Plan for this lecture

- Trade costs: definition and importance

- Measurement of trade costs

- Economic geography

Video on the importance of trade costs for SDGs: https://youtu.be/TgJ794BEeQw

What are trade costs?

All the costs that impede trade from origin to destination

This includes:

- Tariffs and non-tariff barriers (quotas, anti-dumping, etc.)
- Transportation costs
- Administrative hurdles
- Corruption
- Contractual frictions, e.g. the need to secure trade finance (working capital while goods in transit)

Note: Some of these "trade costs" can also occur within countries

Are trade costs large?

There is considerable debate (still unresolved) about this question

Arguments for "yes"

- Trade falls very dramatically with distance. Need large trade costs to rationalize trade flows in standard trade models

- Contractual frictions of sale at a distance seem potentially severe

- One often hears the argument that a fundamental problem in developing countries is the poor quality of their transportation infrastructure (i.e. ports, roads, etc.)

Trade falls with distance (Germany)

Leamer: *A Review of Thomas L Friedman's* The World is Flat   111
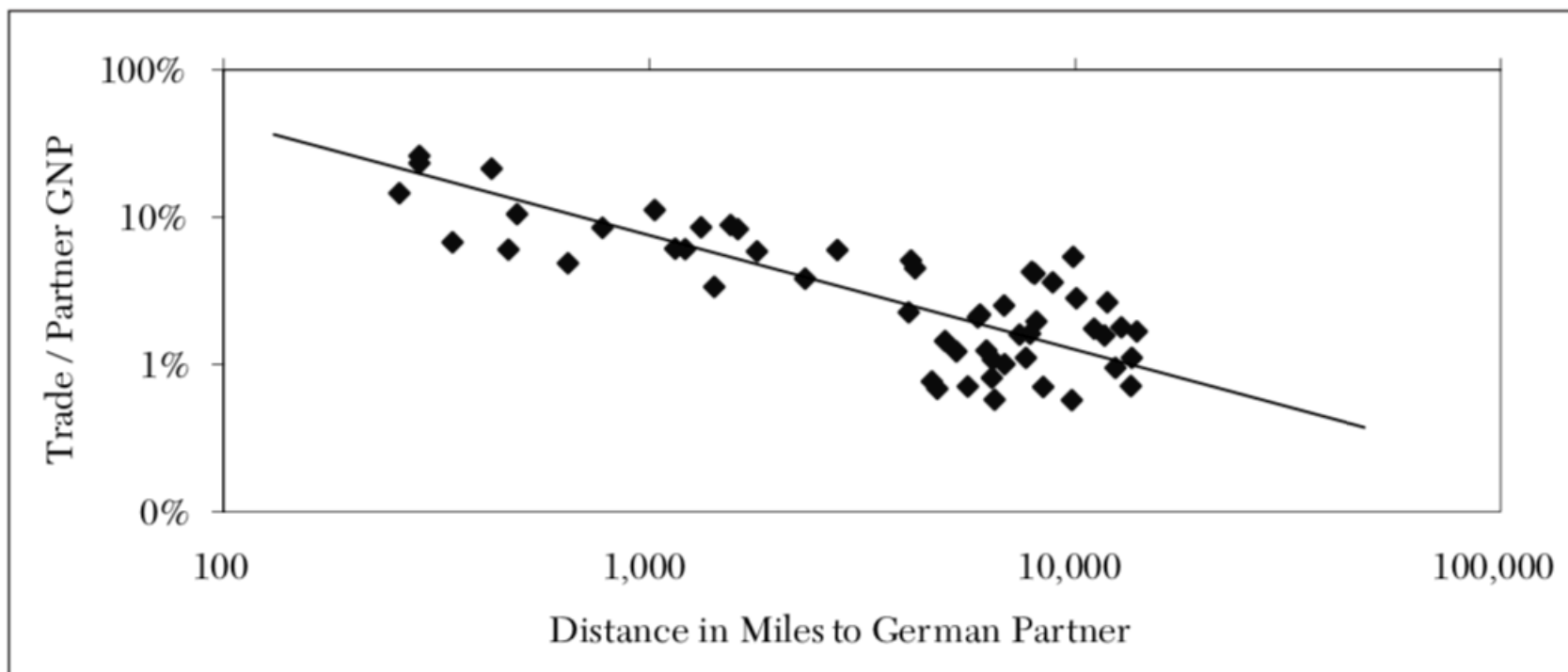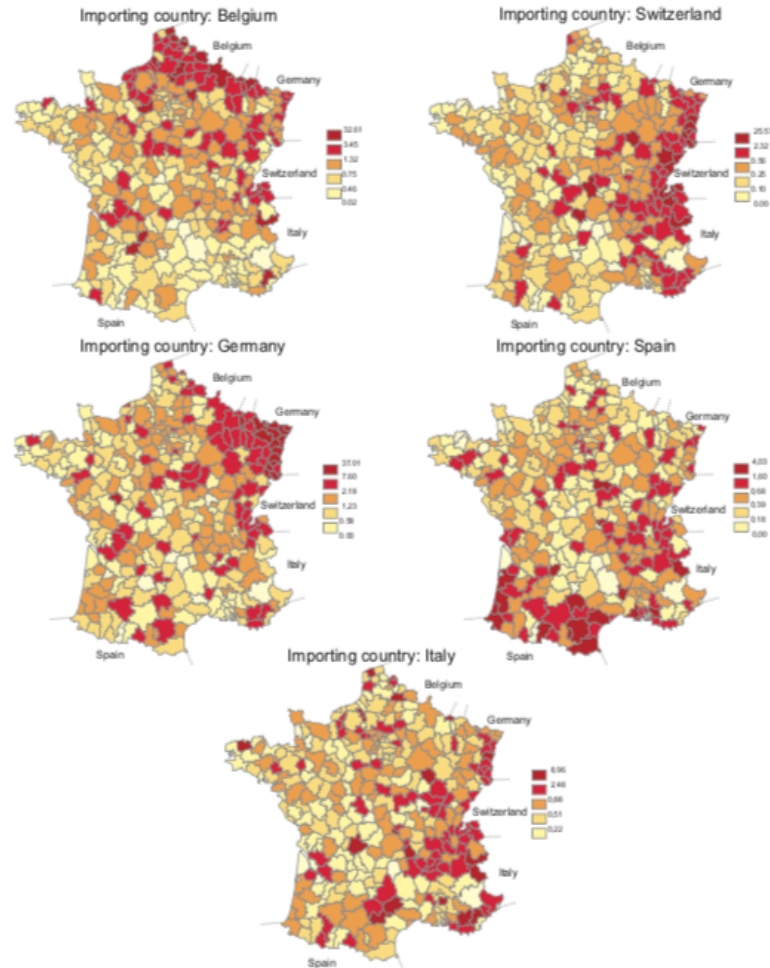
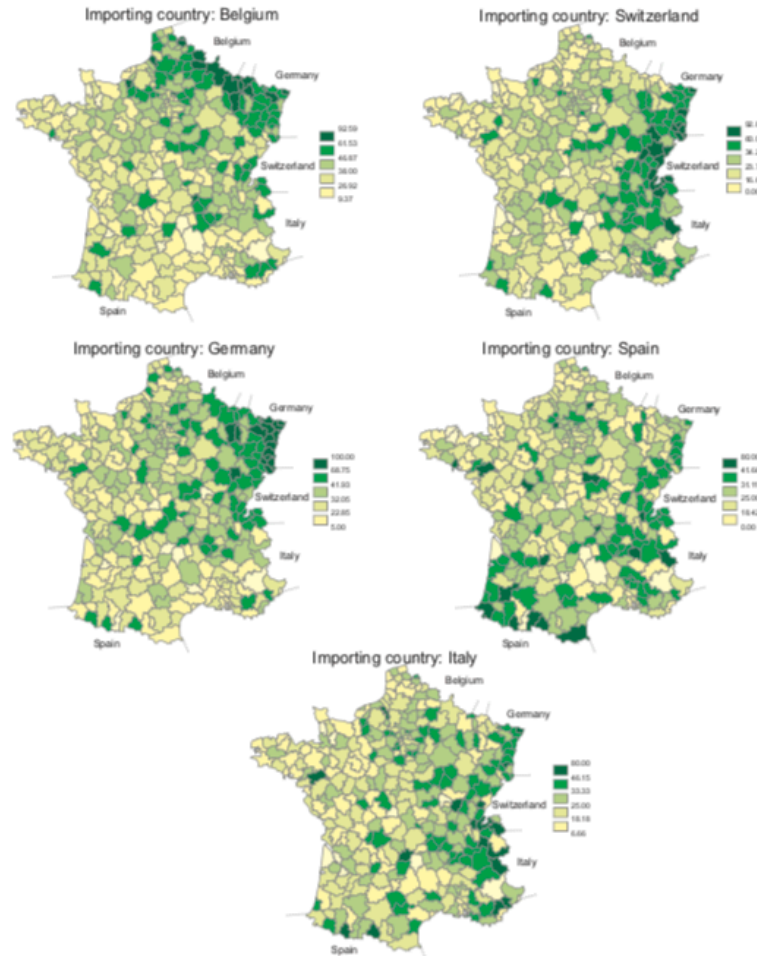Figure 8. West German Trading Partners, 1985

