Why are Goods and Services more Expensive in Rich Countries? Demand Complementarities and Cross-Country Price Differences

by Daniel Murphy

Discussion by Philip Sauré, SNB*

*The views expressed in these slides are the authors' and do not necessarily represent those of the Swiss National Bank.

The paper

1. …observes that tradable consumption goods are more expensive in rich countries (e.g., Alessandria and Kaboski 2011 and Simonovska 2011).
2. …conjectures that *catalyst goods*, which act as demand shifters, may explain part of this pattern.

   More/better roads -> higher willingness to pay for new cars.
3. …develops a theory of catalyst goods with that prediction.
4. …provides evidence for the prediction, exploiting the catalyst impact of Energy/Housing/Roads for Electrical Consumer Goods/Home Entertainment Equipment/Cars.

Theory

Utility:

$$U = y + C^{\alpha} \int f_{\omega} d\omega - \frac{\gamma}{2} \int f_{\omega}^{2} d\omega$$

Demand for *f*:

$$f_{\omega} = \gamma^{-1} \left(C^{\alpha} - p_{\omega} \right)$$

Demand elasticity:

$$- \left(\frac{d \ln(f_{\omega})}{dp_{\omega}} \right) p_{\omega} = \frac{p_{\omega}}{C^{\alpha} - p_{\omega}}$$

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Prediction:
higher consumption of catalyst good increases markups (prices)

Theory (CES)

Utility:

$$U = \left[C^{1-1/\sigma} + F^{1-1/\sigma} \right]^{\sigma/(\sigma-1)}$$

$$F = \left[\int (f_\omega)^{1-1/\rho} d\omega \right]^{\rho/(\rho-1)}$$

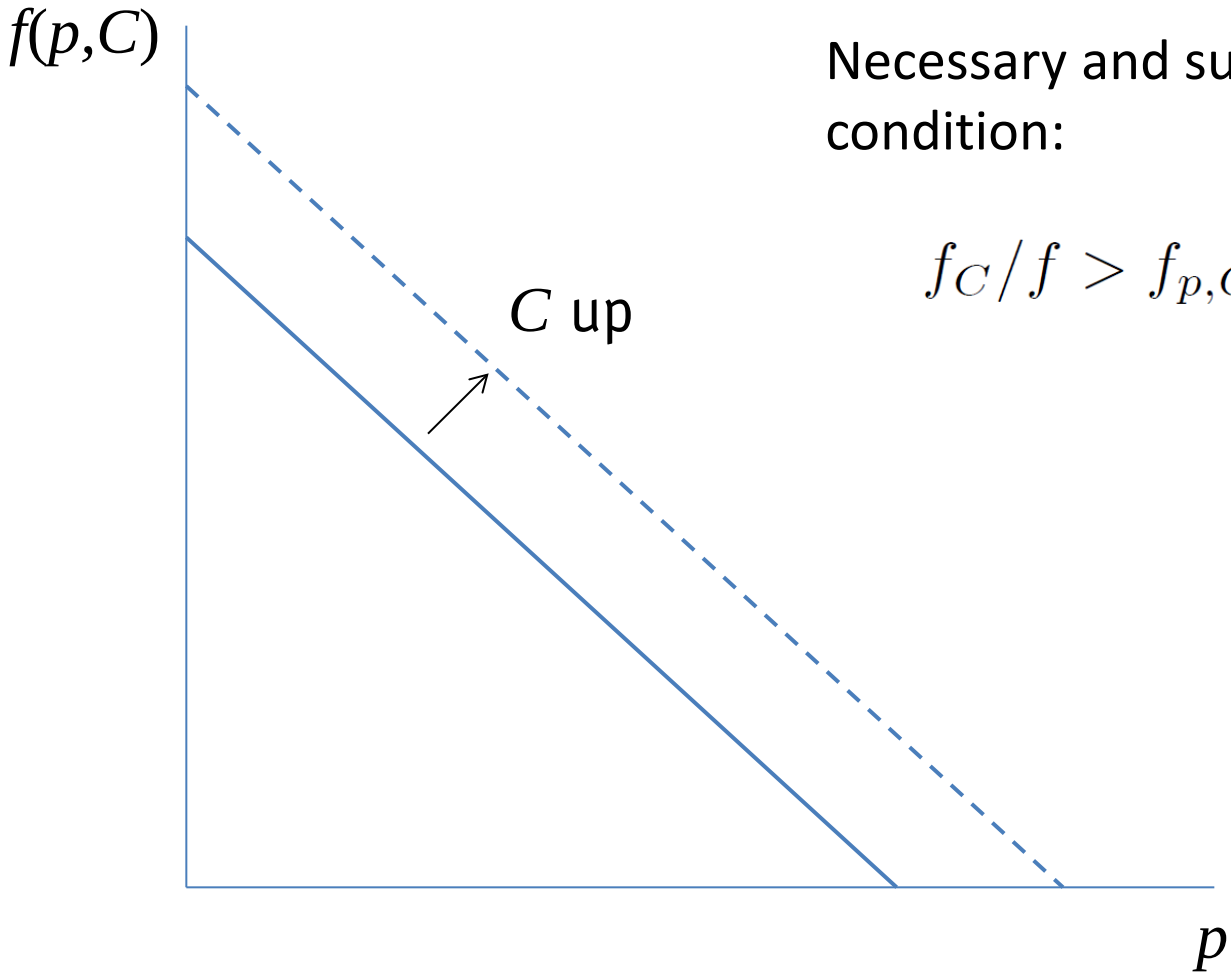
Demand for *f*: …

Demand elasticity: ρ

Necessary and sufficient condition:

$$\frac{d}{dC}\left[-\left(\frac{df}{dp}\right)\frac{p}{f}\right] < 0 \qquad \Leftrightarrow \qquad f_C/f > f_{p,C}/f_p$$

% increase in level of demand must exceed % increase in slope:



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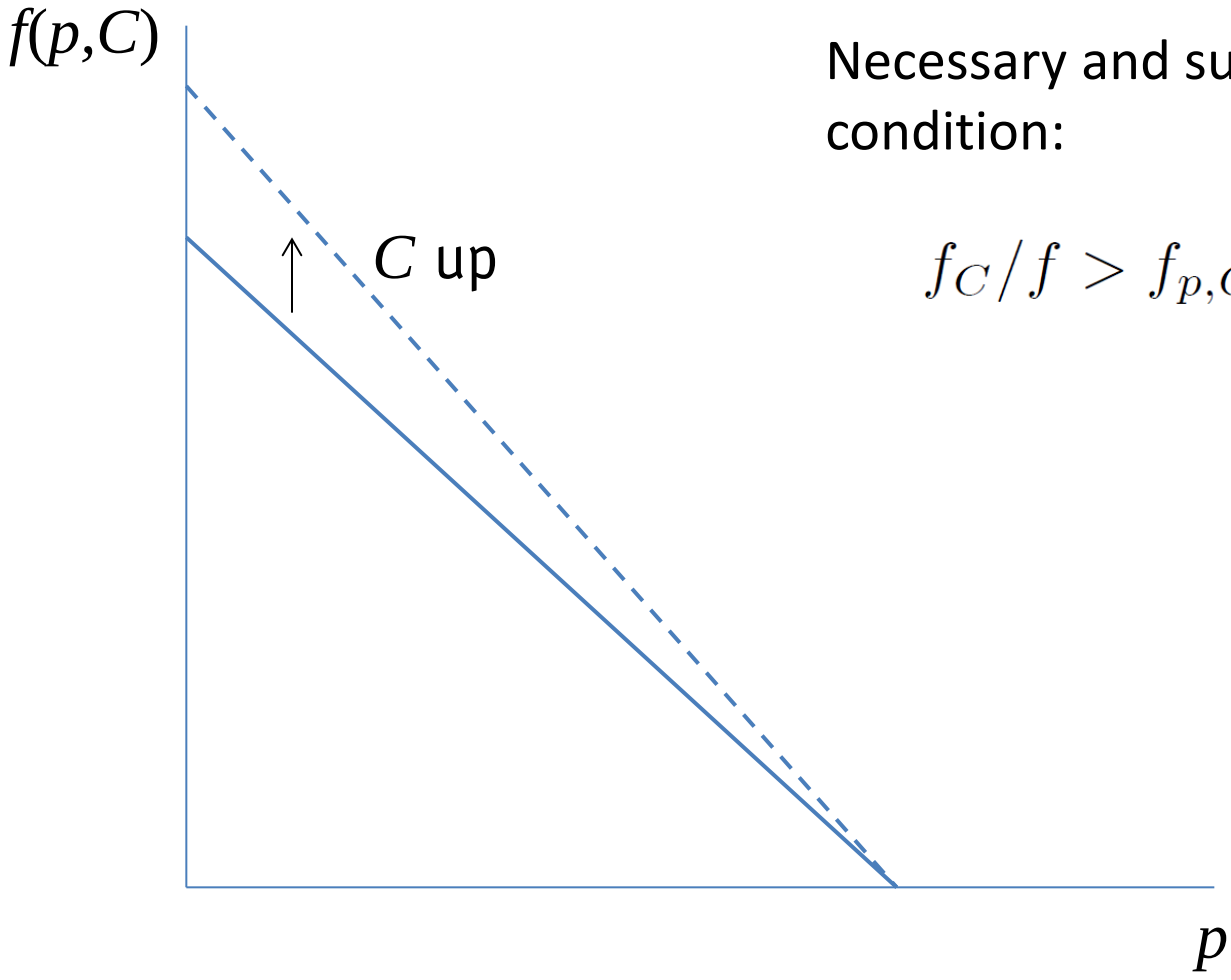

