

# Fast Fashion

Theory and Evidence from Portuguese Textile and Clothing  
Firms

Ana Fernandes (Exeter); Heiwai Tang (Johns Hopkins)

Rochester Macro and Intl Econ Workshop

May 8, 2019

# Fast Fashion



- ▶ Business definition: Inexpensive clothing produced rapidly by mass-market retailers in response to the latest trends.
- ▶ Their owners are the richest people in their respective countries: Amancio Ortega (Spain); Tadashi Yanai (Japan); Stefan Persson (Sweden).
- ▶ Trade economists' (our) definition: Advanced economies' manufacturers become more specialized in exporting (1) higher quality products to (2) closer-by market; (3) at higher frequency.

# Anecdotes

- ▶ *"The logic of selling cheaper man-hours is gone, it is via innovation, ability to deliver the needed quantities on time, hearing the client and integrating the production chain that one becomes competitive."* Luis Rodrigues, head of sales at Lameirinho.
- ▶ *"There is quality and craftsmanship there that you don't find in Chinese or Turkish flannel."*

# This paper

- ▶ Develop a continuous-time industry-equilibrium model of heterogeneous firms to study exporters' choices of markets, the freq of exporting and the quality of products in each market, and complementarity of these choices.
  - ▶ Predictions: In response to imp comp from low-wage countries, more productive firms increase exports of high-quality products to nearby markets; less productive firms drop out from distant and low-income markets.
  - ▶ Outcome: Changes in firms' export patterns → advanced economies become more specialized in fast fashion.

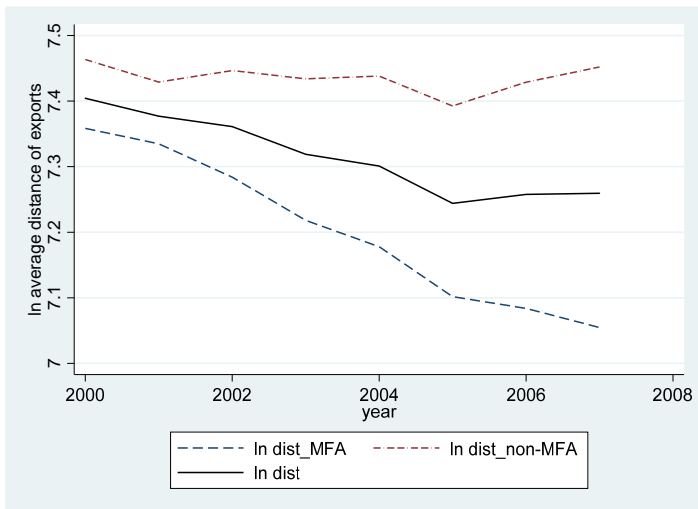
# This paper

- ▶ Develop a continuous-time industry-equilibrium model of heterogeneous firms to study exporters' choices of markets, the freq of exporting and the quality of products in each market, and complementarity of these choices.
  - ▶ Predictions: In response to imp comp from low-wage countries, more productive firms increase exports of high-quality products to nearby markets; less productive firms drop out from distant and low-income markets.
  - ▶ Outcome: Changes in firms' export patterns → advanced economies become more specialized in fast fashion.
- ▶ Use data on all Portuguese textile & clothing (T&C) producers' monthly export transactions
- ▶ Exploit the exog increase in comp at detailed product levels, following removal of Multi-Fibre Arrangement (MFA) quotas on Chinese T&C exports in 2005.
  - ▶ No effect of increased imp comp on Portuguese firms' employment, output, or exports, etc.
  - ▶ Positive effects on their output prices and freq of exports, and negative effects on their avg dist of exports.

# Quota- and non-quota-bound products' unit values



# Quota- and non-quota-bound products' distance of exports



# Quota- and non-quota-bound products' freq of exports





# China shocks, again?

- ▶ The surge in exports from low-wage countries, particularly China, has led to substantial economic restructuring across the world.
- ▶ **Negative effects** on labor market and other economic outcomes
  - ▶ Autor, Dorn, and Hanson, 2013; Acemoglu et al., 2014; and Pierce and Schott, 2014; Hummels et al., 2014, etc.
- ▶ **Positive effects:** reallocation of resources from the less productive to the more productive firms, and within-firm technology and quality upgrading
  - ▶ Bloom, Draca, and van Reenen, 2012; Amiti and Khandelwal, 2013; Iacovone, Rauch, and Winters, 2013; Martin and Mejean, 2014, Piveteau and Smagghue, 2018.