Trade falls with distance (France)

Figure 1: Mean value of individual-firm exports (single-region firms, 1992)

Trade falls with distance (France)

Figure 2: Percentage of firms which export (single-region firms, 1992)
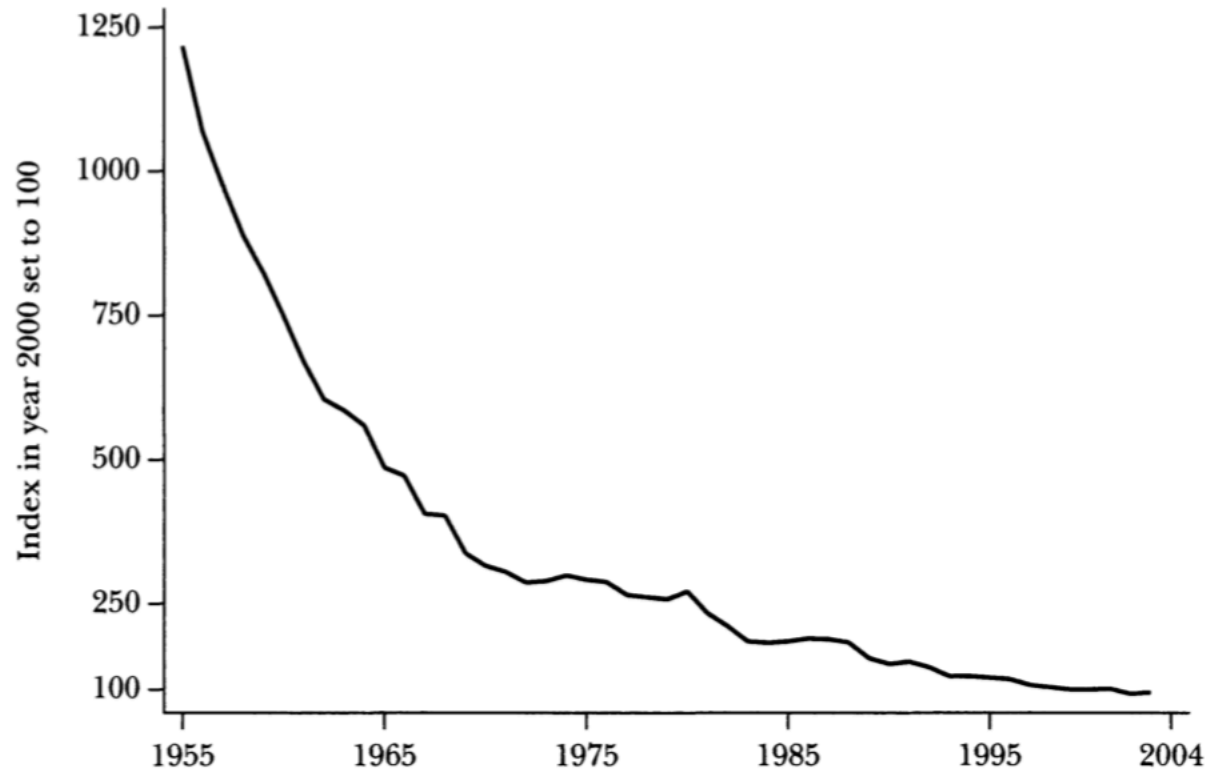
Are trade costs large?

Arguments for "no"

- Inter- and intra-national shipping rates aren't that high

- Tariffs are not that big (nowadays)

- Repeated games and reputations/brand names are likely to circumvent any high stakes contractual issues

Direct measures: Hummels (2007): Air shipping

Air shipping prices falling.

Figure 1
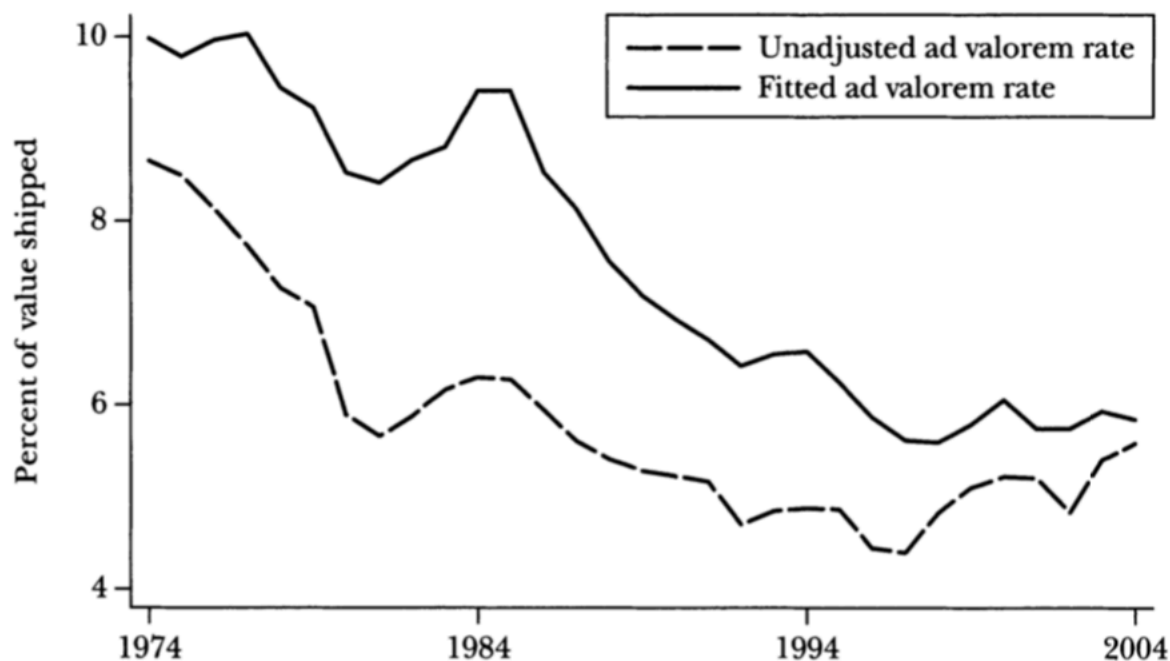### Worldwide Air Revenue per Ton-Kilometer

Source: International Air Transport Association, *World Air Transport Statistics,* various years.

