There Goes Gravity: How eBay Reduces Trade Costs

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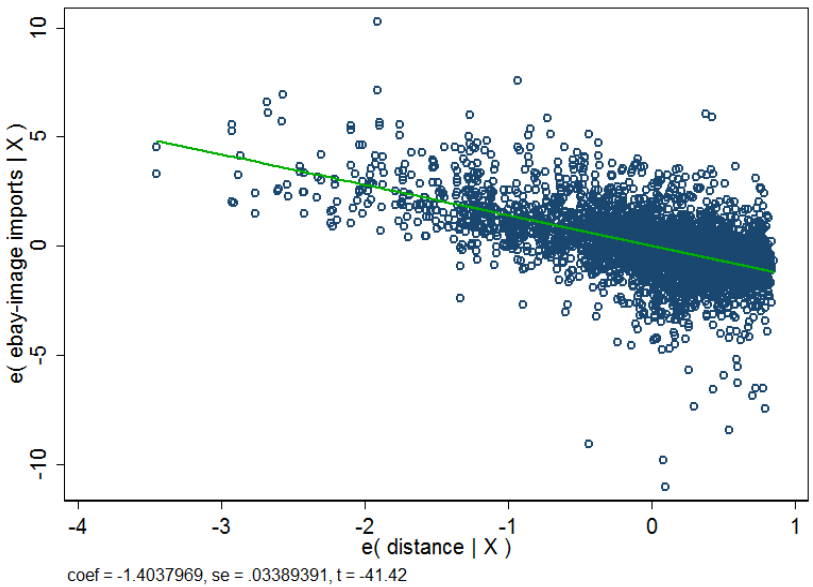
March 16, 2012

Motivation: Death of distance?

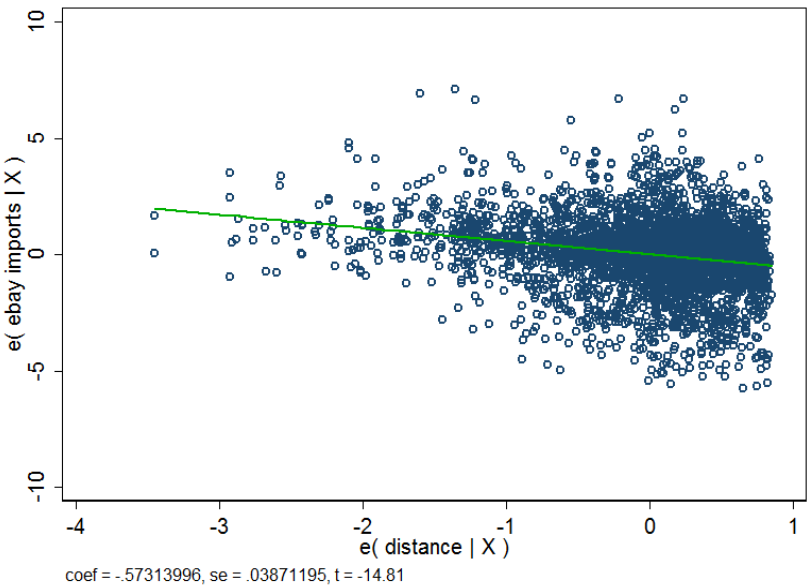
- Technology was predicted to dramatically reduce trade costs
  - "The death of distance" (Cairncross 1997)
  - "The world is flat" (Friedman 2005)
- But distance is thriving, not dying (Disdier and Head 2008)
- Chaney (2011) argues search costs explain why distance still matters for trade
- Allen (2011) says 93% of the distance effect due to information frictions
- Why? Isn't technology helping?

Motivation: Death of distance?

Distance matters less for eBay trade flows



coef = -1.4037969, se = .03389391, t = -41.42



coef = -.57313996, se = .03871195, t = -14.81

Objectives

- What's hiding behind distance and the reduction of its impact?
  - Transport cost
  - Institutions
  - Information and search costs (Rauch 1999)
  - Trust and enforcement costs (Anderson and Marcouiller 2002)
- Who benefits from it? Will depend on what's driving the decline in distance.
- We will address these questions using cross-border flows on the eBay platform

Bottom line

- Distance matters three times more offline than online
- Not explained by other trade costs variables (transport cost, differences in culture or legal systems, history)
- Reduction is stronger where it is more needed:
  - products subject to more information asymmetries
  - countries where contract-enforcement is the weakest
  - countries where information is more difficult to obtain

Rest of the talk

- Why eBay?
- Data
- The empirical model
- Results and further digging
- Conclusion

Why eBay?