# Model - Set up

- ▶ Continuous-time industry-equilibrium model of heterogeneous firms.
- ▶ Multi-product multi-destination firms.
- ▶  $M + 1$  destinations, indexed by  $m$  with 0 being Home (Portugal), 1 industry (T&C).
- ▶ Each country is endowed with labor, only factor of production.
- ▶ Focus on solving for the industry equilibrium and examining firms' decisions to export to  $M$  countries.
- ▶ A market is defined as a country-product(HS6) pair.
- ▶ Heterogeneous firms producing horizontally differentiated varieties and compete monopolistically.

# Model - preferences

- ▶ Consumer utility in country  $m$  over  $K$  discrete T&C (HS 6-digit) sectors:  
 $U_m = \sum_{k=1}^K \beta_k \ln C_{mk}$ , where  $\sum_{k=1}^K \beta_k = 1$
- ▶ Each T&C sector is a 2-tier CES aggregates:
- ▶ Upper nest: high ( $H$ ) and low ( $L$ ) (similar to Fajgelbaum, Grossman, and Helpman (2011); Holmes and Stevens (2014); Bustos (2011)):

$$C_{mk} = \left[ \Theta_{mk}^L \left( C_{mk}^L \right)^{\frac{\kappa_k - 1}{\kappa_k}} + \Theta_{mk}^H \left( C_{mk}^H \right)^{\frac{\kappa_k - 1}{\kappa_k}} \right]^{\frac{\kappa_k}{\kappa_k - 1}}$$

- ▶ Within a quality segment  $s$ , a continuum of varieties ( $\omega$ ),

$$C_{mk}^s = \left( \int_{\omega \in \Omega_{mk}^s} \left( (\theta_{mk}^s \omega)^{\lambda_{mk}} q_{mk}^s \omega \right)^{\frac{\sigma_k - 1}{\sigma_k}} d\omega \right)^{\frac{\sigma_k}{\sigma_k - 1}},$$

# Model - Firms' Product Appeals

- ▶ Firm's product appeal:

$$\theta_{mk\omega}^s = a_{mk\omega}^s e^{-\beta_k t_{mk\omega}^s},$$

- ▶  $a_{mk\omega}^s$  = firm  $\omega$ 's product quality, specific to a sector-market pair,
- ▶  $e^{-\beta_k t_{mk\omega}^s}$  = consumers' disutility of delayed delivery (Hummels and Schaur, 2012)
- ▶  $t_{mk\omega}^s$  = time lapsed since firm  $\omega$ .
- ▶  $\beta_k$  = time sensitivity of consumers to delayed delivery.

# Quality Choices

- ▶ Simplifying assumptions (also in Fajgelbaum, Grossman, and Helpman, 2011; Holmes and Stevens, 2014; Lim, Trefler and Yu, 2019):

$$\begin{aligned}a_{mk}^H &\equiv a_k > 1 \quad \forall k; \\a_{mk}^L &= 1 \quad \forall k; \\p_{mk}^s(a_{mk}, \varphi) &= \frac{\sigma_k \tau_{mk} w (a_{mk}^s)^{\gamma_k}}{\sigma_k - 1} \varphi.\end{aligned}$$

- ▶ Prices are independent of the time gap between production and consumption, so they are still a good proxy of quality.
- ▶ Firm  $\omega$ 's iso-elastic demand in sector  $k$  and country  $m$ :

$$r_{mk\omega}^s \equiv \beta_k Y_m (P_{mk}^s)^{\sigma_k - \kappa_k} (P_{mk})^{\kappa_k - 1} (p_{mk\omega}^s)^{1 - \sigma_k} (\Theta_{mk}^s)^{\kappa_k - 1} (\theta_{mk\omega}^s)^{\lambda_{mk}(\sigma_k - 1)}$$

where  $Y_m$  is market  $m$ 's total nominal expenditure on T&C goods.

# Firms' profit maximization problem

- ▶ Step 1: chooses the optimal set of (1) products, (2) segments and (3) countries to export.
- ▶ Step 2: For each chosen product-market-segment triple, the firm optimally chooses the frequency of exporting. Each decision will be associated with the corresponding fixed costs (below).
- ▶ Solving the model backward, Step 2 (similar to Kropf and Saure, 2014):

$$\max_{\Delta_{mk}^s} \pi_{mk}^s(\varphi) = \delta_{mk}^s \left[ \int_0^{\Delta_{mk}^s} \left( e^{-rt'} \bar{\pi}_{mk}^s(\varphi) e^{-\beta_k t_{mk}^s \lambda_{mk}(\sigma_k - 1)} dt - wf_{mk} \right) \right]$$

- ▶  $\bar{\pi}_{mk}^s(\varphi) = \Phi_{mk}^s \varphi^{\sigma_k - 1} (a_{mk}^s)^{(\lambda_{mk} - \gamma_k)(\sigma_k - 1)}$  and  $\delta_{mk}^s = 1 / (1 - e^{-r\Delta_{mk}^s})$ .

