

# Distribution services and the impact of trade on producer and consumer prices

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# Outline

- ▶ Background and Motivation
- ▶ The Analytical Model
  - ▶ double margins
  - ▶ consumer and producer prices
- ▶ Estimating Equations
- ▶ Empirics (eurozone, consumer products)
- ▶ Closing Remarks

## IKEA prices in the EU

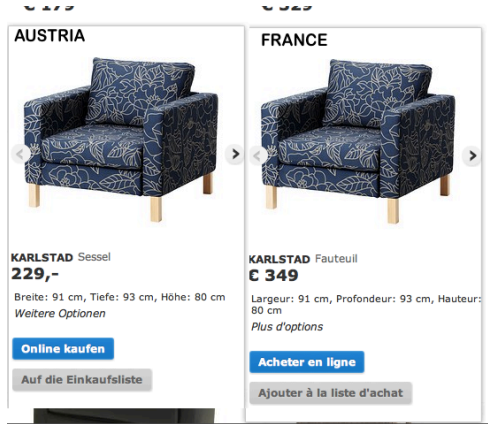


Figure: comparison: Austrian and French furniture prices

## Book Prices in the EU

Libros en idiomas extranjeros   Búsqueda avanzada   Todos los géneros   Novedades

**SPAIN -- AMAZON.ES**



**Fifty Shades of Grey** (Fifty Shades of Grey)  
E.L. James (Autor)  
★★★★★ (2 opiniones de clientes)  
Precio recomendado: ~~EUR 14,52~~  
Precio: **EUR 13,80**  
Ahorras: **EUR 0,72 (5%)**  
**En stock.**  
Enviado y vendido por Amazon.es. [Ver detalles](#)  
**¿Quieres recibir el pedido el Jueves?**  
[Nuevos: 6](#) desde **EUR 11,65**

[Ampliar la imagen](#)

GERMANY -- AMAZON.DE

Hier klicken **Blick ins Buch!**



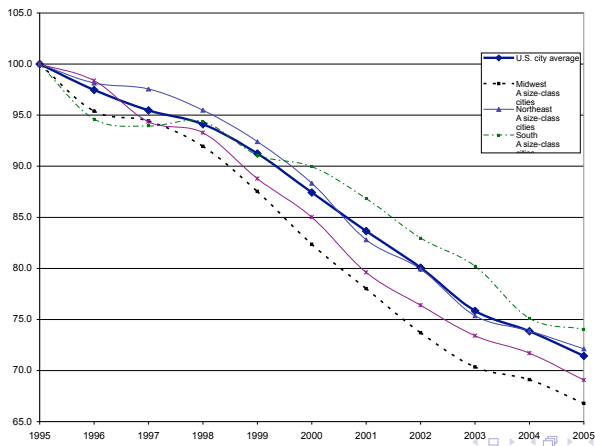
**Fifty Shades of Grey**  
E.L. James (Autor)  
★★★★★ (117 Kundenrezens.)  
Statt: ~~EUR 7,99~~  
Jetzt: **EUR 7,10** kostenlos  
Sie sparen: **EUR 0,89 (11%)**  
Alle Preisangaben  
**Auf Lager.**  
Verkauf und Versand durch Amazon  
**Lieferung bis Donnerstag, 18. April**  
**96 neu** ab **EUR 5,88** **17 geb.**

**Weitere Ausgaben**  
Kindle Edition

Figure: comparison: German and Spanish book prices

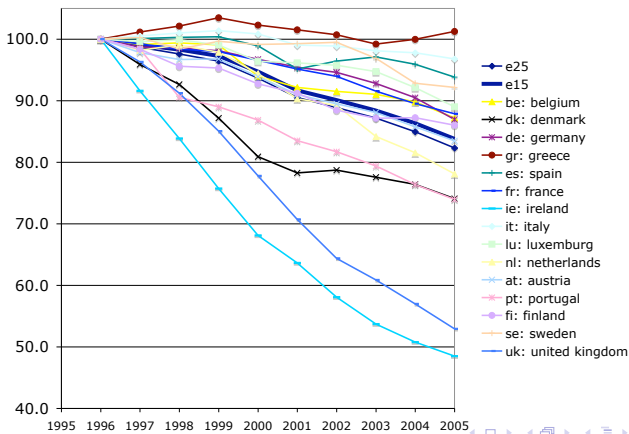
## The ATC Phase-out & Consumer Prices 1995-2005