- eBay is the world's largest online marketplace
- Founded in 1995
- Millions of buyers and sellers globally on a daily basis
- Sellers upload their products online
- Buyers search for their desired products
- The main benefit of the Internet as a trade facilitator is to reduce search costs (Hortascu et al. 2009)

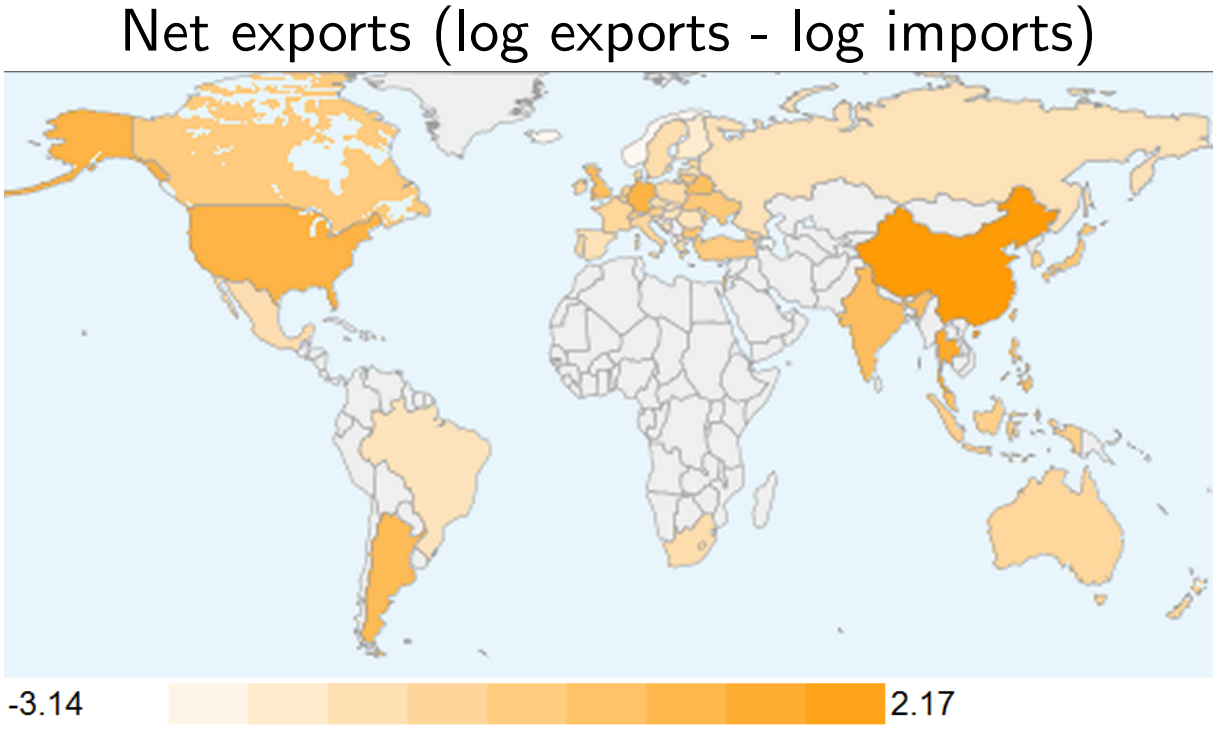
Existing studies

- Hortascu et al. (2009) is the only existing study of eBay in "international" trade
  - A sample of eBay transactions across US states
  - Assume there are no search costs on eBay
  - Finds the coefficient on distance on trade much smaller online than offline
  - But distance still matters (-0.07) – attributes this to "trust"
  - Comparison with offline trade imperfect
    - Not the same countries
    - Not the same goods. Products traded on eBay are mainly household durables. Not offline
    - Search and enforcement costs are very different internationally than across US states

Our data

- Our data includes all eBay transactions between 2004 and 2009 between 62 countries (92 percent of world trade)
- 40 product categories that can be matched across all eBay sites across countries
- Total cross border flows were on average $6 billion per year over the period(0.06% of world trade)
- Used good represent 25% of total flows, auctions 65%, and sales by non-businesses 66%.
- The correlation between the logs of online and offline trade flows is 0.72.