Direct measures: Hummels (2007): sea shipping

These effects are moderated by compositional changes.
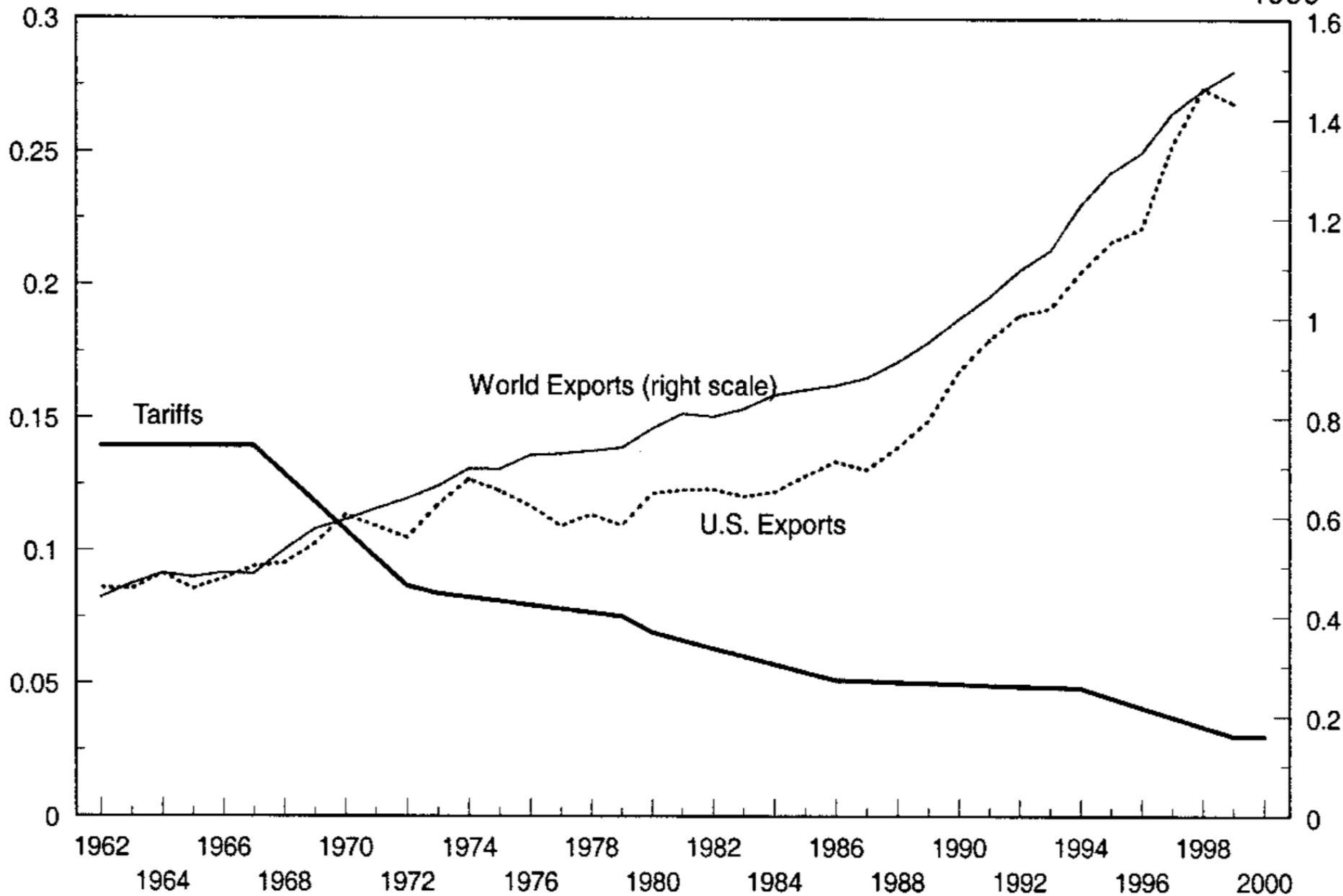
Figure 6
Ad Valorem Ocean Freight

Source: Author's calculations based on the U.S. Census Bureau's *U.S. Imports of Merchandise.*
Note: The unadjusted ad valorem rate is simply expenditure/import value. The fitted ad valorem rate is derived from a regression and controls for changes in the mix of trade partners and products traded.

From Yi (JPE, 2003)

a   1990=1

Direct measures: Djankov, Freund and Pham (2010)

'Doing business' style survey on freight forwarding firms around the world.

List of Procedures to Export from Burundi

1. Secure letter of credit
2. Obtain and load containers
3. Assemble and process export documents
4. Pre-shipment inspection and clearance
5. Prepare transit clearance
6. Inland transportation to port of departure
7. Arrange transport; waiting for pickup and loading on local carriage
8. Wait at border crossing
9. Transportation from border to port
10. Terminal handling activities
11. Pay of export duties, taxes or tariffs
12. Waiting for loading container on vessel
13. Customs inspection and clearance
14. Technical control, health, quarantine
15. Pass customs inspection and clearance
16. Pass technical control, health, quarantine
17. Pass terminal clearance

Direct measures: Djankov, Freund and Pham (2010)

'Doing business' style survey on freight forwarding firms around the world.

