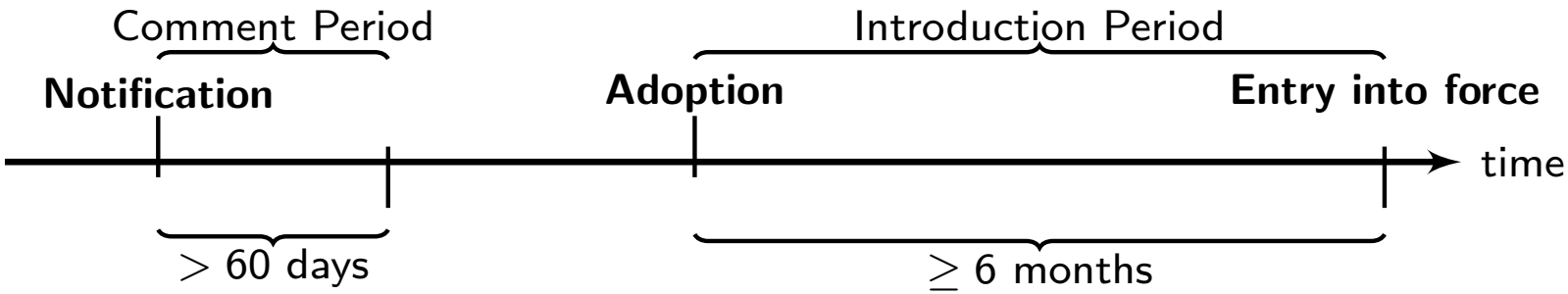
- Exporters find **technical regulations** to be the **largest non tariff barriers** (OECD Report p.24, 2005).

- More than the regulation itself, EU exporters mostly complain about the **procedural obstacles** to comply with it (ITC Report 2016 Table B5).

How do procedural obstacles characterize the protective nature of technical regulations?

Institutional Framework

1. For the WTO Technical Barriers To Trade Agreement, a technical regulation
   - must pursue **legitimate policy objectives** and **non discriminant**
   - must be implemented in a **transparent way**.

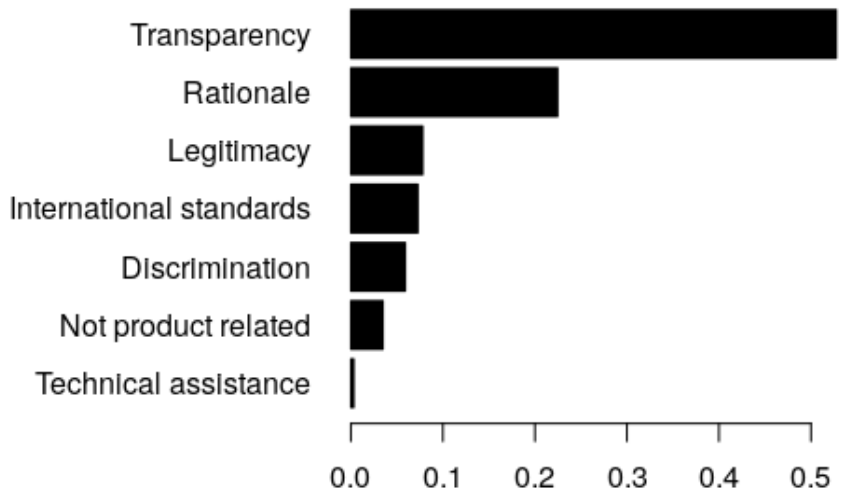


2. If other WTO members find the TBT an **unnecessary obstacle to trade** they can raise a Specific Trade Concern (STC) to the WTO, and specify the nature of the obstacle, i.e. the **motivation of the issue**.

Why countries rise STC?

Most of the concerns are raised because of the **lack of transparency**.

Figure: Relative frequencies of the motivations to rise STCs



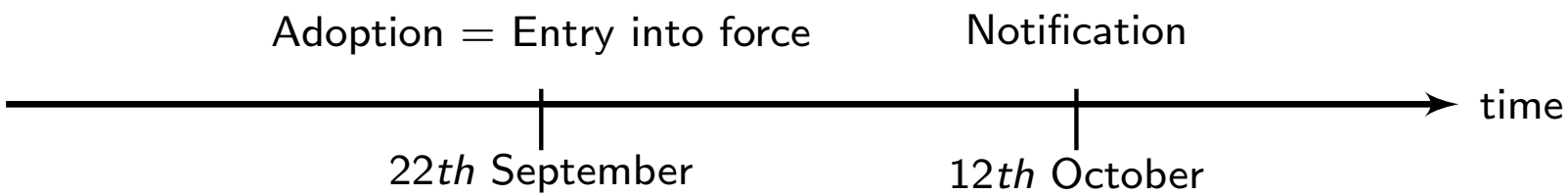
Source: Elaboration from Specific Trade Concerns database of the WTO (1995-2011)

Example: the Mexican ban of CFCs

In 1998 US raised a STC against the **Mexican ban of Cloro Fluoro Carbon Compounds** in production.

- Why? For an issue with **transparency**.
  - Us representative: "Exporters are uncertain on how to comply with the new regulation" (G/TBT/M/14, par 35).

- How was the Mexican ban implemented?



What I do

I consider newly introduced **TBTs raised as STCs** and carry out an **event study design** to investigate the differential **effect of technical regulations that have been implemented in a non transparent way** on the trade activity of international firms.

1. Build an **original database on the timelines of TBTs** rised as STCs to identify how they have been introduced

2. Match with a **panel of French exporters** and exploit cross-product variation within country, sector and time to identify effects of non-transparent TBTs

Related Literature

1. Works that study the effects of **transparency** on trade
   - Lejárraga and Shepherd (2013); Ing et al. (2018).

3. Works that study the effects of **TBTs** on trade margins:
   - Bao and Qiu (2012); Schmidt and Steingress (2018); Fontagné and Orefice (2018)

4. Works that study the effect of **TBTs raised as STC** at the WTO on exporters' margin:
   - Fontagné and Orefice (2018)

Building a new database on timelines

- **Why?**
  1. Existing database (e.g. TRAINS) does not report full history of TBTs and/or they lack identifiers of the regulation.