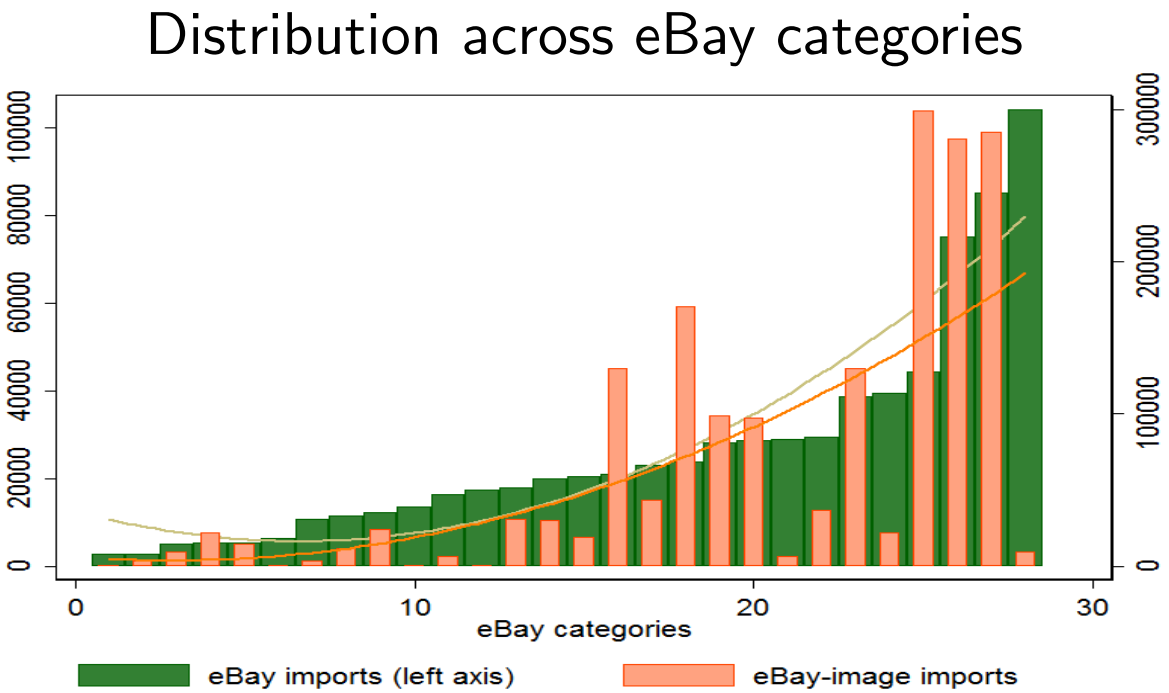
Country coverage



Matching eBay and offline data

- Compare trade flows on eBay and offline for the same set of countries
- And same goods. We select only 6-digit product codes in the HS classification that match eBay product descriptions
  - All are "final goods" (WTO) and "consumer goods" (BEC) and "differentiated goods" (Rauch, 1999)
- Some SAP categories are unmatchable (e.g., "event tickets, hollidays and travel). We drop them
- Drop auctions and keep only sales by businesses

Matching product distributions



The empirical model

Gravity model (Anderson and VanWincoop 2003)

$$\begin{aligned}\ln(m_{ij}) = \quad & \ln(y_i) + \ln(y_j) - \ln(y_w) + \beta_D \ln(D_{ij}) + \beta_T \ln(T_{ij}) \\ & + \beta_{NB} NB_{ij} + \beta_{NC} NC_{ij} + \beta_{NCL} NCL_{ij} + \beta_{NCLS} NCLS_{ij} \\ & + \beta_{NFTA} NFTA_{ij} + \beta_{NIQ}(NIQ_{ij}) - \epsilon \ln(P_i) - \epsilon \ln(\Pi_i)\end{aligned} \tag{1}$$

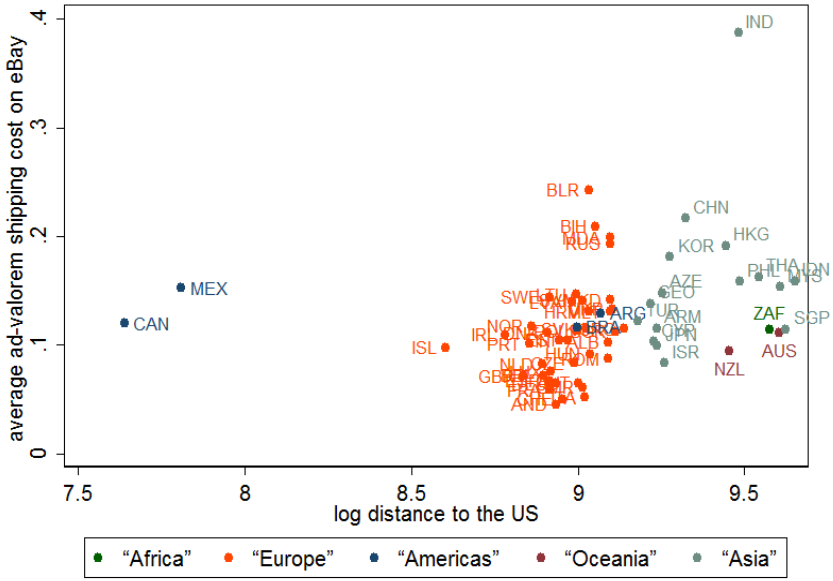
- MR terms replaced by importer and exporter fixed effects
- Because prices online and offline may be different, and to correct for self-selection we also make them online and offline specific
- Estimate them linearly, but also Poisson
- Estimate them separately, but also appended with interaction variables for online flows