# Predictions about the frequency of exports

- ▶ Implicit solution:

$$\frac{r + \phi_{mk} e^{(r + \phi_{mk}) \Delta_{mk}^{s*}} - (r + \phi_{mk}) e^{\phi_{mk} \Delta_{mk}^{s*}}}{r + \phi_{mk}} = \frac{r w f_{mk}}{\Phi_{mk}^s}$$

$$\Phi_{mk}^s = \frac{(\sigma_k - 1)^{\sigma_k - 1}}{\sigma_k^{\sigma_k}} \beta_k Y_m (P_{mk}^s)^{\sigma_k - \kappa_k} (P_{mk})^{\kappa_k - 1} (\Theta_{mk}^s)^{\kappa_k - 1} (\tau_{mk} w)^{1 - \sigma_k}$$

## Hypothesis

*The export frequency of a firm exporting goods in segment  $s$  of sector  $k$  in country  $m$  (i.e.,  $1/\Delta_{mk}^s$ ) is positively correlated with the size of market  $m$ , but decreases with the iceberg trade costs ( $\tau_{mk}$ ) and fixed costs of trade ( $f_{mk}$ ).*

## Hypothesis

*The export frequency of a firm exporting to sector  $k$  in country  $m$  is higher for high-quality products ( $\Delta_{mk}^L > \Delta_{mk}^H$ ).*

# Step 1: Choosing markets and quality segments

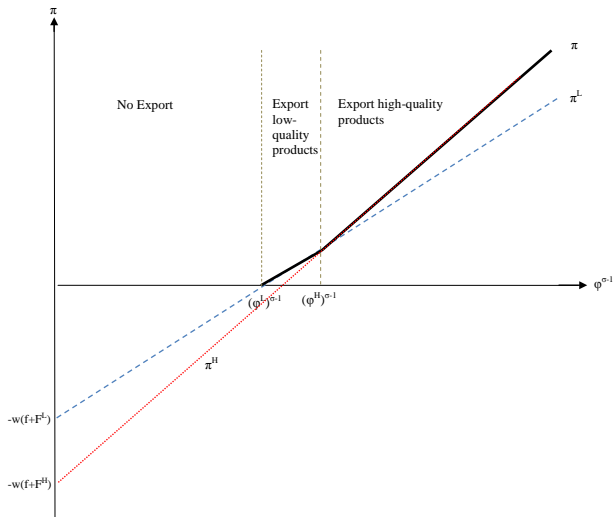
- ▶ A firm's profit maximization problem at the point of entry is

$$\begin{aligned} & \max_{\{m \in \Omega; k \in \Psi_m; s \in S_{mk}\}} \sum_{m \in \Omega} \sum_{k \in \Psi_m} \sum_{s \in S_{mk}} \pi_{mk}^s(\varphi) \\ & - \sum_{m \in \Omega} wF_m^M - \sum_{k \in \Psi_m} \sum_{m \in \Omega} wF_{mk}^K - \sum_{s \in S_{mk}} \sum_{k \in \Psi_m} \sum_{m \in \Omega} wF_{mk}^s \end{aligned}$$

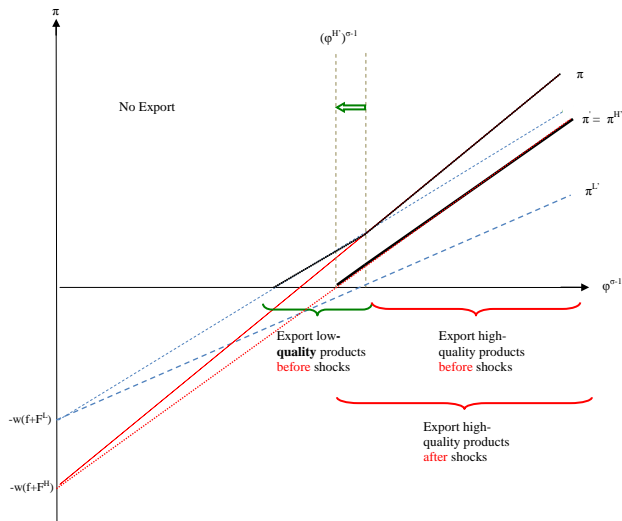
- ▶ **Assumption:**  $F_{mk}^H > F_{mk}^L$ .
- ▶ Within a country-sector pair ( $mk$ ), more productive firms tend to export in the high-quality segment (high-priced products), which tend to be associated with a higher frequency of export transactions.