FIGURE 1.—EXPORT PROCEDURES IN BURUNDI
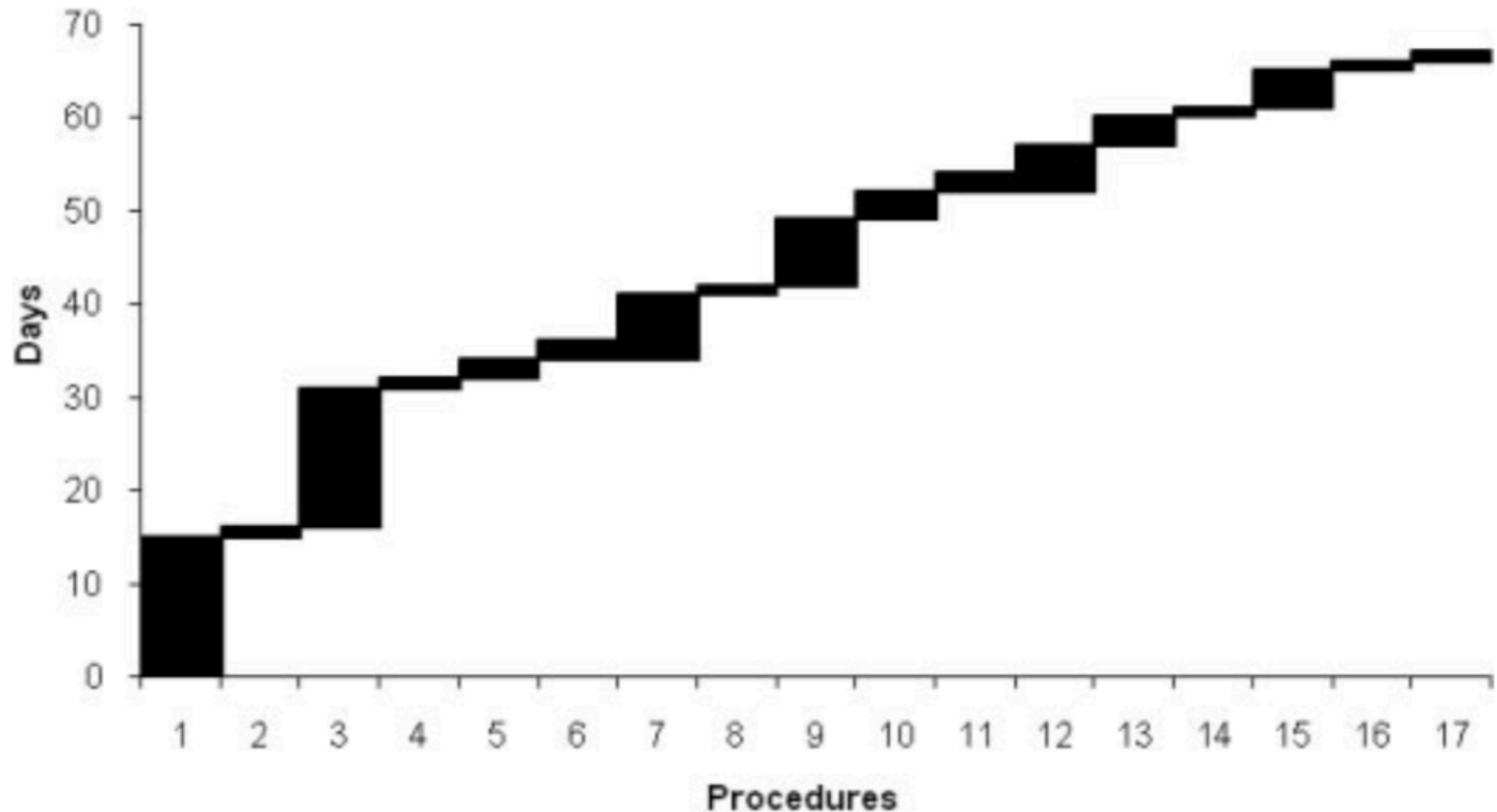
Direct measures: Barron and Olken (JPE 2009)

Survey of truckers in Aceh, Indonesia.

TABLE 1
SUMMARY STATISTICS

	Both Roads (1)	Meulaboh Road (2)	Banda Aceh Road (3)
Total expenditures during trip (rupiah)	2,901,345	2,932,687	2,863,637
	(725,003)	(561,736)	(883,308)
Bribes, extortion, and protection payments	361,323	415,263	296,427
	(182,563)	(180,928)	(162,896)
Payments at checkpoints	131,876	201,671	47,905
	(106,386)	(85,203)	(57,293)
Payments at weigh stations	79,195	61,461	100,531
	(79,405)	(43,090)	(104,277)
Convoy fees	131,404	152,131	106,468
	(176,689)	(147,927)	(203,875)
Coupons/protection fees	18,848	. . .	41,524
	(57,593)		(79,937)
Fuel	1,553,712	1,434,608	1,697,010
	(477,207)	(222,493)	(637,442)
Salary for truck driver and assistant	275,058	325,514	214,353
	(124,685)	(139,233)	(65,132)
Loading and unloading of cargo	421,408	471,182	361,523
	(336,904)	(298,246)	(370,621)
Food, lodging, etc.	148,872	124,649	178,016
	(70,807)	(59,067)	(72,956)
Other	140,971	161,471	116,308
	(194,728)	(236,202)	(124,755)
Number of checkpoints	20	27	11
	(13)	(12)	(6)
Average payment at checkpoint	6,262	7,769	4,421
	(3,809)	(1,780)	(4,722)
Number of trips	282	154	128

NOTE.—Standard deviations are in parentheses. Summary statistics include only those trips for which salary information was available. All figures are in October 2006 rupiah (US$1.00 = Rp. 9,200).

Direct measures: Sequeira (AER 2016)

Mozambique: When tariffs are high, pay bribes to assign to different tariff code

Table 6: **Summary Statistics: Bribe Payments**

	Pre Tariff Change	Post Tariff Change	
	2007	2008	2011-2012
Probability of Paying a Bribe (%)	80	26	16
Avg Bribe Amount per Ton (Metical 2007, CPI Adjusted)	2,164 (7,800)	280 (963)	494 (2,746)
Primary Bribe Recipient	Customs (97%)	Customs (84%)	Customs (72%)
Primary Reason for Bribe Payment	Tariff Evasion (61%)	Congestion (59%)	Congestion (38%)
Ratio of Bribe Amount to Tariff Duties Saved [0-1]*	0.07 (0.13)	0.028 (0.09)	0.008 (0.02)
Avg clearing time for all shipments (days)	2.4 (1.4)	2.6 (1.4)	2.6 (3.6)
Avg clearing time with the payment of a bribe (days)	2.5 (1.5)	2.3 (1.2)	2.5 (3.1)
Avg clearing time without the payment of a bribe (days)	1.9 (0.74)	2.7 (1.38)	2.6 (3.7)
Avg clearing time with bribe payment for tariff evasion (days)	2.2 (1.7)	2.6 (1.4)	2.4 (1.8)

[a] *Conditional on the bribe being paid for tariff evasion.

[b] Source: Audit study conducted by the author.

[c] NOTES: Average clearing times moved in tandem with increases in the overall volume of cargo handled at the port between 2007 and 2011. Total volumes increased by 13% in 2008 and 18% in 2011. Note that in 2009, the port of Maputo was still functioning at 30% of capacity so it was capable of handling the observed increase in volumes without substantially increasing congestion.

Direct measures: Starz (2016)