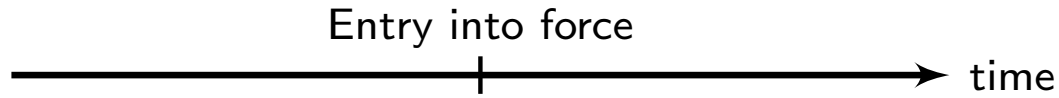
- **How?**
  - I use the identifiers from the WTO STC database to web scrape the IMS WTO repository to downloads documents about the contested TBTs .
  - I text parse two sources of data:
    1. documents provided by the introducing country (Notification, Revisions)
    2. the content of the concern

[More info]

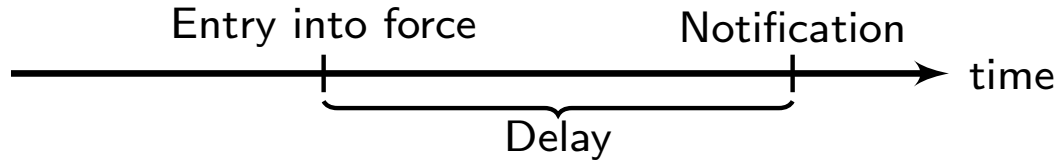
Frequency and Types of Surprise Measures

1. We could identify the timeline of 75% of TBTs
   - 38% have been introduced as **Surprise TBTs**, there are two types:

a. **Unnotified** (22%)



b. **Late Notified** (16%)



   - The most common delay in Notification is 3 months

2. We match these with a panel of French exporters over the period 1994-2007.
   - The average export share of extra EU markets covered by a new regulation is 8%.

[More]

Research design 1

Let p be the product, d destination country and s being the semester

$$y_{i,p,d,s} = \alpha + \delta_0 \mathrm{TBT}_{p,d,s} + \epsilon_{i,p,d,s} \tag{1}$$

where $y_{i,p,d,s}$ represents **firm's i trade margins** and

$$\mathrm{TBT}_{p,d,s} = \mathbb{1}[\text{if s} \in I_{p,d}] \tag{2}$$

where $I_{p,d}$ be the introduction period between adoption ($A_{p,d}$) and enforcement ($E_{p,d}$).

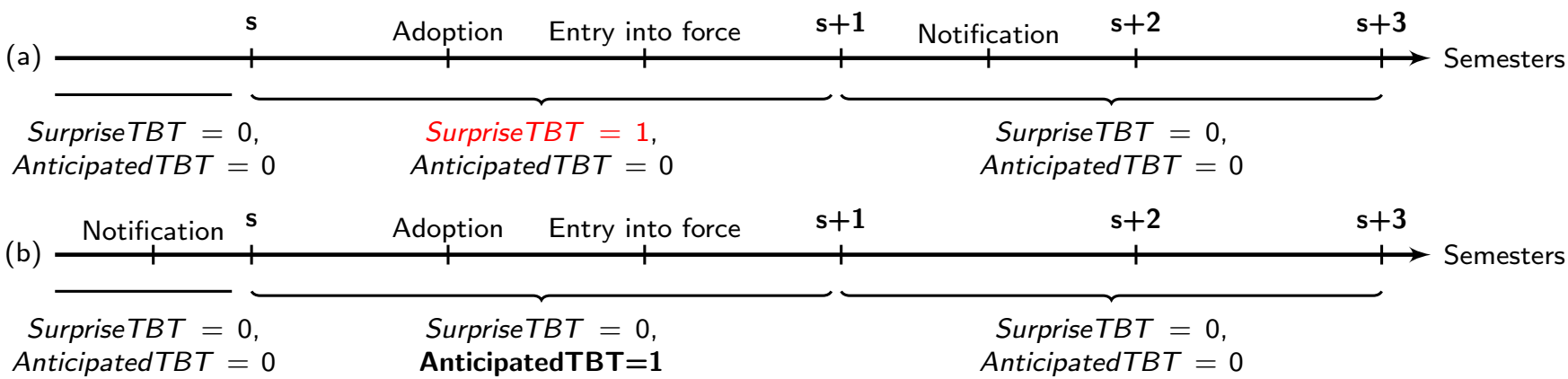
Research design 2

$$y_{i,p,d,s} = \alpha + \beta_0 \text{SurpriseTBT}_{p,d,s} + \gamma_0 \textbf{AnticipatedTBT}_{p,d,s} + \epsilon_{i,p,d,s} \quad (3)$$

where:

1. $\text{SurpriseTBT}_{p,d,s} = \mathbb{1}[\text{if } (N_{p,d} = NA \text{ or } N_{p,d} > E_{p,d}) \ \& \ \text{TBT}_{p,d,s} = 1]$,
2. $\textbf{AnticipatedTBT}_{p,d,s} = \mathbb{1}[\text{if } N_{p,d} \leq E_{p,d} \text{ and s} \in I_{p,d}]$.

with $N_{p,d}$ being the notification date, which is NA if not notified.



Research design: Identification

$$y_{i,p,d,s} = \beta_0 \text{SurpriseTBT}_{p,d,s} + \gamma_0 \text{AnticipatedTBT}_{p,d,s} + \\ + \delta asinh(\text{tariff}_{p,d,s}) + \mu_{HS2,d,s} + \mu_i + \epsilon_{i,p,d,s} \quad (4)$$

1. control for tariff level (Moore and Zanardi, 2011; Beverelli et al., 2014)
2. compare trade margins across p product categories sold by **similar firms** (μ_i firm fixed effects), in initially **similar market conditions** ($\mu_{HS2,d,s}$), that should vary only for the introduction of a restrictive TBT

[Reverse causality] .

Results - Static Model

DEPENDENT VARIABLE	Export		Exit_{s-1}	
TBT	0.12		0.045^{b}	
	(0.10)		(0.017)	
SurpriseTBT		-0.27^{a}		0.00
		(0.13)		(0.02)
AnticipatedTBT		0.23^{b}		0.055^{a}
		(0.11)		(0.01)
asinh(tariff)	-0.05^{a}	-0.05^{a}	0.00	0.00
	(0.036)	(0.036)	(0.00)	(0.00)
Obs.	3,367,627	3,367,627	3,735,637	3,735,637
Adj. R2	0.30	0.30	0.04	0.04
Firm FE	Yes	Yes	Yes	Yes
HS2-Country-Time FE	Yes	Yes	Yes	Yes

Notes: Export is in log, so the marginal effect of a dummy reads $100(e^{\beta}-1)\%$, with β being the coefficient on the dummy. Standard errors in parenthesis are clustered at (p,country,time). The observations in cols 3 and 4 are larger than in 1 and 2 since who export might be an entry and exit or an incumbent, exit is defined only over the last two. $^{c} < 0.1$, $^{b} < 0.05$, $^{a} < 0.01$.