# Productivity Sorting



# The Impact of the Trade Shocks from Low-wage Countries



# Theoretical Predictions

## Hypothesis

*(Within each market)* Given  $w_m$ ,  $Y_m$ , lowers price indices of the low-quality segments due to competition from a low-wage country will induce the more productive firms to upgrade to a high-quality segment and increase the freq of exports; and induce the less productive firms to drop out from the market.

## Hypothesis

*(Across markets)* Given  $w_m$ ,  $Y_m$ , in response to significant increased low-wage countries' imp comp, the less productive firms to drop out from the lower income or more distant markets.

## Hypothesis

*(Fast Fashion)* More productive firms' adding of high-quality products in nearby markets and relatively less productive firms dropping low-quality products from distant and low-income markets imply that advanced economies' firms, in response to low-wage countries' imp comp, will become more specialized in exporting (1) higher quality products; (2) to closer-by market; (3) at higher freq on avg.

# Data

## Data set 1: Domestic output and input data set

- ▶ Annual Survey of Industrial Production (IAPI) (2000-2007) by the Portuguese National Statistics Office (INE).
  - ▶ 15,000 firms; 13% are in the T&C sectors.
  - ▶ Background: In 2005, T&C: 12 % of gross manu value added; 23 % of manu emp; 12 % of total manu exp.
- ▶ Values and physical quantities for each product sold (incl exports) and input purchased of the firm, at the 8-digit EU Prodcom (PC) level (3000 different input & 5000 different products categories).

## Data set 2: Foreign trade statistics (2000-2007)

- ▶ census of export and import transactions at the firm-product (HS6)-country level, both quantity and value.

# Cross-sectional Patterns

- ▶ Prediction 1: More productive firms export more products in each country and to more countries for each product. ▶ Regression Results
- ▶ Prediction 2: Firms on average export higher priced products to richer destinations.
- ▶ Prediction 3: Firms' export frequency is negatively correlated with distance from the destinations, and positively correlated with the market size.
  - ▶ Hallak and Schott (2011) and Blum et al. (2019)

# Export Frequency, Prices, and Nations' Preferences for Quality

**Table 3: Export frequency, quantity and value of shipments and destination characteristics, firm-product-country regressions**

	(1)	(2)	(3)	(4)
Dep. variable:	ln (exp value)	ln (exp frequency)	ln (avg shipment value)	ln (unit value)
ln (gdp)	0.279*** (18.78)	0.104*** (17.08)	0.175*** (18.40)	-0.00222 (-0.75)
ln (gdp per capita)	0.0113 (0.33)	0.113*** (12.16)	-0.102*** (-3.52)	0.0519*** (3.92)
ln (distance)	-0.499*** (-18.51)	-0.288*** (-30.05)	-0.211*** (-9.51)	0.0581*** (7.50)
<b>Fixed effects</b>	<b>firm-product-year</b>			
Num of Obs	219213	219213	219213	219213
R-squared	.0849	.169	.0368	.0122

# Unit value and export frequency

- ▶ Prediction 4: Within a country-sector, more productive firms are more likely to export higher priced products.
- ▶ Prediction 5: Within a country-sector, firms export high-priced products at higher frequency.

# Unit value and export frequency

**Table 4: Firms' unit values and export frequency**

Dep. variable:	(1) ln (frequency) <sub>f<sub>pct</sub></sub>	(2) ln (unit value) <sub>f<sub>pct</sub></sub>
ln (firm sales) <sub>ft</sub>	0.128*** (21.22)	0.0474*** (7.29)
ln (unit value) <sub>f<sub>pct</sub></sub>	0.0232** (2.37)	
Fixed effects	country-product	
Num of Obs	17554	17554
R-squared	.333	.649



# Brief history of MFA liberalization

- ▶ The Multifibre Arrangement (MFA) was introduced to curb the T&C imports from low-wage countries to developed countries (US, EU, Canada) from 1974-2004.
- ▶ Uruguay Round (1995): The new Agreement on Textiles and Clothing (ATC) to eliminate the quotas over 4 stages (January of 1995, 1998, 2002, & 2005).
- ▶ By 2005, the remaining (49%) import quotas were eliminated.
- ▶ Products that were more susceptible to competition were usually liberalized in the final phase to delay competition from low-wage countries. Quotas removed last (2005) were the most binding (Khandelwal et al., 2012).
- ▶ Bloom et al. (2012), Khandelwal et al. (2011), Utar (2012), Martin and Mejean (2014).