Nigerian Traders: Travel costs as large as transportation/tariff costs

Figure 3: Travel, transport, and tariff expenditures relative to goods value
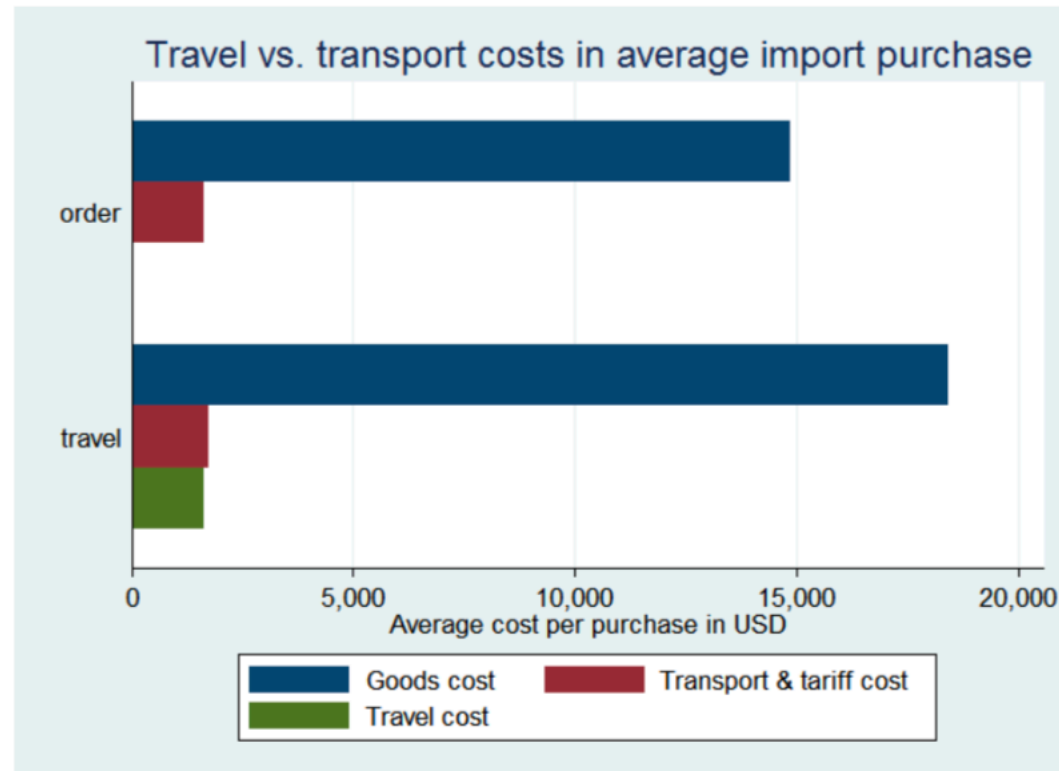
Elements of trade costs

- Tariffs, NTBs, etc
- Transportation costs, roads, ports
- Currency policies
- Being a member of the WTO
- Language barriers, colonial ties
- Information barriers
- Contracting costs and insecurity
- US CIA-sponsored coups
- (…)

Video on Doing Business in China https://youtu.be/Iw7Q1LiNXig
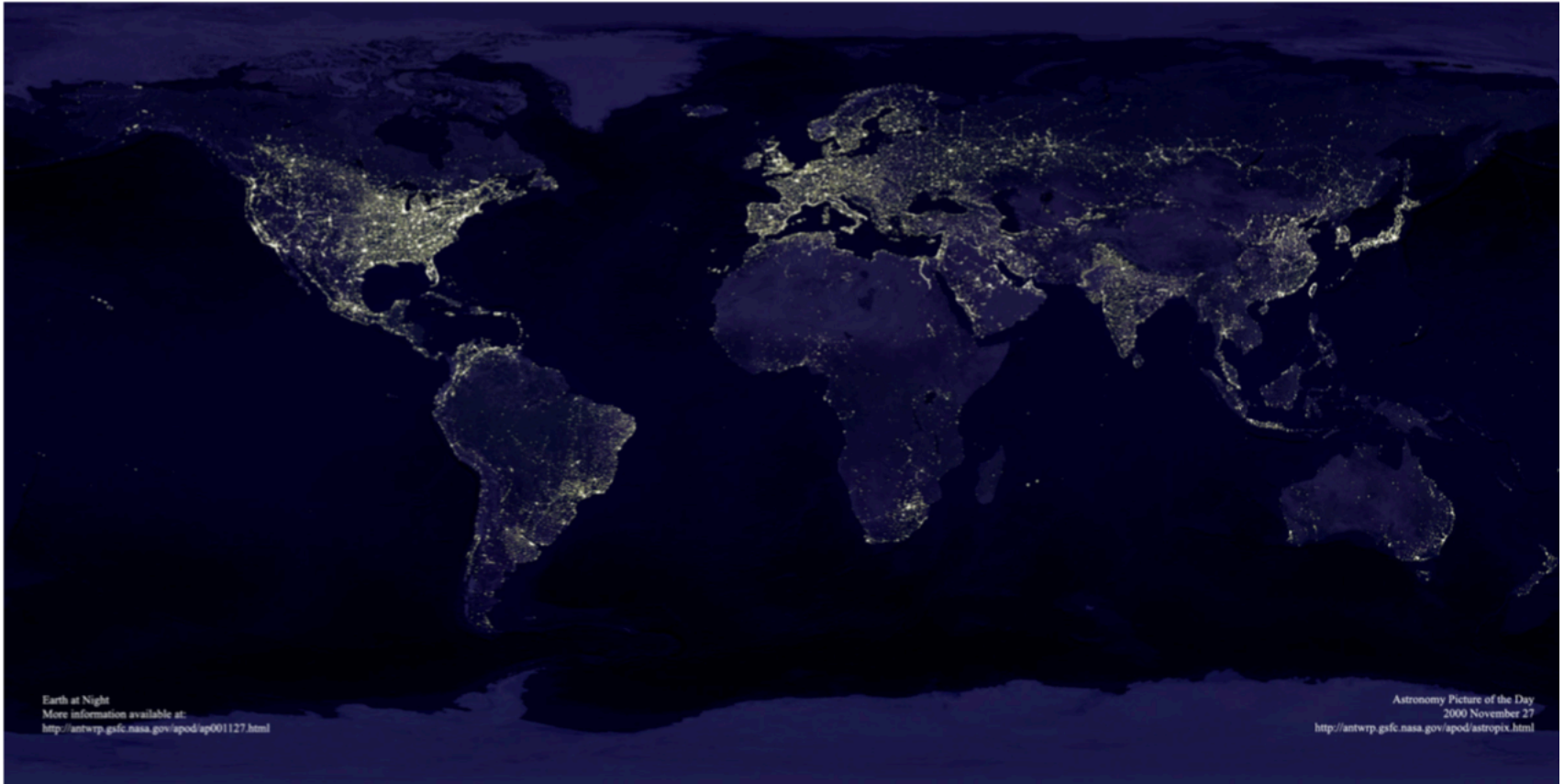
Disidier and Head (ReStat, 2008): is the world becoming flatter?