A natural experiment across Europe and North America



## The ATC Phase-out & Consumer Prices 1995-2005

### A natural experiment across Europe and North America



► **Literature on exchange rates**

- Feinberg (RESTAT etc 1980s)
- Goldberg & Knetter (1997, JEL)
- Taylor (EER, 2000)
- Gust & Sheets (FRB, 2007)
- Capma & Goldberg (RESTAT, 2005)

► **European regulation and competition**

- automobiles: Flam and Nordström(1995, CEPR), Lutz(RIW 2004) – "15(27) single markets..."
- broad single market effects: Francois and Wooton (WE 2010)
- EU drugs market: Timur, Picone, and DeSimone (NBER 2010)
- ATC and general EU passthrough: Francois, Manchin, Norberg (IIDE,EC 2007, 2008)

► **Some theory**

- heterogeneity and openness: Chen, Imbs, Scott (JIE 2009)
- tariff passthrough: Feenstra ( JIE 1987)
- Cournot: Francois and Wooton (RIE 2001, WE 2010)
- heterogeneity: Raff (ETSG 2008, 2011)

- ▶ **Some of the main findings of the previous literature**
  - ▶ Far from complete pass-through
  - ▶ Substantial heterogeneity across industries and countries
- ▶ **Some explanations for low pass-through rates**
  - ▶ Domestic pricing
  - ▶ Currency pricing and strategies of exporting firms
  - ▶ Distribution costs and the level of competition in the retail sector



# Background and Motivation

## What we do

- ▶ first level item
  - ▶ Provide a framework which allows us to analyze pass-through both to producer and consumer prices
  - ▶ Empirically examine the differential impact of changes in import prices on consumer and producer prices in the EU

## Basic Analytical Structure

- ▶ Consumers buy a mixed of imported and competing domestic goods
- ▶ Goods reach consumers through a trade and distribution sector that has market power
  - ▶ market power (oligopoly) vis-a-vis consumers
  - ▶ market power (oligopsony) vis-a-vis producers
- ▶ This results in a double margin mechanism linking border prices to consumer prices and competing producer prices

# Empirics

- ▶ Data
  - ▶ border prices of consumer goods from COMTRADE database
  - ▶ constructed and Eurostat PPI series
  - ▶ competition indicators from the OECD PMR database
  - ▶ country coverage: 12 Eurozone countries
- ▶ Basic results
  - ▶ passthrough varies by member state, and is different for consumers and producers
  - ▶ variations in prices and passthrough are systematically related to degree of competition
  - ▶ robustness: long-run evidence effects linked to price and tariffs, less to exchange rates
  - ▶ robustness: constructed PPI data seem to match performance of Eurostat data

## Basic Structure

### ► Two Sources of Supply

#### ► Import Supply:

$$P_{cif} = F(q_M)$$

$$P_M = eTP_{cif}$$

#### ► Domestic Supply:

$$P_H = S(q_H)$$

#### ► Domestic Demand:

$$P_D = D(q_M + q_H)$$

### ► Double Margins: Oligopsony and Oligopoly. N intermediaries (distribution firms) behaving in a Cournot-Nash fashion

$$\pi_j = (P_C - P_M) \cdot q_{Mj} + (P_C - P_H) \cdot q_{Hj} - C(q_M + q_H)$$

# Prices, Competition, and Passthrough Rates

## ► Equilibrium conditions

With standard Cournot-Nash assumptions, we can derive the following equilibrium relationships between prices at the border  $P_M$  from external suppliers, factory gate prices for internal market suppliers  $P_H$ , and prices for consumers on store shelves  $P_C$ .

$$\left( \left( \frac{q_j}{Q} \right) \varepsilon_D^{-1} + 1 \right) P_C = \left( \left( \frac{q_{Hj}}{Q_H} \right) \varepsilon_{SH}^{-1} + 1 \right) P_H + \varsigma$$

$$\left( \left( \frac{q_j}{Q} \right) \varepsilon_D^{-1} + 1 \right) P_C = \left( \left( \frac{q_{Mj}}{Q_M} \right) \varepsilon_{SM}^{-1} + 1 \right) P_M + \varsigma$$

## ► Where

- $\varepsilon_D$  is the elasticity of demand
- $\varepsilon_{SH}$  is the elasticity of home supply
- $\varepsilon_{SM}$  is the elasticity of import supply
- $\varsigma$  is a constant per-unit cost for trade and distribution services