# Binding quota distribution

**Table A2: Number and export share of T&C HS6 with binding quotas in 2004**

	2000	2002	2004	2006
share of PT exp to the EU	83.1%	83.3%	85.4%	86.4%
share of PT exp to the US	8.9%	8.2%	7.1%	6.4%
share of quota-bound exp in total PT exp	54.7%	53.1%	54.6%	53.8%
share of quota-bound exp to the EU in total PT exp	47.5%	47.0%	49.5%	49.4%
share of quota-bound exp to the US in total PT exp	7.3%	6.2%	5.1%	4.4%
share of quota-bound exp to the EU in total exp to EU	57.1%	56.4%	57.9%	57.2%
share of quota-bound exp to the US in total exp to US	81.6%	75.4%	72.0%	68.9%
Nb. T&C hs6 exported (with binding quotas)	708 (258)	715 (265)	714 (267)	724 (251)
Nb. T&C hs6 exported to EU (with binding quotas)	678 (187)	668 (183)	680 (185)	671 (181)
Nb. T&C hs6 exported to US (with binding quotas)	326 (159)	361(180)	358 (176)	352 (167)

# Main regression specification

- ▶ Diff-in-diff:

$$Y_{it} = \alpha + \beta Quota_i \times Post05_t + \mathbf{X}_{it}\Gamma + F_i + F_t + \epsilon_{it},$$

- ▶  $Y_{it}$  is the firm's outcome (e.g., exports, add, drop, unit value, dist, freq, etc.)
- ▶ Several ways to construct  $Quota_i$ . Baseline: the firm has 25% exports in 2000 that were protected by MFA binding quotas (90% filled rates in 2004).
- ▶ Later on, run regressions at firm-product or firm-product-country levels,  $Quota_{ip}$  will be a dummy = 1 if MFA quotas bind.
- ▶  $\alpha = \text{constant}$ ;  $F_i = \text{firm FE}$ ;  $F_t = \text{year FE}$ .

# No effect on firm size

**Table: Impact of T&C trade shock on firm-level variables**

Dep. variable:	(1) ln(sales)	(2) ln(val. added)	(3) ln(output)	(4) ln(employm)	(5) ln(wages)
Quota x Post05	-0.0370 (-1.40)	0.0246 (1.06)	-0.0124 (-0.74)	0.0316 (1.35)	0.00486 (0.56)
Firm FE	yes	yes	yes	yes	yes
year FE	yes	yes	yes	yes	yes
ln(sales)t-1	no	yes	yes	yes	yes
Num of Obs	9533	6708	6787	9361	7912
R-sq	.0893	.195	.346	.115	.0601

# Significant effect on export prices, freq and dist of exports

**Table: Impact of T&C trade shock on firm-level variables**

Dep. variable:	(6) ln(unit values)	(7) ln(import prices)	(8) skill intensity	(9) ln(frequency)	(10) ln(distance)
Quota x Post05	0.0594*** (2.67)	0.0889** (2.00)	0.0441** (2.44)	0.130*** (4.11)	-0.0481** (-2.01)
Firm FE	yes	yes	yes	yes	yes
year FE	yes	yes	yes	yes	yes
ln(sales)t-1	yes	yes	yes	yes	yes
Num of Obs	9652	6883	7823	9052	9052
R-sq	.0232	.0129	.0216	.036	.0119

# Market adding and dropping

- ▶ Prediction 6: In response to MFA shocks, within a country-sector pair, the more productive firms are more likely to switch to the high-quality segment of a market, while the less productive ones are more likely to drop out from the affected markets.
- ▶ Prediction 7: In response to MFA shocks, firms are more likely to drop products and countries, especially the low-priced products and the more distant and lower-income markets.

# Patterns of market dropping

**Table 8: Impact of MFA shock on the probability of dropping destinations and destination characteristics**

Dependent variable:	(1)	(2)	(3)	(4)
		Pr(drop country) <sub>fict</sub>		
Quota x Post05 x ln distance	0.0166** (2.37)		0.0194** (2.34)	
Quota x Post05 x ln gdpcap		-0.00782 (-1.03)		-0.0242** (-2.46)
Quota x Post05	-0.150*** (-2.81)	0.0601 (0.77)	-0.170*** (-2.72)	0.239** (2.34)
Fixed effects	country + firm + year		country-firm + year	
Num of Obs	59300	59228	59300	59228
R-squared	.0915	.0913	.134	.134