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HS2-Country-time FE	Yes	Yes	Yes	Yes

The introduction of a **TBT** over which EU has raised a concern is associated to:

- **no significant** adjustment in the **average export value**;
- an **increase** in the probability of **exit by 4.5%**

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Firm FE	Yes	Yes	Yes	Yes
HS2-Country-time FE	Yes	Yes	Yes	Yes

Surprise TBTs are associated to a:

- substantial **fall**, of around **24%**, in the **average export value**,
- **no significant** adjustment in the probability of **exit**

Results - Static Model

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	(0.10)		(0.017)	
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AnticipatedTBT		$\mathbf{0.23}^{b}$		$\mathbf{0.055}^{a}$
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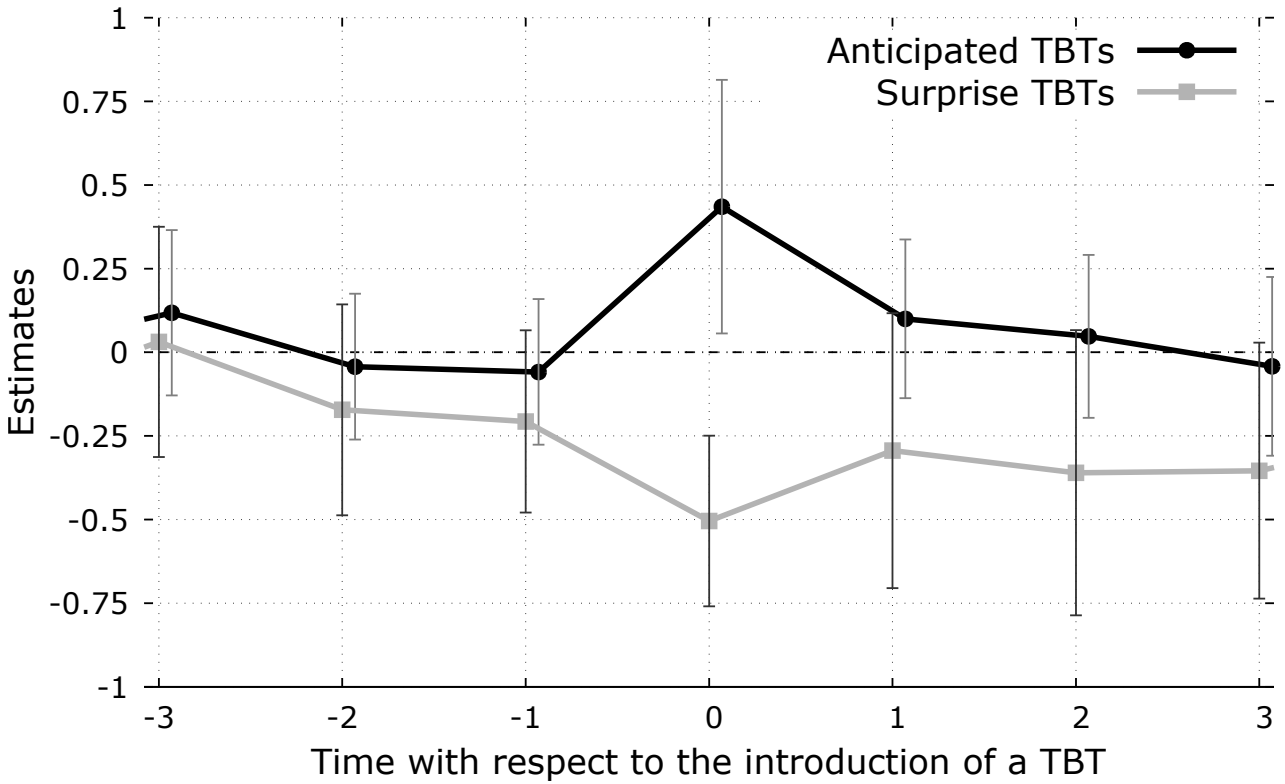
	(0.036)	(0.036)	(0.00)	(0.00)
Obs.	3,367,627	3,367,627	3,735,637	3,735,637
Adj. R2	0.30	0.30	0.04	0.04
Firm FE	Yes	Yes	Yes	Yes
HS2-Country-time FE	Yes	Yes	Yes	Yes

Anticipated TBTs are associated to a:

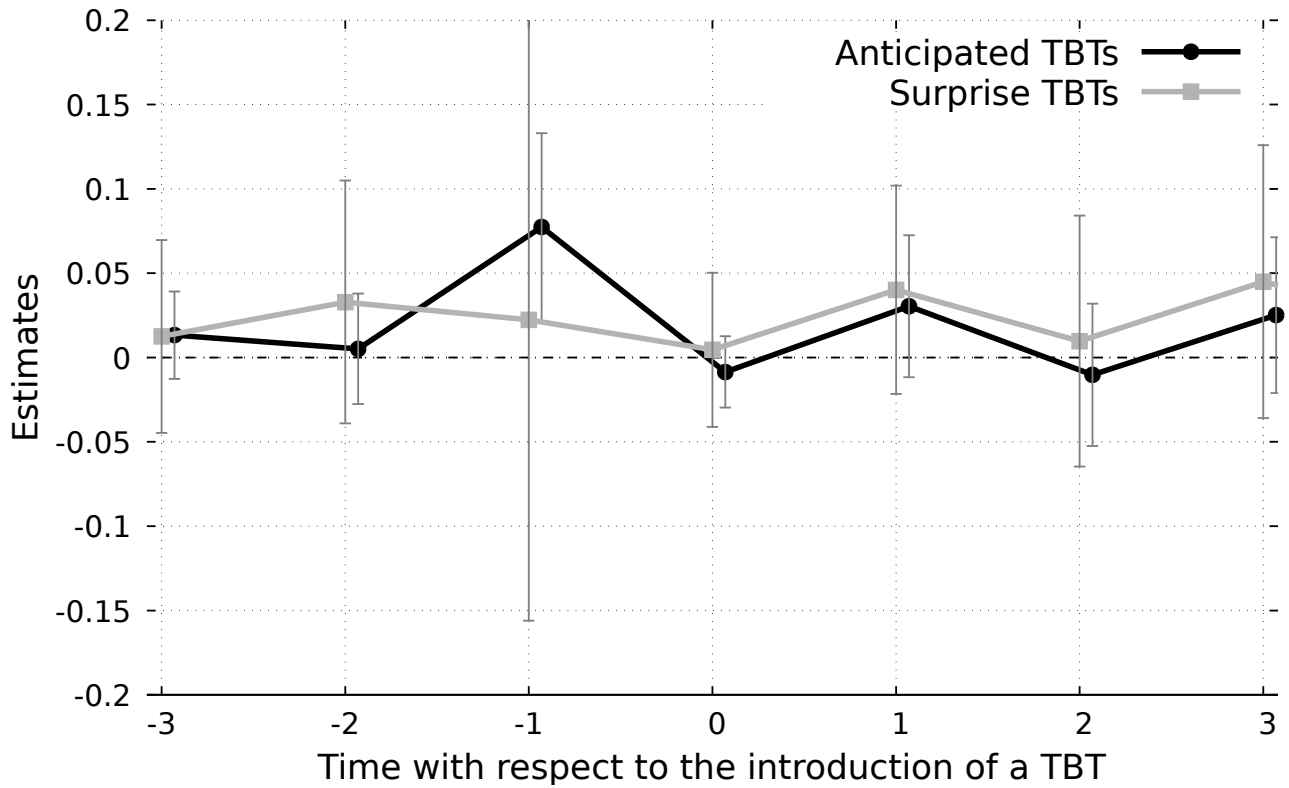
- substantial **rise**, of around **26%**, in the **average export value**;
- an **increase** in the probability of **exit by 5.5%**