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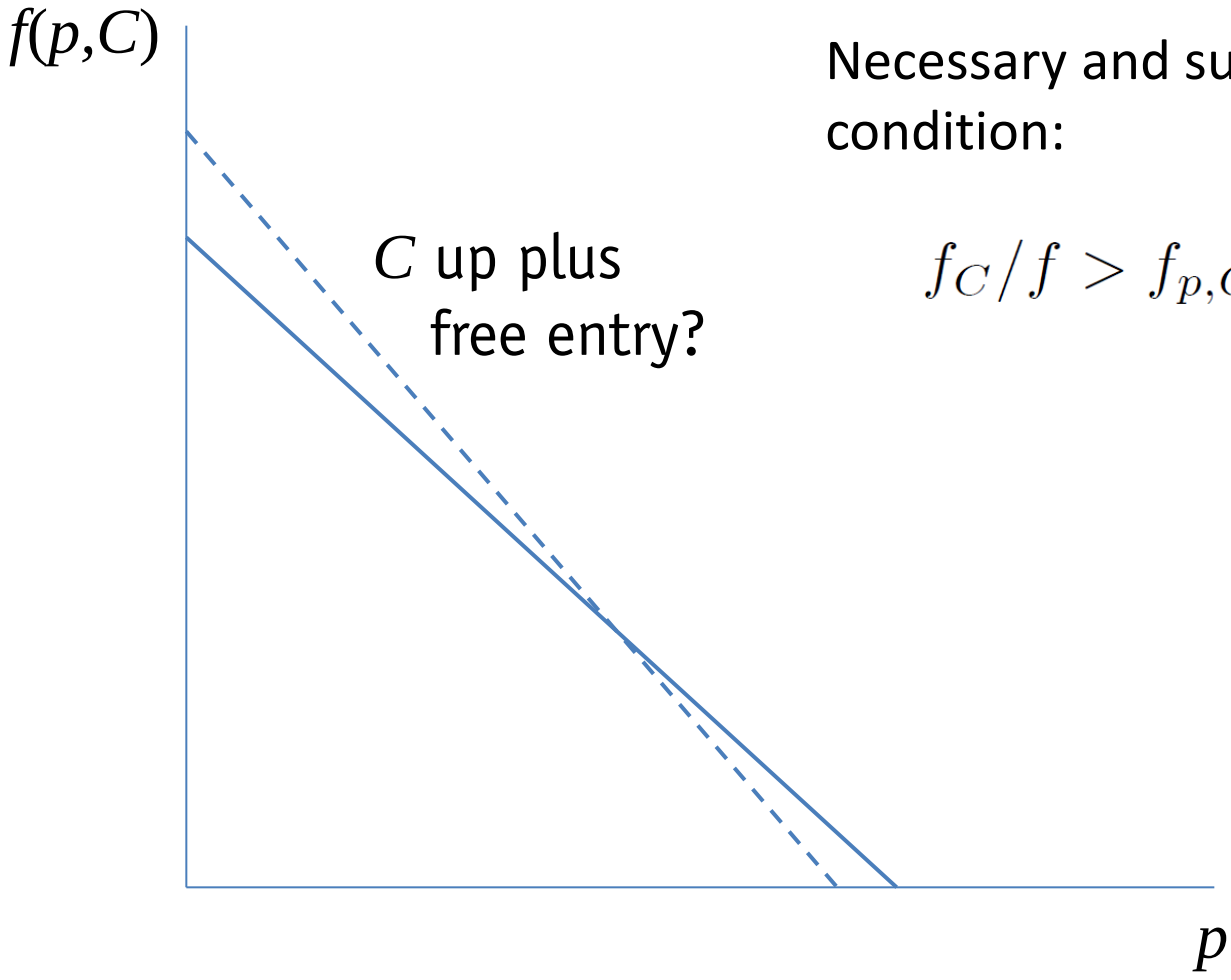