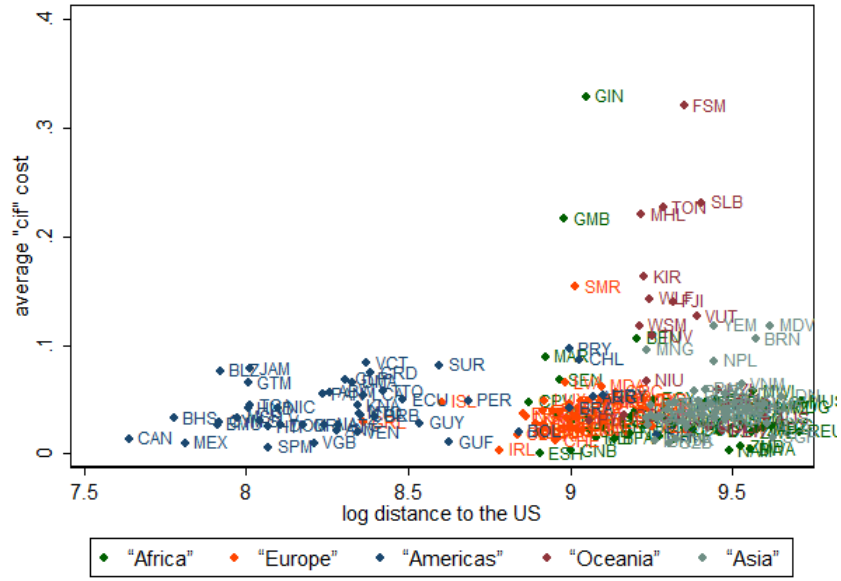
Baseline regressions

	eBay	eBay	eBay	eBay image	eBay image	eBay image
	(1)	(2)	(3)	(4)	(5)	(6)
Distance	-0.573***	-0.409***	-0.398***	-1.404***	-1.119***	-1.101***
	(0.0834)	(0.0926)	(0.0962)	(0.102)	(0.100)	(0.0986)
No common legal sys.		-0.266*	-0.191		-0.584***	-0.586***
		(0.138)	(0.121)		(0.0945)	(0.0946)
No colony		0.188	0.135		-0.408*	-0.410*
		(0.228)	(0.221)		(0.222)	(0.219)
No common language		-0.449***	-0.464***		-0.210	-0.215
		(0.165)	(0.165)		(0.175)	(0.172)
No border		-0.122	-0.102		-0.353*	-0.318
		(0.179)	(0.171)		(0.206)	(0.200)
No FTA		-0.207	-0.226		-0.314***	-0.286***
		(0.172)	(0.166)		(0.110)	(0.107)
Shipping costs			0.00368			-0.109
			(0.0888)			(0.0937)
Observations	3,763	3,763	3,733	3,763	3,763	3,733
R-squared	0.864	0.866	0.870	0.849	0.857	0.857