FIGURE 3.—THE VARIATION OF $\hat{\theta}$ GRAPHED RELATIVE TO THE MIDPERIOD OF THE DATA SAMPLE
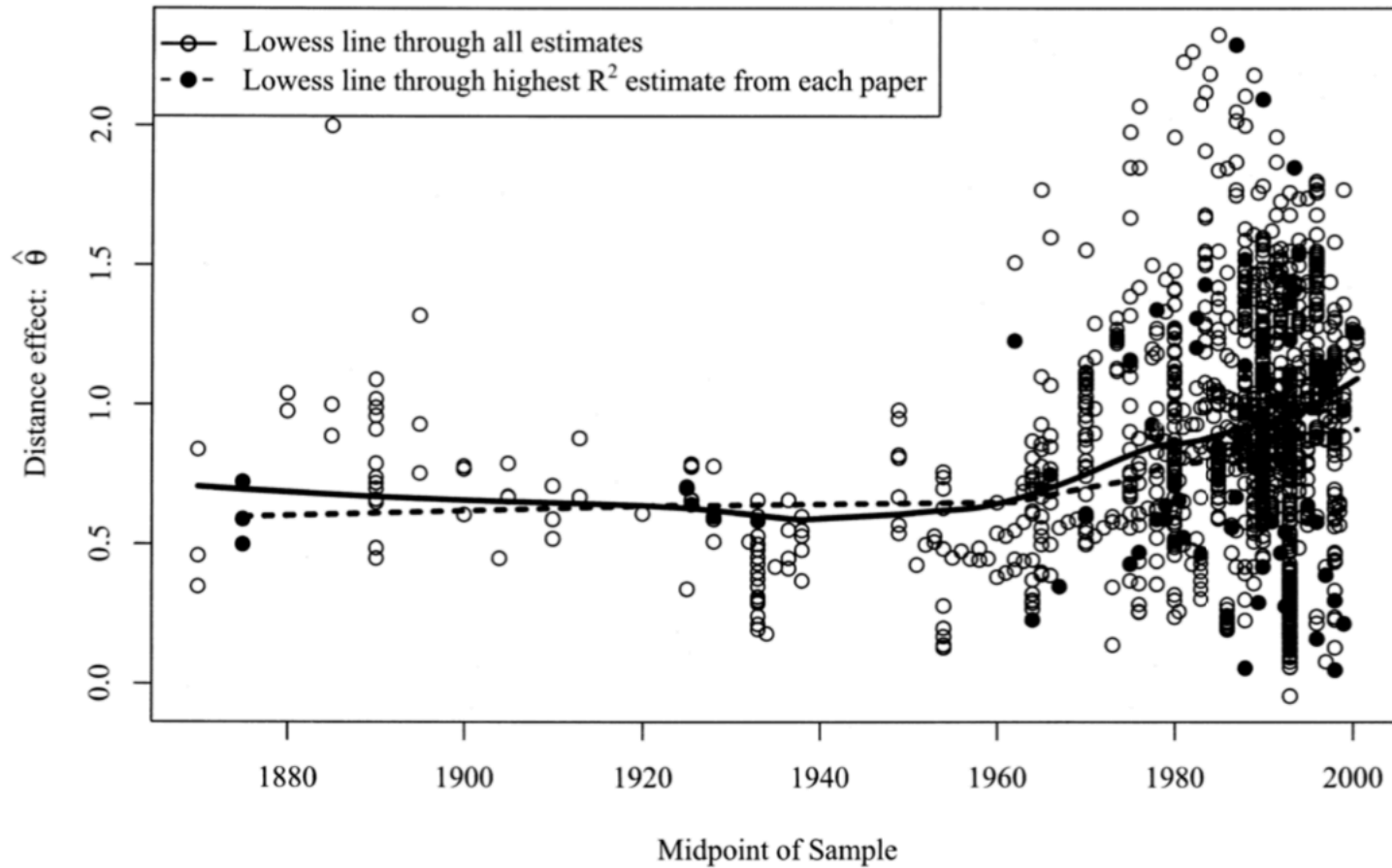
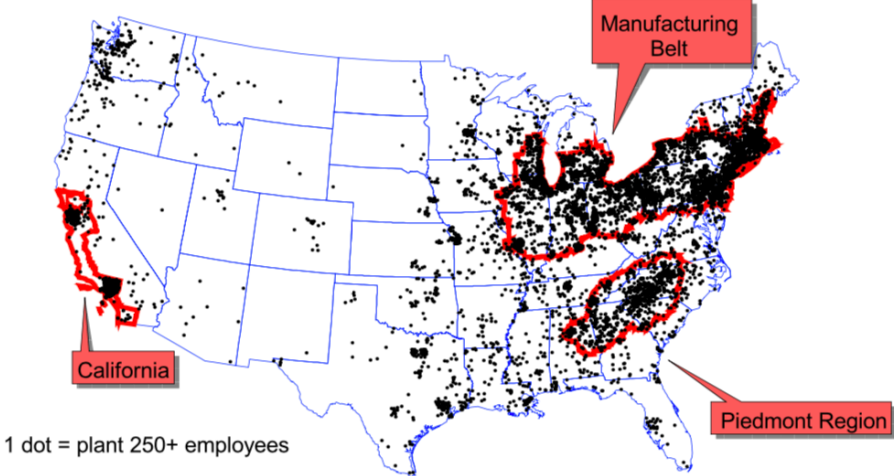# Trade costs and economic geography: The earth at night


Earth at Night
More information available at:
http://antwrp.gsfc.nasa.gov/apod/ap001127.html

Astronomy Picture of the Day
2000 November 27
http://antwrp.gsfc.nasa.gov/apod/astropix.html

Holmes and Stevens (2004):

Figure 2:
Location of Large Manufacturing Plants (1947)

1 dot = plant 250+ employees

Figure 3:
Location of Large Manufacturing Plants (1999)
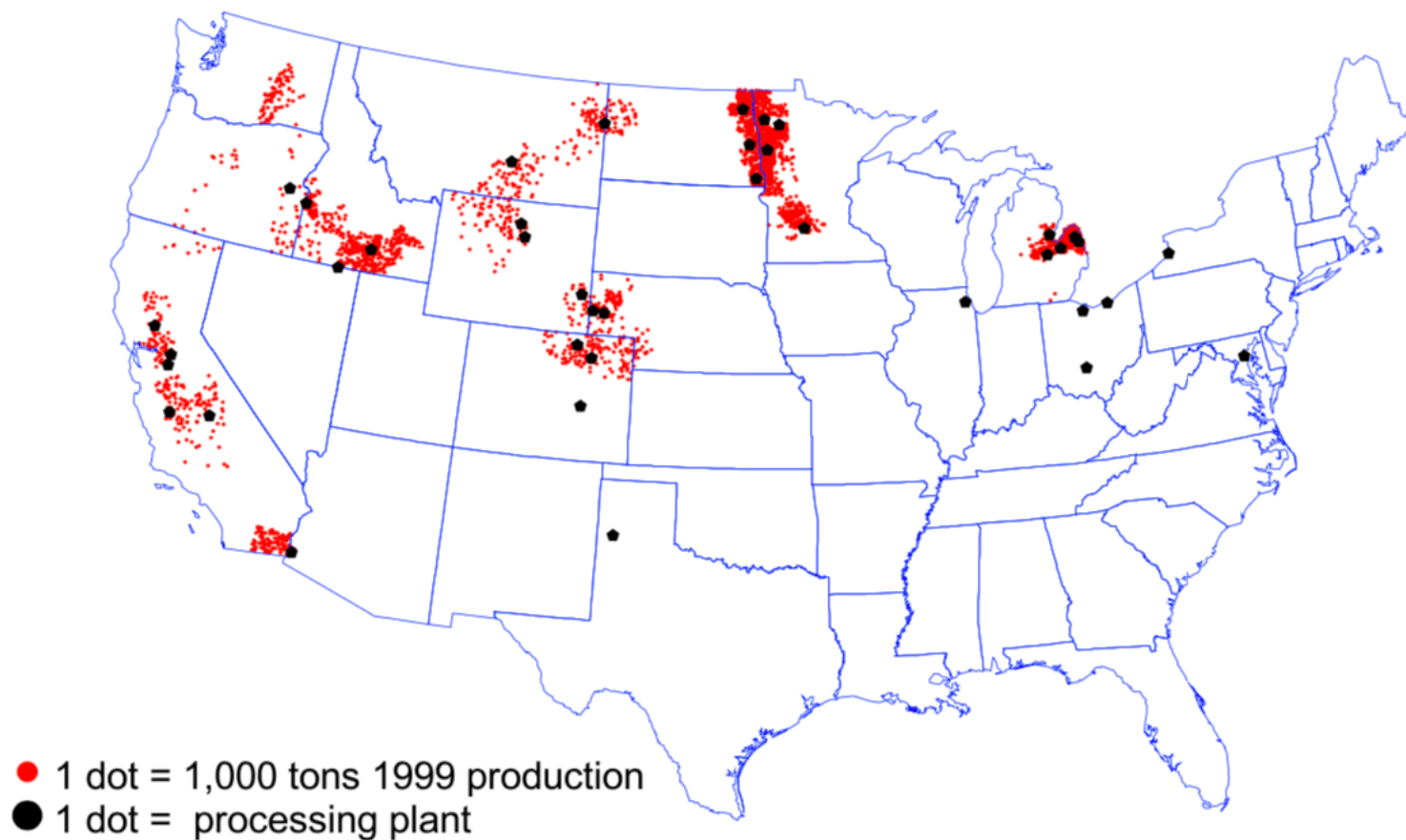
1 dot = plant 250+ employees
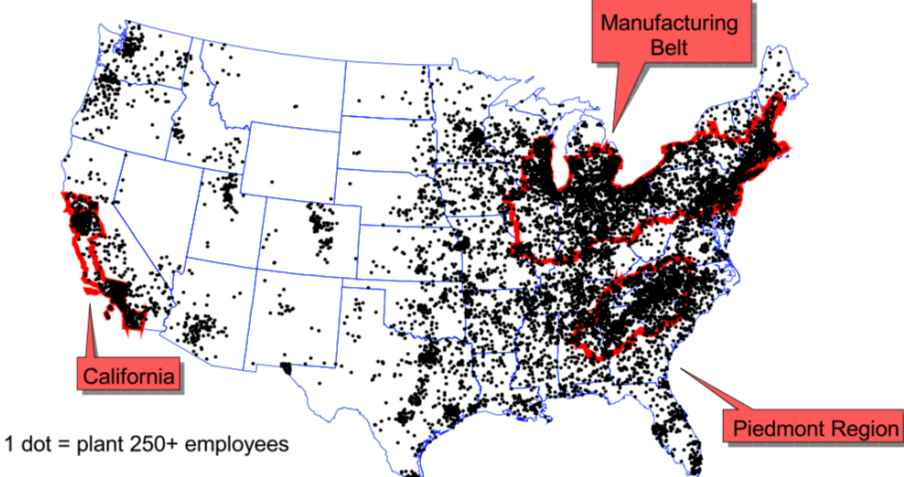
Holmes and Stevens (2004):