Testing for Pre-Trends - Export



[Different Specification] .

Testing for Pre-Trends - Exit



Interpretation of results

We interpret the differences in terms of the nature of the cost:

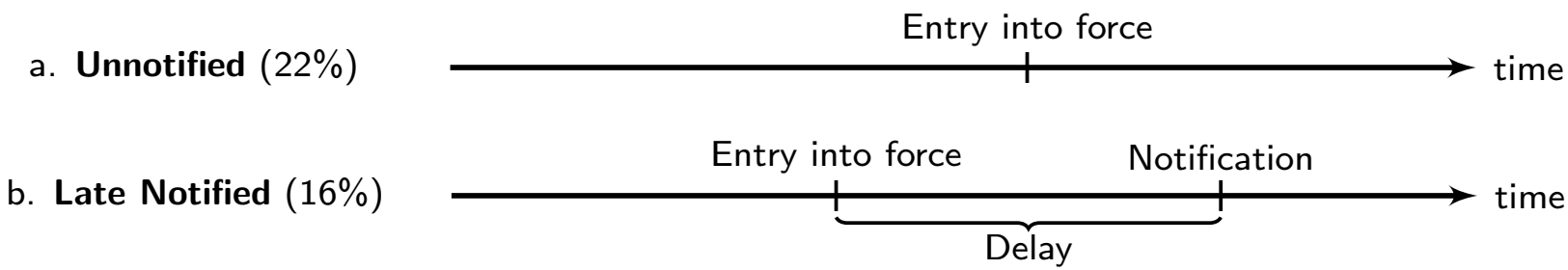
- Anticipated TBTs: $\uparrow$ *Intensive*, $\downarrow$ *Extensive* $\Longrightarrow \uparrow$ *FixedCosts*
- Surprise Measures: $\downarrow$ *Intensive*, $=$ *Extensive* $\Longrightarrow \uparrow$ *VariableCosts*

Which Variable cost?

- $\uparrow$ uncertainty $\Longrightarrow \uparrow$ *Pr*(rejection) $\Longrightarrow \uparrow$ *VariableCost*

How to investigate this argument?

The effect should last longer in those cases where the uncertainty is not yet solved.



Persistence of Uncertainty and the Role of Late Notifications

	(1) Export	(2) Export
$SurpriseTBT_{HS4,d,s,k=0}$	-0.269^{c}	-0.268^{c}
	(0.14)	(0.14)
$SurpriseTBT^{UN}_{HS4,d,s,k=1}$	-0.310^{a}	**-0.320**^{a}
	(0.119)	(0.135)
$SurpriseTBT^{LN}_{HS4,d,s,k=1}$	0.0936	**0.0951**
	(0.193)	(0.194)
$SurpriseTBT^{UN}_{HS4,d,s,k=2}$		-0.186
		(0.173)
$SurpriseTBT^{LN}_{HS4,d,s,k=2}$		0.0192
		(0.177)
asinh(tariff)	-0.0520^{a}	-0.0514^{a}
	(0.00204)	(0.00206)
N	3965137	3819196
adj. R^2	0.261	0.262
Firm FE	Yes	Yes
HS2-Country-Time FE	Yes	Yes

Notes: K are the number of semesters after the introduction of a TBT. The superscript UN and LN are used to distinguish the two types of Surprise TBT, Unnotified and Late Notified ones. Estimates for AnticipatedTBT and the relative forward window are not shown. The definition of the sample follows methodology of Schmidheiny and Siegloch (2019). Export is in log. Standard errors in parenthesis are clustered at (HS4,country,Time). Significance levels: $^{c} < 0.1$, $^{b} < 0.05$, $^{a} < 0.01$.

[Firm heterogeneous responses]

Conclusions

- The lack of transparency is the main source of procedural obstacles for TBT.
- WTO members sometimes elude completely the timeline agreed,
- these Surprise TBTs produce temporary but substantial fall in the export value of firms.
- Even though delayed, transparency provisions, prevent this effect to last longer.
- [Firm heterogeneous responses] Exporters that are relatively new to the markets are the ones that suffer of this.

We interpret these results as suggesting that countries can effectively deploy regulations that hinders trade by rising the uncertainty.

Thank you!