Distance and shipping costs

Our data also includes average bilateral ad-valorem shipping costs





Testing the statistical differences

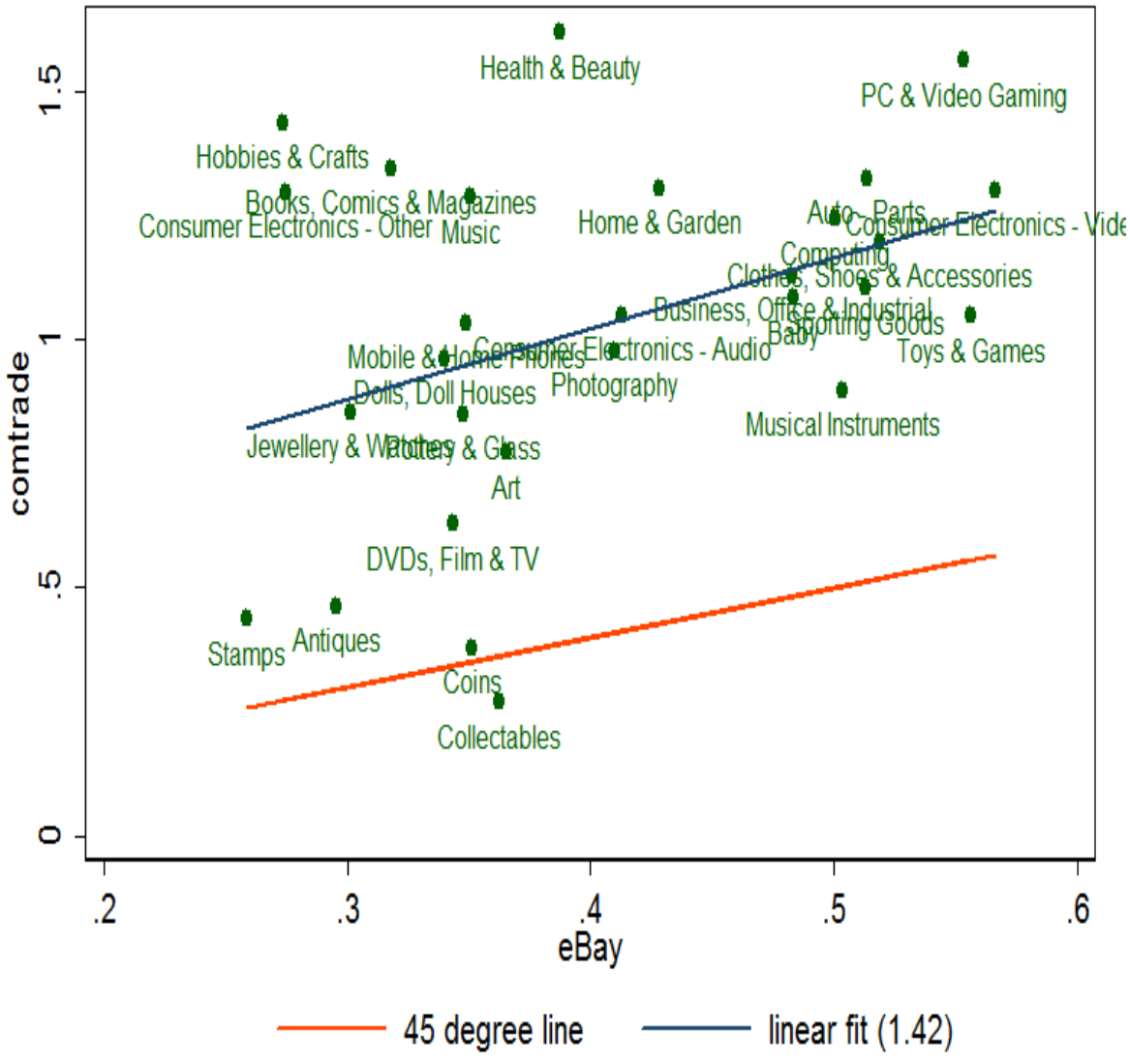
	Distance	No common legal system	No colony	No common language	No border	No FTA
Gravity coefficient	-1.119***	-0.584***	-0.408*	-0.210	-0.353*	-0.314***
	(0.100)	(0.0945)	(0.222)	(0.175)	(0.206)	(0.110)
Interaction with eBay dummy	0.711***	0.318*	0.596*	-0.239	0.231	0.107
	(0.136)	(0.167)	(0.318)	(0.240)	(0.273)	(0.204)

Robustness across various types of trade flows

	eBay total (1)	comtrade total (2)	New goods (3)	Used goods (4)	Auctions (5)	Non-auctions (6)
Distance	-0.436***	-1.267***	-0.408***	-0.572***	-0.491***	-0.334***
	(0.0655)	(0.0891)	(0.0780)	(0.0858)	(0.0631)	(0.0669)
No common legal sys.	-0.134**	-0.539***	0.0294	-0.165*	-0.114**	-0.0568
	(0.0528)	(0.0836)	(0.0808)	(0.0940)	(0.0550)	(0.0727)
No colony	-0.328***	-0.421***	0.00409	-0.237	-0.375***	-0.131
	(0.117)	(0.121)	(0.167)	(0.173)	(0.129)	(0.127)
No common language	-0.347***	-0.183	-0.432***	-0.246*	-0.339***	-0.380***
	(0.124)	(0.173)	(0.161)	(0.144)	(0.107)	(0.145)
No border	-0.215*	-0.408**	-0.362***	-0.103	-0.265**	-0.345***
	(0.129)	(0.166)	(0.132)	(0.143)	(0.109)	(0.123)
No FTA	-0.0572	-0.294***	-0.0582	-0.233	-0.0534	-0.127
	(0.0735)	(0.0895)	(0.0952)	(0.145)	(0.0754)	(0.0776)
Observations	3,740	3,754	3,740	3,740	3,740	3,740
R-squared	0.934	0.829	0.881	0.818	0.920	0.910