Figure 4:
Location of Durum Wheat, Rice, Flue Tobacco, and Burley Tobacco
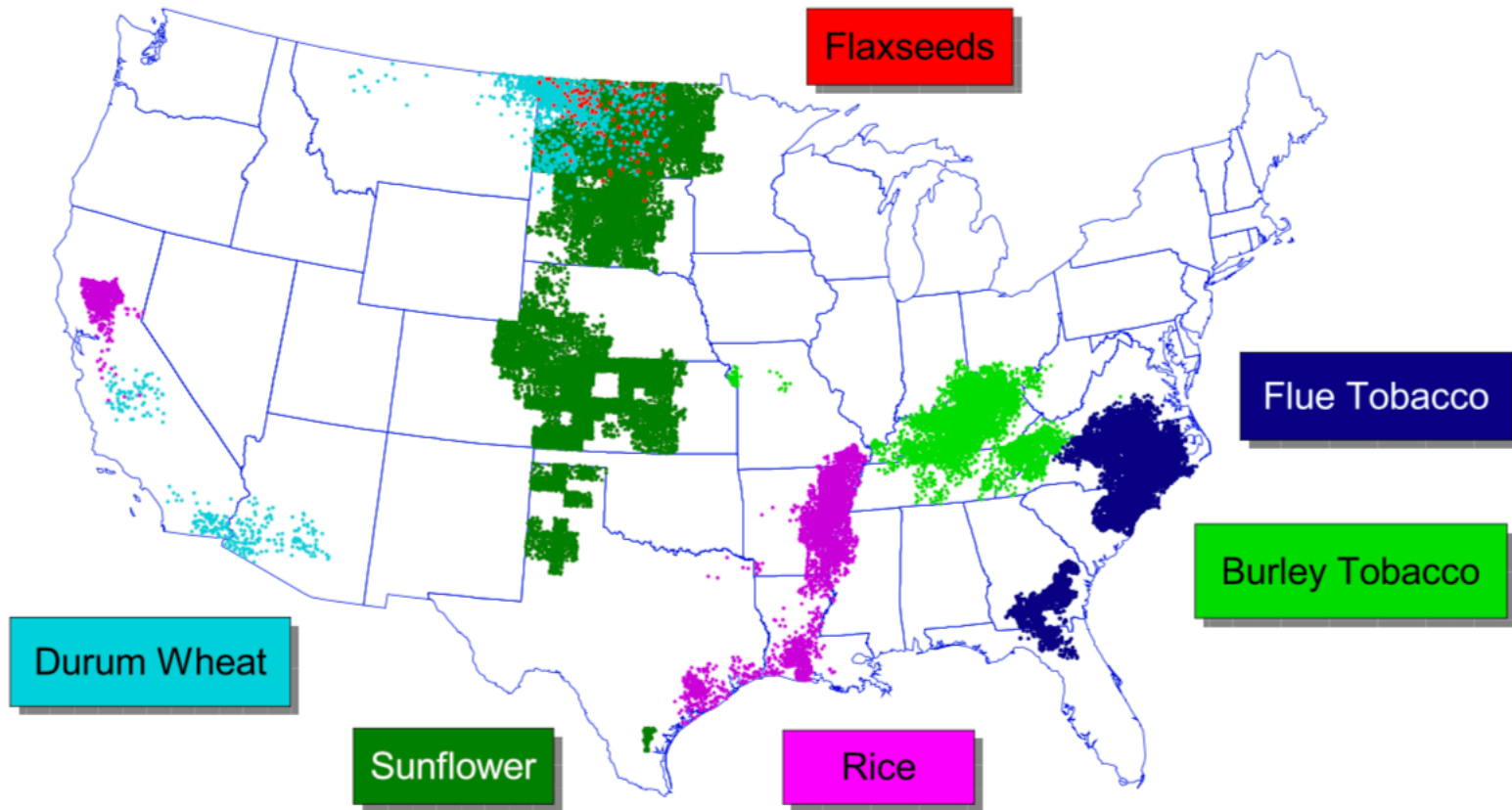
Holmes and Stevens (2004):

Figure 5:
Location of Sugar Beet Plants and Sugar Beet Crops

● 1 dot = 1,000 tons 1999 production
● 1 dot = processing plant

Holmes and Stevens (2004):

Figure 6:
Location of Anheuser-Busch Breweries and Population (2000)