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Future Analysis

1. New SE estimator from Ferman and Pinto (2018)
2. Enter into the heterogenity of the effects of TBTs

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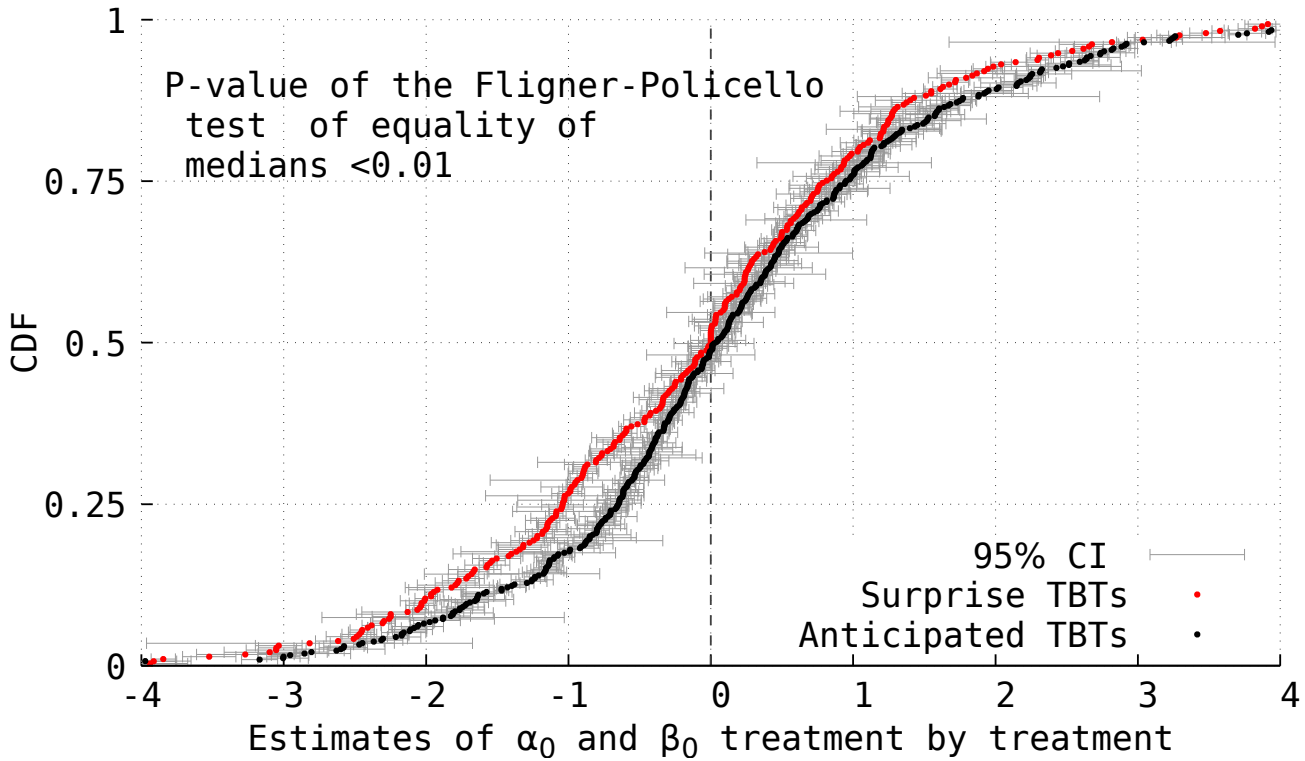

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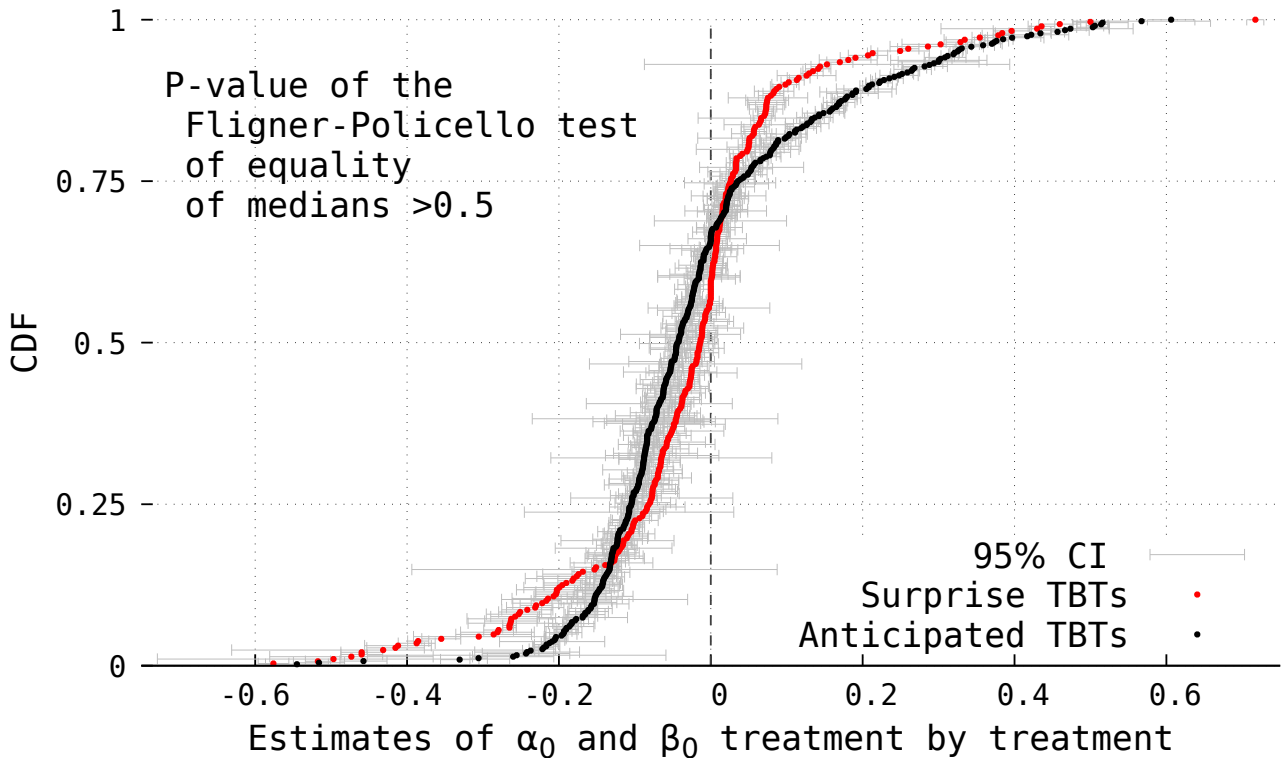


Bao, X. and L. D. Qiu (2012): "How do technical barriers to trade influence trade?" *Review of International Economics*, 20, 691–706.

Beverelli, C., M. Boffa, and A. Keck (2014): "Trade policy substitution: Theory and evidence from Specific Trade Concerns," Tech. rep., WTO Staff Working Paper.

Correia, S. (2016): "Linear Models with High-Dimensional Fixed Effects: An Efficient and Feasible Estimator," Tech. rep., Boston College Department of Economics.

Ferman, B. and C. Pinto (2018): "Inference in Differences-in-Differences with Few Treated Groups and Heteroskedasticity," *The Review of Economics and Statistics*, 0, 1–16.

Fontagné, L. and G. Orefice (2018): "Let's try next door: Technical Barriers to Trade and multi-destination firms," *European Economic Review*, 101, 643–663.

Ing, L. Y., O. Cadot, and J. Walz (2018): "Transparency in non-tariff measures: An international comparison," *The World Economy*, 41, 884–912.

Lejárraga, I. and B. Shepherd (2013): "Quantitative evidence on transparency in regional trade agreements," .

Moore, M. O. and M. Zanardi (2011): "Trade liberalization and antidumping: Is there a substitution effect?" *Review of Development Economics*, 15, 601–619.