# Patterns of market dropping

Panel B: Heterogeneous effects

Country Characteristic (Z):	Pr(drop country) <sub>ict</sub>			
	(1) distance	(2) per cap GDP	(3) distance	(4) per cap GDP
Quota x Post05 x ln distance x TFP	0.000117 (0.05)		-0.00689** (-2.20)	
Quota x Post05 x ln gdpcap x TFP		-0.00231 (-0.80)		-0.00437 (-1.14)
Quota x Post05	-0.0766 (-0.50)	-0.161 (-0.69)	-0.471** (-2.44)	-0.115 (-0.38)
Quota x Post05 x ln distance	0.0111 (0.56)		0.0630** (2.49)	
Quota x Post05 x ln gdpcap		0.0177 (0.78)		0.0145 (0.50)
Fixed effects	country + firm + year		country-firm + year	
Num of Obs	45417	45355	45417	45355
R-squared	.0874	.0864	.135	.134



# Patterns of market adding

**Table: Impact of MFA shock on the probability of adding destinations and destination characteristics**

	(1)	(2)	(3)	(4)
Dependent variable:		Pr(add country) <sub>ict</sub>		
Quota x Post05 x ln distance	-0.00134** (-2.42)		0.00121** (2.49)	
Quota x Post05 x ln gdp <sub>cap</sub>		0.00101*** (4.10)		0.000631*** (2.88)
Quota x Post05	0.0131*** (2.65)	-0.00653*** (-3.76)	-0.0103** (-2.38)	-0.00438*** (-2.89)
Fixed effects	country + firm + year		country-firm + year	
Num of Obs	1053870	937024	996052	885223
R-squared	.0347	.0354	.349	.35

# Patterns of product dropping

**Table 9: Impact of MFA shock on the probability of dropping products and product price**

Dependent variable:	Pr(drop product) <sub>fpt</sub>	
Quota x Post05 x ln price	-0.00785 (-1.21)	-0.0232*** (-3.06)
Quota x Post05	-0.0150** (-2.11)	-0.00575 (-0.70)
Fixed effects	product + firm + year	product-firm + year
Num of Obs	55396	52100
R-squared	.173	.399

# Patterns of product dropping

Panel B: Heterogeneous effects		
	Pr(drop product) <sub>ipt</sub>	
Quota x Post05 x ln price	-0.0423** (-2.06)	-0.0771*** (-3.38)
Quota x Post05 x ln price x TFP	0.00558** (2.13)	0.00959*** (3.33)
Quota x Post05	0.0231 (0.98)	0.0334 (1.33)
Fixed effects	product + firm + year	product-firm + year
Num of Obs	42638	38854
R-squared	.187	.412

# Higher export prices (within markets)

**Table 6: Impact of T&C trade shock on export prices; firm-product-country level**

	(1)	(2)	(3)	(4)
Dep. variable: $\ln(P)_{isct}$	Export Price			
Sample:	All	Cont	All	Cont
Quota x Post05	0.0535*** (6.91)	0.0535*** (6.74)	0.0529*** (5.47)	0.0546*** (5.52)
$\ln(\text{sales})_{t-1}$	0.00537 (1.30)	0.00766 (1.53)	0.0385*** (9.21)	0.0405*** (7.85)
Firm-product-country fixed effects	yes	yes		
Product-country fixed effects			yes	yes
Year fixed effects	yes	yes	yes	yes
Num of Obs	176246	141640	176246	141640
R-sq	.00587	.00664	.00543	.00626

# Higher export prices (within markets)

**Table 7: Impact of T&C trade shock on prices; firm-product-country, heterogeneous effect**

	(1)	(2)	(3)	(4)
Dep. variable: $\ln(P)_{isct}$	Export Price			
Sample:	All	Cont	All	Cont
Quota x Post05 x TFP	0.00826*** (2.84)	0.00918*** (3.05)	0.00953*** (3.10)	0.0104*** (3.11)
Quota x Post05	-0.0138 (-0.61)	-0.0201 (-0.86)	-0.00360 (-0.14)	-0.00470 (-0.16)
TFP	0.00459*** (3.74)	0.00469*** (3.75)	0.0105*** (8.34)	0.00988*** (7.69)
Quota x TFP	-0.00627** (-2.37)	-0.00599** (-2.18)	-0.00127 (-0.50)	-0.00194 (-0.71)
Post05 x TFP	-0.00484*** (-4.08)	-0.00492*** (-4.08)	-0.0102*** (-8.04)	-0.00852*** (-5.84)
$\ln(\text{sales})_{t-1}$	0.0152* (1.74)	0.0113 (1.19)	0.0310*** (6.51)	0.0343*** (6.13)
Firm-prod-country fixed effects	yes	yes		
Product-country fixed effects			yes	yes
Year fixed effects	yes	yes	yes	yes
Num of Obs	144557	118958	144557	118958
R-sq	.00644	.00712	.00675	.00805

## Frequency of exports (within markets)

- ▶ Prediction 8: In response to the MFA shocks, firms are more likely to increase the frequency of exports on average (across country-product pairs) and within each country-product market on average (conditional on survival).