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  Free entry: demand up -> entry up -> more competition ->
  -> less market share -> lower markups.

  Income distribution: affects demand for consumption goods, if individual consumption is binary (TV, cars).
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- Theory of Simonovska 2011 included in Sauré 2007 already.

Empirics

	Catalyst (CAT)		Consumption Good ($CONS$)
1.	Energy	->	Electrical Consumer Goods
2.	Housing	->	Home Entertainment Equipment
3.	Roads	->	Cars

$$\ln(p_{ch}) = \alpha_c + \gamma_h + \beta \cdot CAT_c * CONS_h + controls + \varepsilon_{ch}$$

Evidence is supportive of the theory for all three classes.

Data

U.S. product and *Chinese firm level export data*

Quality substitution within goods

-> subsample of short quality ladders (Khandelwal 2010)

Free alongside board prices

-> no retail costs contained

Do other factors affect the results?

Is implicit insurance of exporting passed on to importers through prices? If yes, is there a bias / in which direction?

Data – Samples

- Energy: 72 counties with consumption < 5 MWH pc. ("*differences in electricity consumption… likely to reflect differences in… weather*")
- Housing: set of European Countries ("*…low levels of within-country inequality, mitigating problems… volume of the average resident may differ from housing volume of the of the consumer driving demand for household goods*")
- Roads: non-military goods

Selection seems a bit arbitrary or sloppy. (Goods dropped with "*…less than 100 units*" or "*…less than $10,000 worth*")

Generally, approach seems to let the reader "pick the favorite".

Example: Electricity

Use summary statistics and scatter plots to comfort the reader:

- What is the correlation of p.c. expenditure on *catalyst good* p.c. expenditure on consumption goods?
- What is the correlation of p.c. expenditure on *catalyst good* with p.c. GDP?
- Are there obvious outliers that are likely to drive the results?
- Why of p.c. consumption < 5 MWH? What does that selection do to distribution?
- Does “weather” correlate with “energy” in eliminated sample, not in the remaining?

Are there other explanation for cross-country differences other than climate (e.g. industrial composition / taxation) that can drive results?

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Catalyst Good <-> Elasticity <-> Price

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- …or exploit predictions on *elasticities* directly (e.g., using Broda, Limao and Weinstein 2008)
- …use alternative / better data-sources; e.g. detailed data for cars (Goldberg & Verboven 2001/2005; Auer Chaney & Sauré 2012).

Additional / General Comments

- Coming back to title/motivation:

  How much of the cross-country variation in prices do you explain?

  How much remains of the income effect on prices once catalyst goods are controlled for?

- Mapping theory to empirics: a multi-country model fits better when testing across export destinations.
- Testing: what to expect from quantity as a control – is that a proxy for market share (and power) and what sign can be expected? (Free entry?)

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"Electricity-Regression" with Swiss exports 2007

- by product/dest.:

```
Number of obs =    74804
F(  1, 69543) =    68.27
Prob > F      =   0.0000
R-squared     =   0.2707
Adj R-squared =   0.2155
Root MSE      =   1.2685
```

uval	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
IA	.1502471	.0181842	8.26	0.000	.1146061	.185888
_cons	-.8081993	.0047946	-166.90	0.000	-.8095966	-.7908019
tari	F(5259, 69543) =		4.901	0.000	(5260 categories)	

- by transaction/dest.:

```
Number of obs = 1637494
F(  1,1632233) =  507.14
Prob > F       =  0.0000
R-squared      =  0.2427
Adj R-squared =  0.2402
Root MSE       =  1.2464
```

uval	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
IA	.141683	.0062915	22.52	0.000	.1293519	.1540141
_cons	-.9116331	.0009979	-913.77	0.000	-.9137889	-.9098773
tari	F(5259, 1632233) =		99.394	0.000	(5260 categories)	

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Overall we see…

- …a very interesting empirical regularity.
- …which is seemingly robust.
- …an able author who can surely exploit and explain it.