Schmidheiny, K. and S. Siegloch (2019): "On Event Study Designs and Distributed-Lag Models: Equivalence, Generalization and Practical Implications," *Cesifo, Working Paper*.

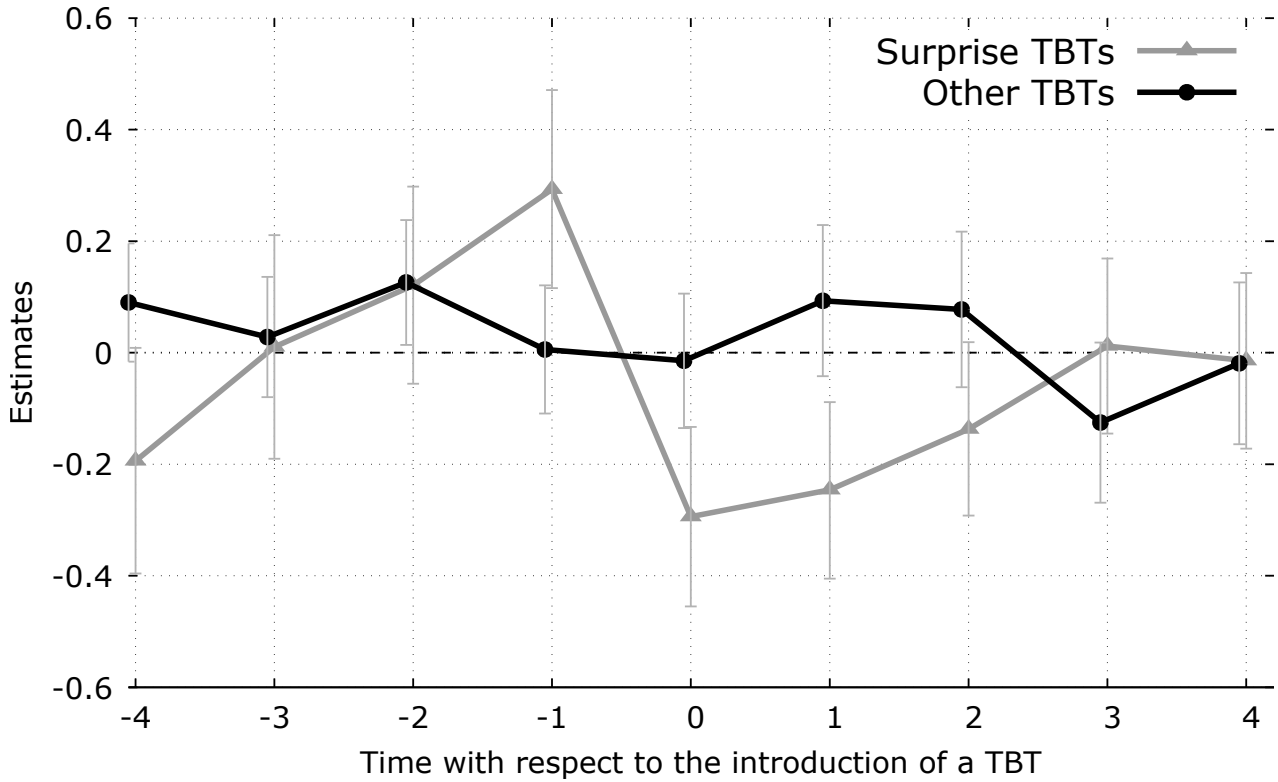
Schmidt, J. and W. Steingress (2018): "No double standards: quantifying the impact of standard harmonization on trade," Tech. rep., Discussion paper, mimeo.

Surprise Measures by countries and products

Country	#(TBTs)	%(Surprise)	Sector (HS2)	#(TBTs)	%(Surprise)
Israel	3	100	Wool, fine or coarse animal hair (51)	5	80
Egypt	4	100	Cotton (52)	5	80
Argentina	5	100	Textile for industrial use (59)	4	75
Malaysia	3	100	Silk (50)	4	75
India	10	70	Special woven fabrics (58)	6	67
Taipei	5	60	Salt; sulphur; earths and stone (25)	5	60
Mexico	6	50	Articles of stone, plaster (68)	5	60
USA	14	50	Tobacco (24)	5	60
Korea	21	48	Vegetable textile fibres (53)	5	60

Notes: Results are shown for the top ten countries and sectors in terms of Surprise share and only for those countries and HS2 with at least 3 contested TBTs.

Figure: FRENCH EXPORTS DYNAMICS AROUND THE INTRODUCTION OF A TBT



Notes: Time is a semester. The image plot the estimated coefficients, and relative 95% confidence bar, of a model where we regress the (log) value of French export in a (product, destination country, time) market over semestral dummies around the introduction of the TBT, for two type, Surprise and Other TBTs. The model includes (product,destination country) fixed effects and therefore exploits the time variability within markets TBTs. All TBTs information come from WTO STC database. In Appendix A1 the regression table.

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WTO Database of STC - Notified entry

STC Notif Type Symbol	First date raised	Dates subsequently raised	Members maintaining	Member(s) concerned	Issues	Description of content	First date raised minutes	Minutes description	Product mentioned in the minutes and/or notification	HS Code (Rev. 2)
G/TBT/N/ARG/101	11/7/2003	3/23/2004	Argentina	European Union	further information, clarification, transparency	Maximum limits for sulphate content	G/TBT/M/31	45. [...] The representative of the European Communities requested Argentina to provide answers to the comments and noted that all the texts concerned had been adopted before their notification.	Wine	2204

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WORLD TRADE ORGANIZATION

NOTIFICATION -> DATE

G/TBT/N/ARG/101
23 May 2003
(03-2765)

Committee on Technical Barriers to Trade Original: Spanish

NOTIFICATION

The following notification is being circulated in accordance with Article 10.6.