# Increased frequency of exports (within markets)

**Table 10: Impact of T&C trade shock on the frequency of export transactions; firm-product-country level**

Panel A: Average effects						
Dep. Variable:	(1)	(2)	(3)	(4)	(5)	(6)
Sample:	Europe	Below-med dist	All dest	Europe	Below-med dist	All dest
	In(# shipments) <sub>isct</sub>					
Quota x Post05	0.0203** (2.09)	0.0205** (2.21)	0.00713 (0.80)	0.0252*** (2.67)	0.0242*** (2.73)	0.0163* (1.91)
ln(sales)t-1	0.0930*** (10.80)	0.0945*** (11.25)	0.0937*** (11.93)	0.101*** (28.39)	0.0977*** (29.79)	0.0967*** (30.89)
Firm-product-country fixed effect:	yes	yes	yes			
Product-country fixed effects				yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Num of Obs	204579	228369	248958	204579	228369	248958
R-sq	.0059	.00548	.00518	.0202	.0197	.0197

# Increased frequency of exports (within markets)

Panel B: Heterogeneous effects						
Dep. Variable:	ln(# shipments) <sub>isct</sub>					
	(1) Europe	(2) Below-med dist	(3) All dest	(4) Europe	(5) Below-med dist	(6) All dest
Quota x Post05 x TFP	0.0111*** (2.93)	0.0106*** (2.91)	0.00812** (2.26)	0.0119*** (3.49)	0.0108*** (3.31)	0.0102*** (3.21)
Quota x Post05	-0.0562* (-1.95)	-0.0523* (-1.89)	-0.0435 (-1.61)	-0.0638** (-2.42)	-0.0592** (-2.34)	-0.0632*** (-2.58)
TFP	0.000225 (0.12)	-0.000355 (-0.20)	-0.00280* (-1.73)	0.00873*** (4.68)	0.00777*** (4.56)	0.00740*** (4.79)
Quota x TFP	-0.000540 (-0.18)	0.00138 (0.48)	0.00407 (1.44)	-0.00317 (-1.13)	0.0000845 (0.03)	0.000653 (0.26)
Post05 x TFP	0.000398 (0.22)	0.000872 (0.50)	0.00331** (2.06)	-0.00875*** (-4.73)	-0.00786*** (-4.65)	-0.00741*** (-4.85)
ln(sales)t-1	0.107*** (9.87)	0.109*** (10.37)	0.107*** (10.55)	0.101*** (24.04)	0.0968*** (25.08)	0.0965*** (26.25)
Firm-prod-country fixed effects	yes	yes	yes			
Product-country fixed effects				yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Num of Obs	158920	177564	195862	158920	177564	195862
R-sq	.00475	.00446	.00415	.0197	.0195	.0195



## Reduced distance of exports (across markets)

Prediction 9: In response to the MFA shocks, firms average distance from destination markets will decrease.

# Reduced distance of exports (across markets)

**Table 11: Impact of T&C trade shock on the distance of exports; firm-product level**

Panel A: Average effects						
Dep. variable:	(1) ln (dist)	(2) ln (distcap)	(3) ln (distw)	(4) ln (dist)	(5) ln (distcap)	(6) ln (distw)
Quota x Post05	-0.0447*** (-3.95)	-0.0473*** (-4.15)	-0.0382*** (-3.63)	-0.0201* (-1.70)	-0.0243** (-2.04)	-0.0219** (-2.00)
Quota				-0.0422*** (-4.15)	-0.0338*** (-3.32)	-0.0549*** (-5.53)
ln(sales)t-1	-0.000975 (-0.15)	-0.00133 (-0.20)	-0.000970 (-0.16)	-0.00334 (-0.91)	-0.00403 (-1.08)	0.000175 (0.05)
Firm-product fixed effects	yes	yes	yes			
Product fixed effects				yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Num of Obs	95154	95154	95154	95154	95154	95154
R-sq	.00251	.00284	.00168	.00207	.00193	.00261