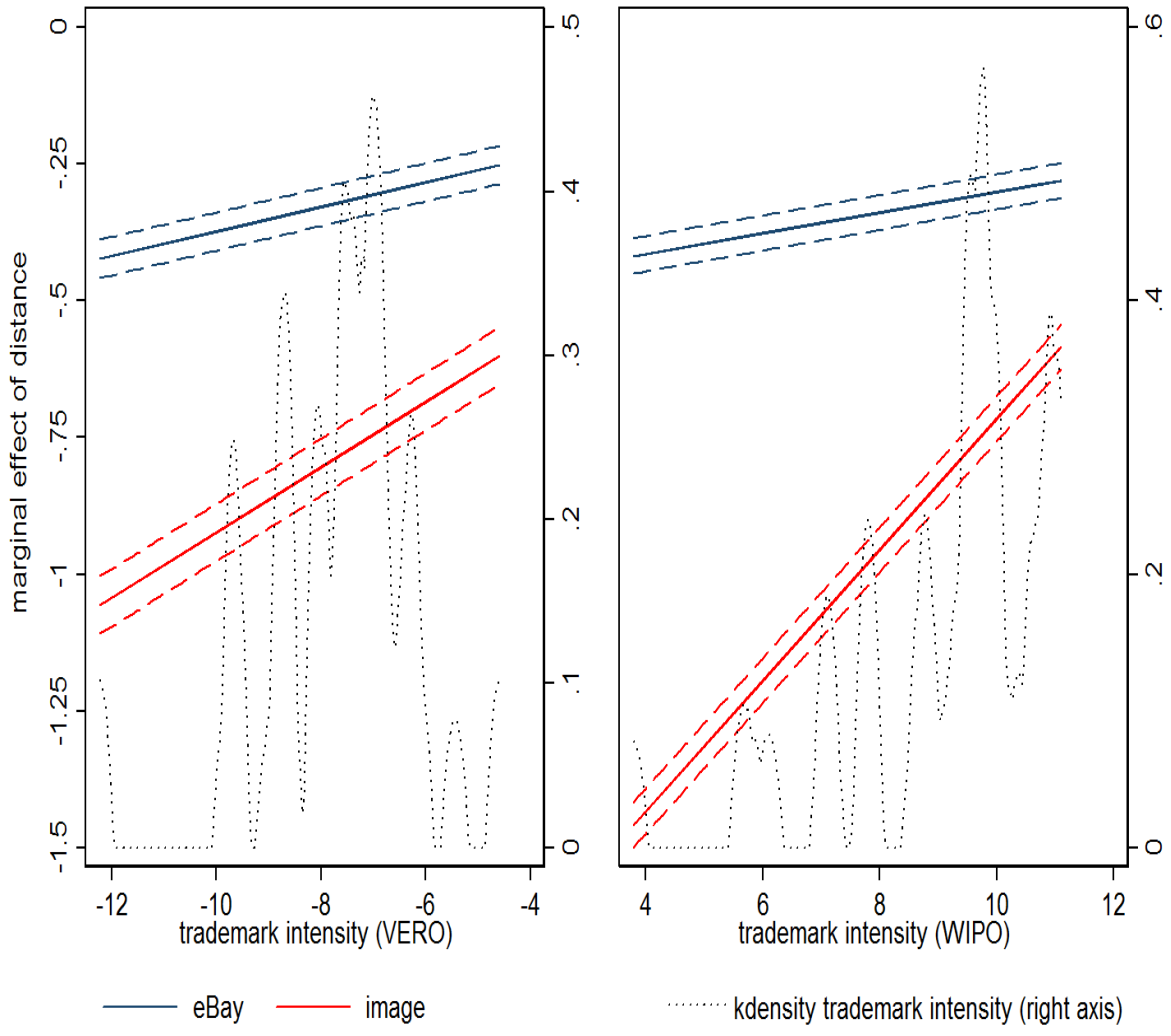
Bundle composition bias?