1.	**Member to Agreement notifying:** ARGENTINA **If applicable, name of local government involved (Articles 3.2 and 7.2):**
2.	**Agency responsible:** National Institute of Vitiviniculture **Name and address (including telephone and fax numbers and E-mail and Web site addresses, if available) of agency or authority designated to handle comments regarding the notification shall be indicated if different from above:** *Idem* National Enquiry Point
3.	**Notified under Article 2.9.2 [** X **], 2.10.1 [ ], 5.6.2 [ ], 5.7.1 [ ], other:**
4.	**Products covered (HS or CCCN where applicable, otherwise national tariff heading. ICS numbers may be provided in addition, where applicable):** Wine
5.	**Title, number of pages and language(s) of the notified document:** Wine – Sulphate Content (2 pages, in Spanish)
6.	**Description of content:** Establishes the maximum limits for sulphate content, expressed as potassium sulphate, both in wine that is in circulation and in wineries.
7.	**Objective and rationale, including the nature of urgent problems where applicable:** The need to establish, as an exporting country, the appropriate limits for these products through essential production and conservation techniques, as laid down by the International Organization of Vine and Wine (OIV).
8.	**Relevant documents:** INV Resolution No. 14/2003
9.	**Proposed date of adoption:** 30 April 2003 (Official Journal) <-ADOPTION DATE **Proposed date of entry into force:** 8 May 2003 <- ENFORCEMENT DATE
10.	**Final date for comments:** -
11.	**Texts available from: National enquiry point [**X**], or address, telephone and fax numbers and E-mail and Web site addresses, if available, of other body:** Punto Focal de la República Argentina Dirección Nacional de Comercio Interior (DNCI) Avda. J. A. Roca 651, Piso 4°, Sector 22 (1322) Buenos Aires Fax: 54 11 4349 4072 Tel.: 54 11 4349 4067 E-mail: focalotc@mecon.gov.ar Web site: http://www.puntofocal.gov.ar

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WTO Database of STC - Unnotified entry

STC Notif Type Symbol	NOTIF_NO	First date raised	Dates subsequently raised	Members maintaining	Member(s) concerned	Issues	Description of content	First date raised minutes	Minutes description	Product mentioned in the minutes and/or notification
		6/25/2009	11/5/2009	China	European Union, United States, Japan	further information, clarification, transparency	Mandatory internet filter software used to prevent harmful information	G/TBT/M/48, paras. 36-42	(ix) China – Green Dam Youth Escort internet filtering software 36. The representative of the European Communities drew the Committee's attention on Circular 2009/226, issued by the Chinese Ministry of Industry and Information Technology (MIIT) on 22 May 2009. The EC representative explained that, according to this measure, all computers sold in China, whether imported or domestically manufactured, would need to be equipped with the so-called Green Dam Youth Escort internet filtering software as of 1 July 2009.	Computers

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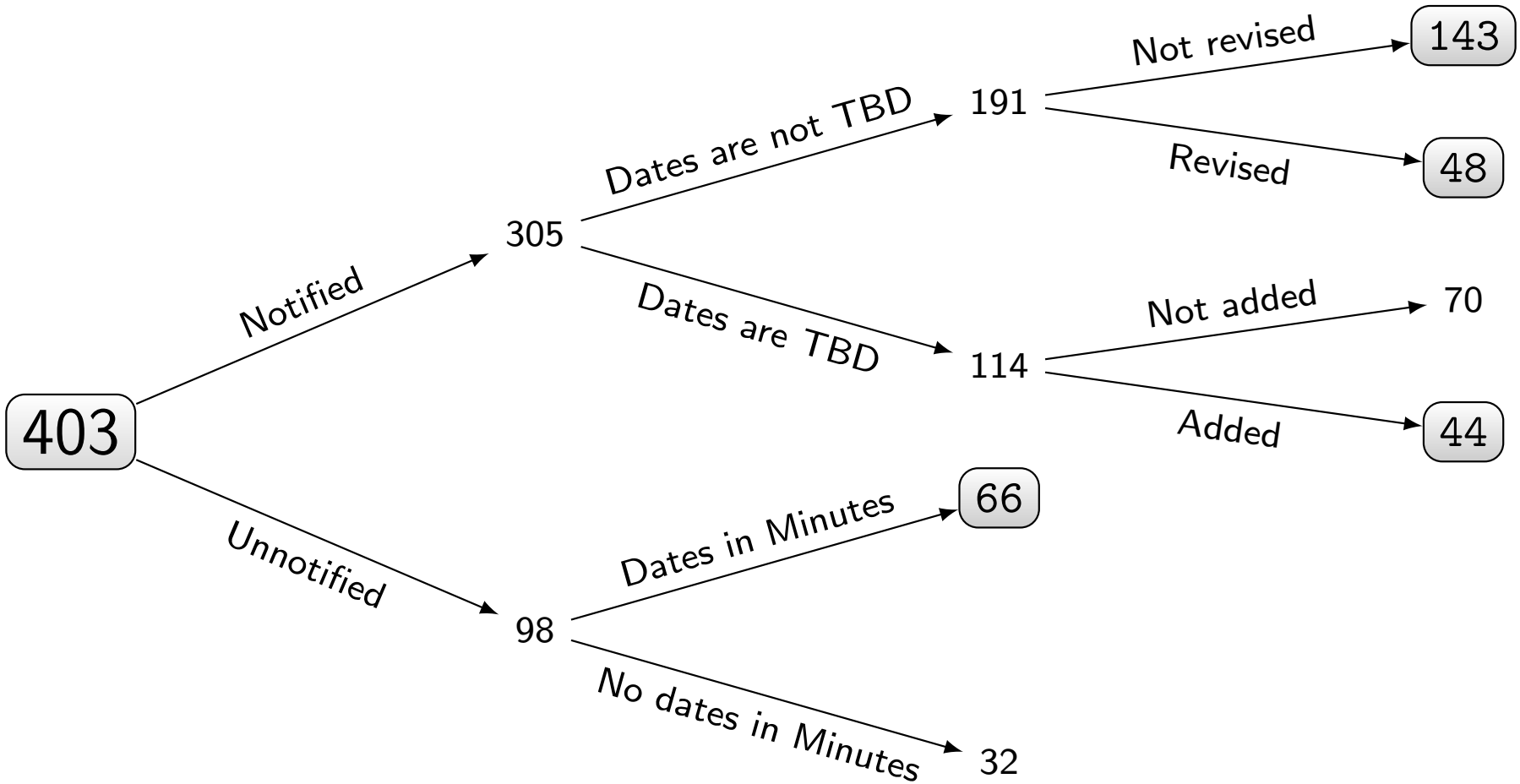
Database on timelines

I identify the timeline of introduction for 301 (**75**%) of the TBTs.



Notes: Frequency of TBTs by the source from which their timeline information is retrieved. The edges of the tree represent attributes that identify whether a certain source of information can be used.