# Reduced distance of exports (across markets)

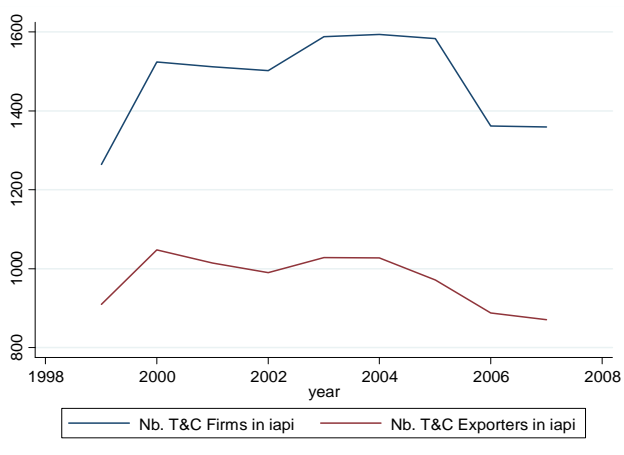
	Panel B: Heterogeneous effects					
	(1)	(2)	(3)	(4)	(5)	(6)
Quota x Post05 x TFP	-0.00897* (-1.84)	-0.00933* (-1.90)	-0.0107** (-2.30)	-0.0266*** (-5.38)	-0.0271*** (-5.44)	-0.0253*** (-5.46)
Quota x Post05	0.0379 (1.06)	0.0392 (1.09)	0.0541 (1.60)	0.124*** (3.47)	0.124*** (3.44)	0.118*** (3.56)
Quota				-0.149*** (-5.13)	-0.141*** (-4.80)	-0.194*** (-7.18)
TFP	-0.0183*** (-5.83)	-0.0187*** (-5.94)	-0.0168*** (-5.74)	-0.0213*** (-6.85)	-0.0217*** (-6.93)	-0.0178*** (-6.44)
Quota x TFP	0.0150*** (3.50)	0.0153*** (3.56)	0.0171*** (4.22)	0.0208*** (5.60)	0.0206*** (5.45)	0.0252*** (7.31)
Post05 x TFP	0.0165*** (5.18)	0.0169*** (5.27)	0.0145*** (4.90)	0.0219*** (7.05)	0.0222*** (7.12)	0.0183*** (6.64)
ln(sales)t-1	0.0278** (2.47)	0.0276** (2.44)	0.0283*** (2.70)	0.0105** (2.39)	0.0102** (2.29)	0.0100** (2.39)
Firm-product fixed effects	yes	yes	yes			
Product fixed effects				yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Num of Obs	69438	69438	69438	69438	69438	69438
R-sq	.00422	.00449	.00409	.00338	.00328	.00398

# Conclusions

- ▶ Competition from China induces Portuguese T&C firms to upgrade product quality of exports.
- ▶ Firms' quality upgrading within markets, especially among the more efficient firms, are accompanied by the “fast-fashion” phenomenon
  - ▶ adding high-income and closer markets;
  - ▶ dropping low-income and distant markets;
  - ▶ exporting at a higher frequency within markets (Just in Time);
- ▶ Localization of trade and supply chains?
- ▶ Constant elasticity of distance in gravity equations?

## APPENDIX

## Number of T&C firms & exporters



# Empirical Findings: Cross-sectional

1. More productive firms export more products in each country and to more countries for each product.
2. Firms on average export higher priced products to richer destinations.
3. Firms' export frequency is negatively correlated with distance from the destinations, and positively correlated with the market size.
4. Within a country-sector, firms export high-priced products at higher frequency.
5. Within a country-sector, more productive firms are more likely to export higher priced products, which are exported at higher frequencies.

## Empirical Findings: In response to the MFA shocks

1. Within a country-sector pair, the more productive firms are more likely to switch to the high-quality segment of a market, while the less productive ones are more likely to drop out from the affected markets.
2. Firms are more likely to drop products and countries, especially the low-priced products and the more distant and lower-income markets.
3. Firms are more likely to increase the frequency of exports on average and within each country-product market on average.
4. Firms average distance from destination markets will decrease.



# Productivity and Scope of Exporting

**Table 2: More productive firms export more products and to more countries**

Dep. variable:	(1) ln (nb exp products) <sub>fct</sub>	(2)	(3) ln (nb exp countries) <sub>fpt</sub>	(4)
In firm exports	0.128*** (12.35)	0.100*** (17.48)	0.123*** (20.58)	0.0968*** (13.23)
Fixed effects	country + year	firm + country-year	product + year	firm + product-year
Num of Obs	79642	78895	119698	118527
R-squared	.0729	.465	.104	.386

Observations are by firm-year. A product is a HS6 digit category. The sample is for 2000-2008; results remain the same if the sample is restricted to 2000-2004, pre-MFA quota removal. Standard errors are clustered by firm. A constant term is included. t-statistics in parenthesis. \*\*\*, \*\*, \* indicate significance at the 1%, 5%, and 10% levels, respectively.

▶ Back

# Heterogeneous effects

## Distribution of export prices