# Prices, Competition, and Passthrough Rates

## ► Border Prices and Internal Prices

markups, markdowns, and prices

$$\begin{aligned}\phi_j &= \left( n^{-1} \varepsilon_{S_j}^{-1} + 1 \right) j = H, M \\ \mu &= \left( n^{-1} \varepsilon_D^{-1} + 1 \right)^{-1}\end{aligned}\tag{1}$$

- $\phi$  represents oligopsony price-cost margin coefficients (mark downs)
- $\mu$  represents oligopoly price-cost markup coefficients (mark ups)

$$\begin{aligned}P_C &= \mu (\phi_H P_H + \varsigma) \\ P_C &= \mu (\phi_M P_M + \varsigma)\end{aligned}$$

## Prices, Competition, and Passthrough Rates

► **Basic estimating equations:**

$$\hat{P}_C = (\hat{\mu} + \gamma_M \hat{\phi}_M) + \gamma_M \hat{P}_M = b_{0C} + b_{1C} \hat{P}_M$$

$$\hat{P}_H = \gamma_H^{-1} \left( \gamma_M \hat{\phi}_M - \gamma_H \hat{\phi}_H \right) + \gamma_H^{-1} \gamma_M \hat{P}_M = b_{0H} + b_{1H} \hat{P}_M$$

► where:

$$\gamma_M = \phi_M P_M (\phi_M P_M + \varsigma)^{-1}$$

is the share of imports in total marginal cost for intermediaries

$$\gamma_H = \phi_H P_H (\phi_H P_H + \varsigma)^{-1}$$

is the share of domestic goods in total marginal cost for intermediaries

# Prices, Competition, and Passthrough Rates

## ► Double Margins: Oligopsony and Oligopoly

- Observation: The direct pass-through from changes in border prices to changes in consumer prices is reduced with a greater service cost component  $\varsigma$  such that the term  $\gamma_M$  is reduced.
- Observation: Changes in consumer prices also depend, in part, on changes in market power as exercised against both consumers and suppliers.
- Observation: Overall, the difference between import price and producer price changes follows in part from differences in market power.

There are other results related to relative elasticities, degree of openness, changes in supply conditions, and such that are outside the scope of the empirics.



# Empirics

## ► Data – Eurozone countries

- EU harmonized consumer prices for a broad set of consumer goods
- Extra-EU imports and EU imports by Member States: 1996-2006
- Tariffs by consumer products (from World Bank-UNCTAD WITS and OECD/GTAP for food sectors)
- Exchange rates (IMF)
- Constructed EU producer prices, and EUROSTAT PPI data
- Import data from COMTRADE and EUROSTAT
- OECD indexes on retail structure and competition

## ► Empirics

- Overall passthrough
- Consumer passthrough by member states
- Deconstruction of the passthrough
- Some Robustness Checks

# Basic Results

Table 1: Border prices and internal prices, all consumer goods

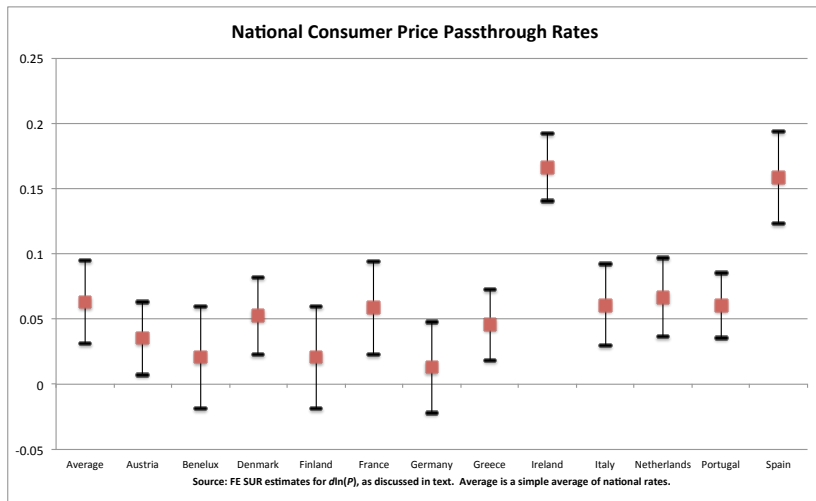
	$\ln(P_c)$	FE SUR $d\ln(p)$ $\ln(P_h)$	$d\ln(p)$ $\ln(P_c)$	$\ln(P_h)$	FE w/ AR(1) corr $d\ln(p)$ $\ln(P_c)^1$	$\ln(P_h)$	FE SUR $\Delta\ln(p)$ $\ln(P_c)$	$\ln(P_h)$
	A	B	C	D	E	F	G	H
$\ln(P_m)$	0.066*** (0.0046)	0.237*** (0.0158)	0.071*** (0.0070)	0.270*** (0.0246)	0.056*** (0.0057)	0.264*** (0.0292)	0.070*** (0.0256)	0.258*** (0.0893)
$\ln(entry)$			0.149*** (0.0295)	0.364*** (0.103)	0.240*** (0.0249)	0.471*** (0.122)	0.036*** (0.0121)	0.131*** (0.0421)
$\ln(P_m) \times \ln(entry)$			-0.020*** (0.0065)	-0.061*** (0.0228)	-0.033*** (0.0054)	-0.080*** (0.0269)	-0.063*** (0.0197)	-0.124* (0.0688)
Observations	3,044		2,739		2,739		305	
$\chi^2, F$	5105.88	3590.97	5447.39	3654.85	F:79.59	F:53.84	862.94	224.67
$Pr(\chi^2, F > 0)$	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Regressions include country-product fixed effects.

Standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

## Consumer Passthrough at Country Level



# Long-Run Prices, Tariffs, and Exchange Rates

Table 3: Landed and *c.i.f.* prices, all consumer goods

	FE SUR $\Delta \ln(p)$ $\ln(P_c)$ A	$\ln(P_h)$ B	FE SUR $\Delta \ln(p)$ $\ln(P_c)$ C	$\ln(P_h)$ D
lnPmET	0.116*** (0.0238)	0.237*** (0.0804)		
lnPmETentry	-0.0956*** (0.0170)	-0.102* (0.0576)		
lentry	0.0214** (0.00912)	0.0981*** (0.0308)	0.0245*** (0.00946)	0.114*** (0.0320)
lnPm			0.107*** (0.0247)	0.204** (0.0836)
ln_T			0.769** (0.382)	0.226 (1.292)
lnr			0.0834 (0.573)	2.889 (1.937)
lnPmentry			-0.0895*** (0.0189)	-0.0637 (0.0640)
lnrentry			-0.0744 (0.357)	-1.871 (1.205)
ln_Tentry			-0.200 (0.188)	-0.296 (0.634)
Constant	-0.0776 (0.0493)	-0.633*** (0.118)	-0.249*** (0.0365)	-0.588*** (0.123)
Observations	305	305	305	305
R-squared	0.707	0.393	0.710	0.400

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Robustness: EUROSTAT and constructed price series

Table 4: **Robustness check with Eurostat PPI data. Pass-through for Consumer Non-Durable Goods,  $dln(P)$**

	iterated SUR			iterated SUR, fixed effects		
	CPI $ln(P_c)$	unit value $ln(P_{h1})$	Eurostat $ln(P_{h2})$	CPI $ln(P_c)$	unit value $ln(P_{h1})$	Eurostat $ln(P_{h2})$
$ln(P_m)$	0.179*** (0.0661)	1.265** (0.638)	0.832*** (0.0772)	0.210*** (0.0713)	1.045* (0.628)	0.729*** (0.0810)
time	0.0173*** (0.000873)	0.0246*** (0.00843)	0.00930*** (0.00102)	0.0169*** (0.000872)	0.0274*** (0.00767)	0.0103*** (0.000990)
Constant	3.598*** (0.301)	-1.444 (2.902)	0.668* (0.351)	3.459*** (0.326)	-0.494 (2.866)	1.123*** (0.370)
Observations	65	65	65	65	65	65
$\chi^2$	787.86	33.33	544.31	3.58e+06	47291.37	2.801e+06
$Pr(\chi^2 > 0)$	0.000	0.000	0.000	0.000	0.000	0.000
Test if producer pass-through coefficients are equal.						
$\chi^2$		0.48			0.25	
$Pr > \chi^2$		0.4896			0.6143	

Standard errors in parentheses

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Note: Prices  $ln(P_{h1})$  are constructed from unit value data. All other price series are from Eurostat.

## Closing Comments

- ▶ **What we have done in the paper**
  - ▶ Constructed a model of double margins for traded consumer goods, and applied this to Eurozone data.
  - ▶ Found producer price pass-through is generally higher than for consumers
  - ▶ Shown that market structure in retail/distribution matters.
  - ▶ Also (implicitly) highlighted the importance of actually focusing on consumer goods when looking at passthrough.