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Heterogeneity across firms

	(1) Export	(2) Export	(3) Export	(4) Export	(5) Export
SurpriseTBT	-0.241^{b}	-0.299^{a}	-0.240^{c}	-0.203^{b}	-0.077
	(0.108)	(0.142)	(0.124)	(0.0945)	(0.250)
asinh(tariff)	-0.048^{a}	-0.108^{a}	-0.034^{a}	-0.055^{a}	-0.047^{a}
	(0.0022)	(0.00232)	(0.0021)	(0.0027)	(0.0033)
N	4086256	4215092	3771961	4209901	2767791
adj. R^2	0.248	0.094	0.332	0.386	0.274
Firm-Time FE	**Yes**	No	No	No	No
Firm-HS2-Time FE	No	No	**Yes**	No	No
Firm-Country FE	No	No	No	**Yes**	No
Firm-Country-Time FE	No	No	No	No	**Yes**
HS2-Country-Time FE	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Notes: The number of observations changes due to automatic drop of singleton observations, 163900, 478195 ,40255, 1482365 respectively (Correia, 2016). Estimates for AnticipatedTBT are not shown. Significance levels: $^{c} < 0.1$, $^{b} < 0.05$, $^{a} < 0.01$.

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The role of Experience

DEPENDENT VARIABLE	Export			
PROXY OF EXPERIENCE	Age	Age	Frequency	Frequency
$ExpClass_{MID,s}$	-0.435^a	-0.435^a	-0.584^a	-0.584^a
	(0.00259)	(0.00259)	(0.00275)	(0.00275)
$LowExp_{LOW,s}$	-0.721^a	-0.721^a	1.492^a	-1.492^a
	(0.00324)	(0.00324)	(0.00318)	(0.00318)
Surprise $\times$ $HighExp_s$ e		-0.195		-0.20
		(0.145)		(0.186)
Surprise $\times$ $MidExp_s$		-0.242		-0.205
		(0.165)		(0.154)
Surprise $\times$ $LowExp_s$		-0.368^a		-0.296^b
		(0.103)		(0.135)
asinh(tariff)	-0.0527^a	-0.0528^a	-0.0506^a	-0.0506^a
	(0.00201)	(0.00201)	(0.00198)	(0.00198)
N	4214856	4208253	4214856	4208253
adj. R^2	0.271	0.271	0.316	0.316
Firm FE	Yes	Yes	Yes	Yes
HS2-Country-Time FE	Yes	Yes	Yes	Yes

Notes: $HighExp_{s-1}$ is dropped as reference class. Export is in log, so the marginal effect of a dummy reads $100(e^{\beta} - 1)\%$, with β being the coefficient on the dummy. Standard errors in parenthesis are clustered at (HS4,country,Time). The observations in cols 3 and 4 are larger than in 1 and 2 since who exits does not export in the period. Significance levels: $^c < 0.1$, $^b < 0.05$, $^a < 0.01$.

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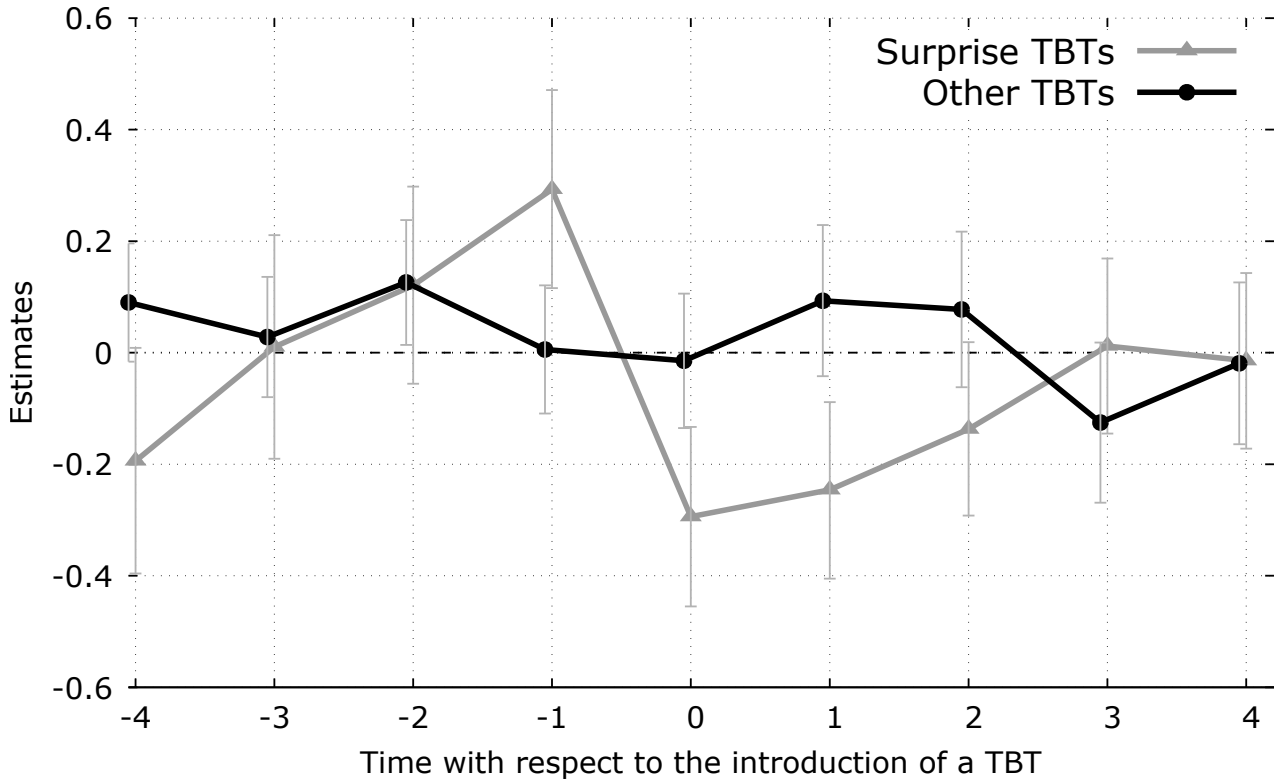
Figure: FRENCH EXPORTS DYNAMICS AROUND THE INTRODUCTION OF A TBT



Notes: Time is a semester. The image plot the estimated coefficients, and relative 95% confidence bar, of a model where we regress the (log) value of French export in a (product, destination country, time) market over semestral dummies around the introduction of the TBT, for two type, Surprise and Other TBTs. The model includes (product,destination country) fixed effects and therefore exploits the time variability within markets TBTs. All TBTs information come from WTO STC database. In Appendix A1 the regression table.

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Estimating Sample

I match data on the TBT over which the EU has risen a STC and their respective introduction dates with data on French manufacturing exports out of the EU between 1995 and 2007.

	SEMESTRAL AVERAGE	
	Sample	TBT with STC
#(p, country)	35964	1122
Total Export (bln)	32.6	2.44

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