Distance coefficients online and offline by product category



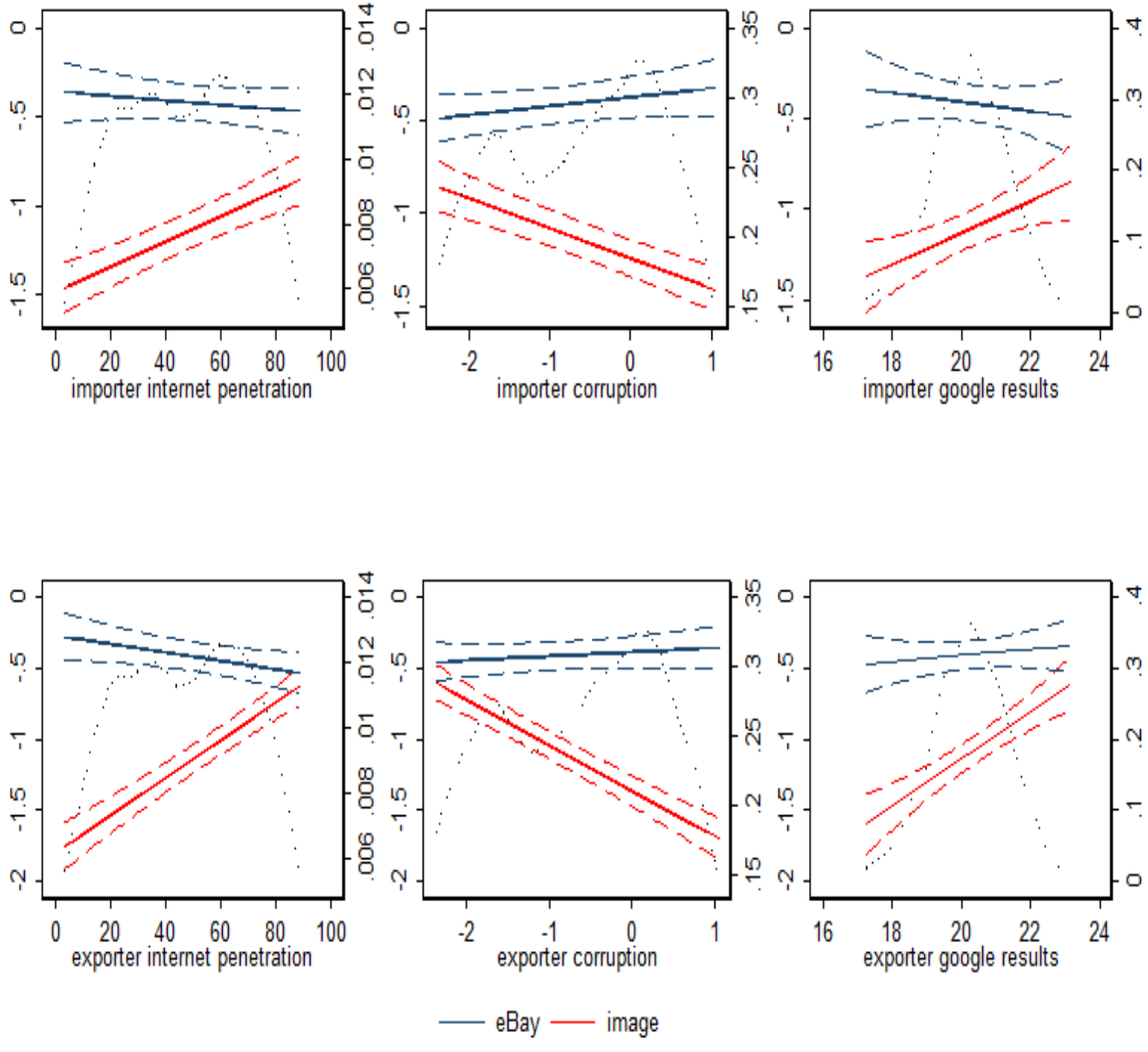
Why? Reducing missing product information