Many thanks!

Minor Comments

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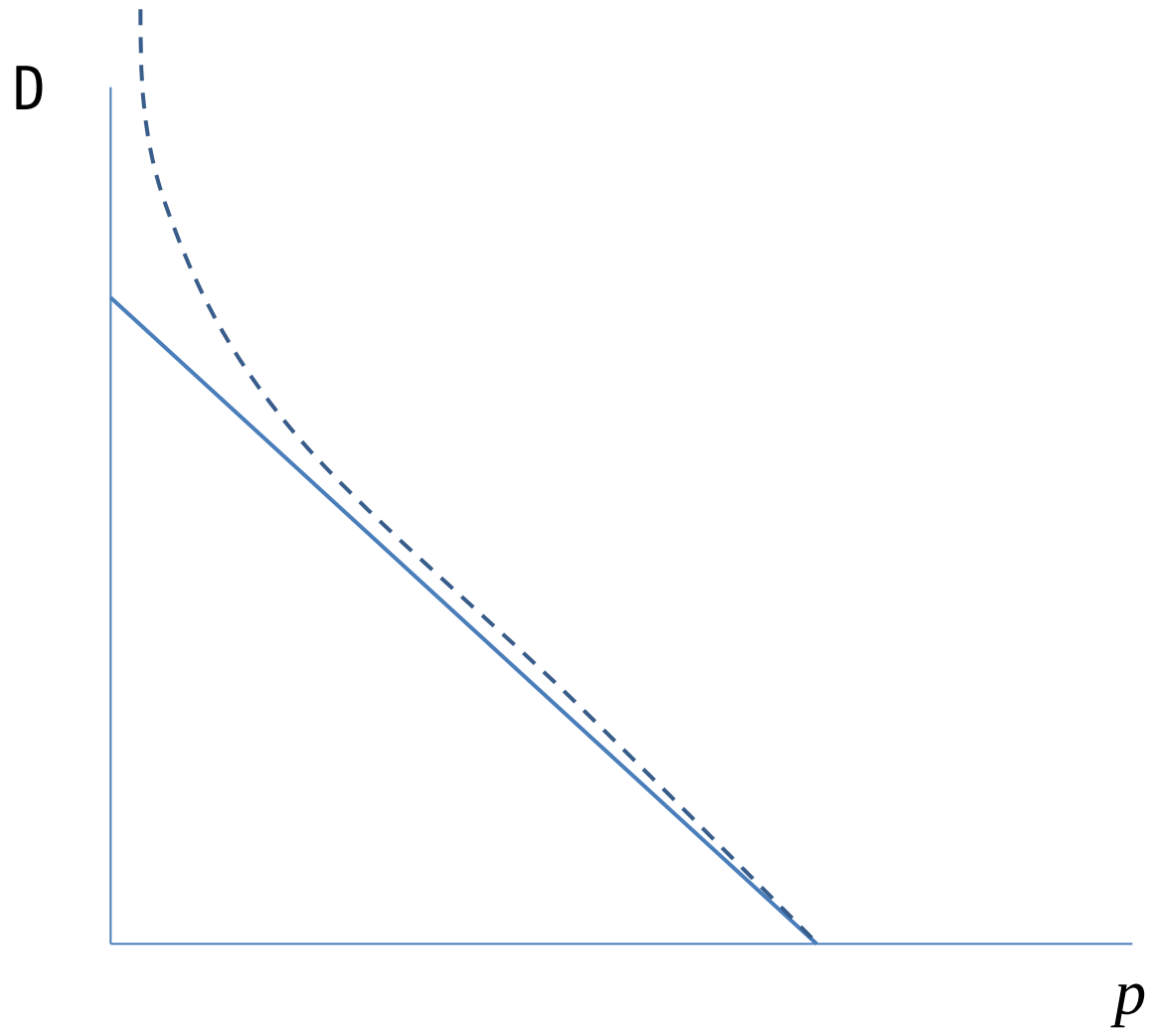
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