● 1 dot = 10,000 people
● 1 dot = processing plant
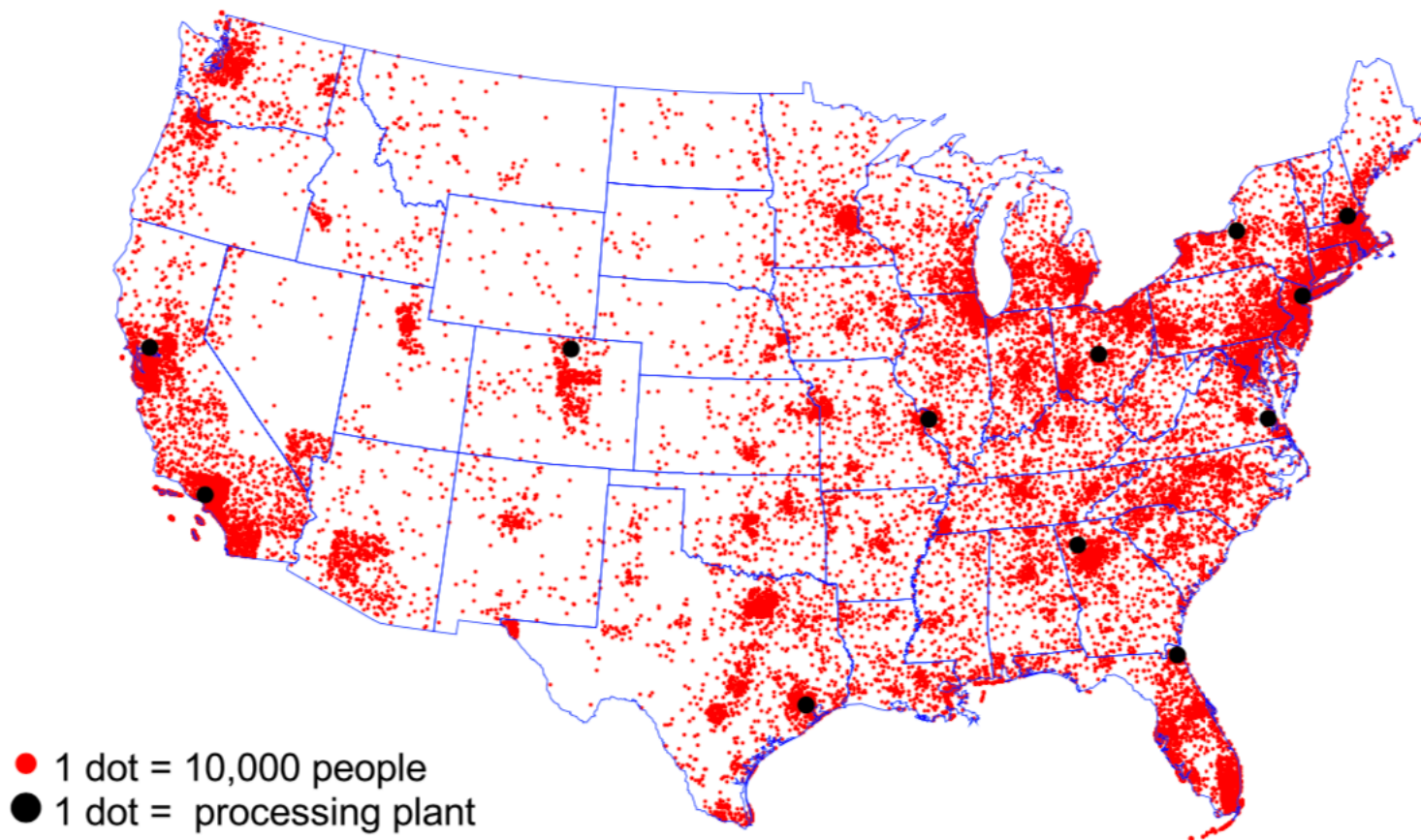
Car suppliers and assemblers in Europe (Klier and McMillen, 2013)

What causes the agglomeration of economic activity?

1. Some production input is exogenously agglomerated

- Natural resources (as in the wine industry); institutions ("exogenous"?)

2. Some consumption amenity is exogenously or endogenously agglomerated

- Nice places to live; People (i.e. workers) just like to live near each other; some non-tradable amenities that are endogenously provided but with IRTS in those goods' production functions (e.g. opera houses)

3. Some production input agglomerates endogenously. Some positive externality (i.e. spillover) that depends on proximity.

- This almost surely explains Silicon Valley, Detroit, Boston biotech, carpets in Dalton, etc

- This is what is usually meant by **agglomeration economies**. This source of agglomeration has attracted the greatest interest among economists.

Main sources of agglomeration economies

The literature on this is vast. Probably begins with Marshall (1890). Survey in Duranton and Puga (2004)

Typically 3 forces for potential agglomeration economies:

1. Thick markets (reduce search costs and idiosyncratic risk) for imperfectly tradable inputs (e.g. workers)

2. Increasing returns to scale combined with trade costs (on either inputs or outputs) that increase with distance

3. Knowledge spillovers that decrease with distance
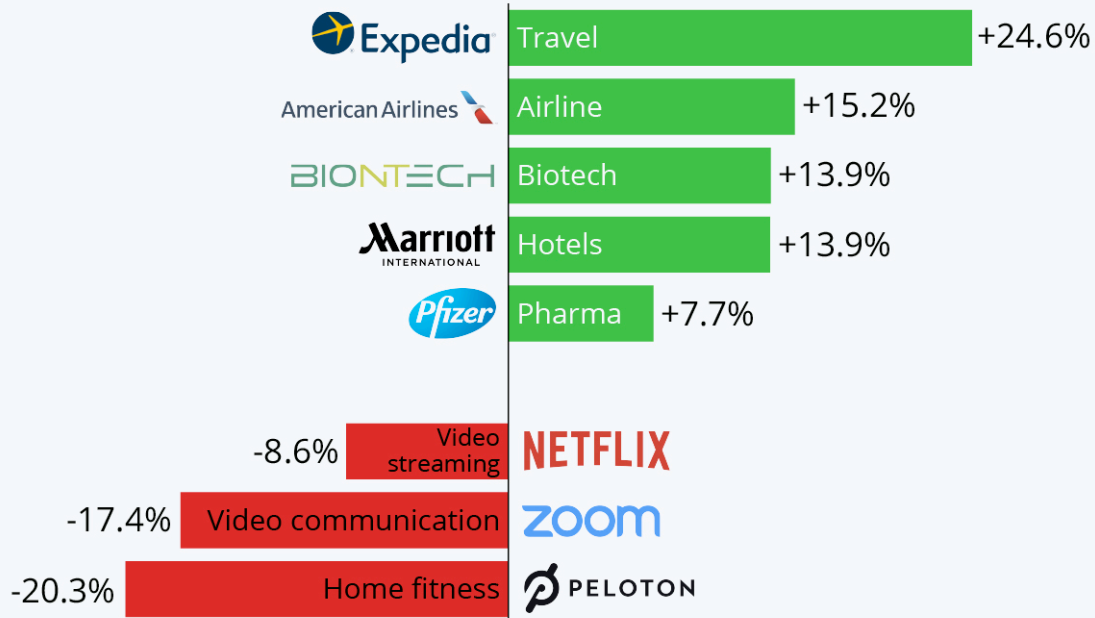
What limits agglomeration?

- Congestion (e.g. transport time, pollution)

- Factor rewards (e.g. wages, land values, housing costs)

- Interaction between trade costs and wages (e.g. Krugman and Venables, 1995)

Video on agglomeration: https://www.youtube.com/watch?v=50vRNNGqlp4

What about the covid-19 pandemic?

Stocks Jump on Vaccine Hopes as Pandemic Winners Plummet

Stock performance of selected companies on November 9, 2020

Company	Category	Performance
Expedia	Travel	+24.6%
American Airlines	Airline	+15.2%
BIONTECH	Biotech	+13.9%
Marriott International	Hotels	+13.9%
Pfizer	Pharma	+7.7%
NETFLIX	Video streaming	-8.6%
zoom	Video communication	-17.4%
PELOTON	Home fitness	-20.3%

Source: Yahoo! Finance

statista