Online platforms as provider of product information



Why? Missing country information and bad institutions

Online platforms as provider of country information and trust



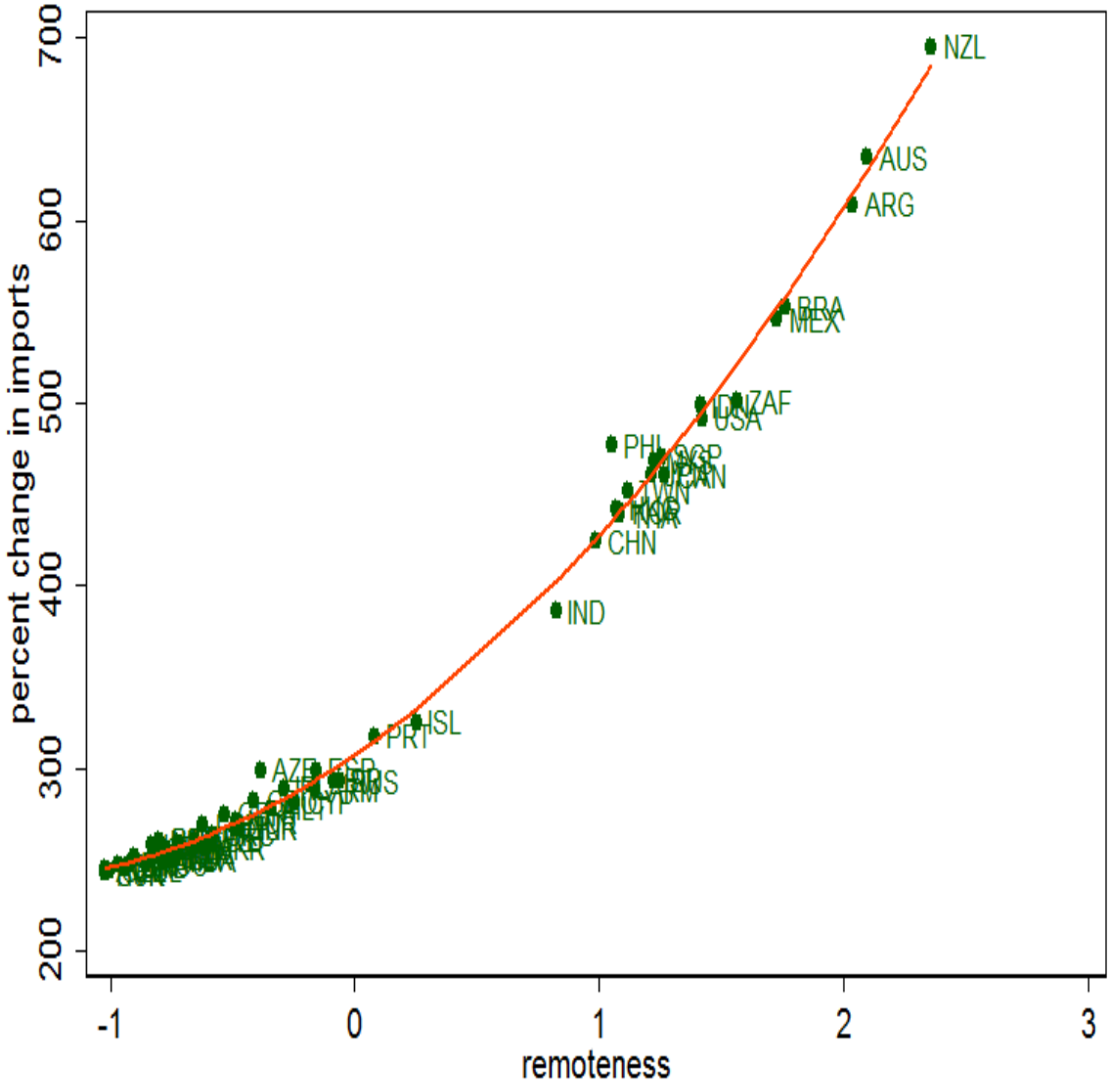
Who benefits?

Arkolakis, Costinot and Rodrǵuez-Clare welfare gains:

$$\hat{W} = \frac{\left(1-\theta'\right)^{1/\epsilon}}{\left(1-\theta'\right)} - 1 \tag{2}$$

- Large broad of trade models consistent with our gravity framework
- Use online and offline estimates to compute θ' if we adopt online trade costs
- Total expenditure remains constant if endowment model where labor is the only factor in fixed supply and we use wages as the numéraire

Gains from moving to online trade costs



Concluding remarks

- The world seems to be flatter online because
  - reduction in product information search costs
  - increases in trust (overcomes bad institutions and missing information)
- This reduction in trade costs is promising in terms of the potential of technology in helping poor countries integrate into the global economy
- Remote countries with bad institutions and specialized in sectors where product information is fuzzy are more likely to benefit from a shift towards online platforms