
Foreign Direct Investment: Facts and Modeling Choices

Bruce Blonigen

University of Oregon and NBER

Plan of the Talk

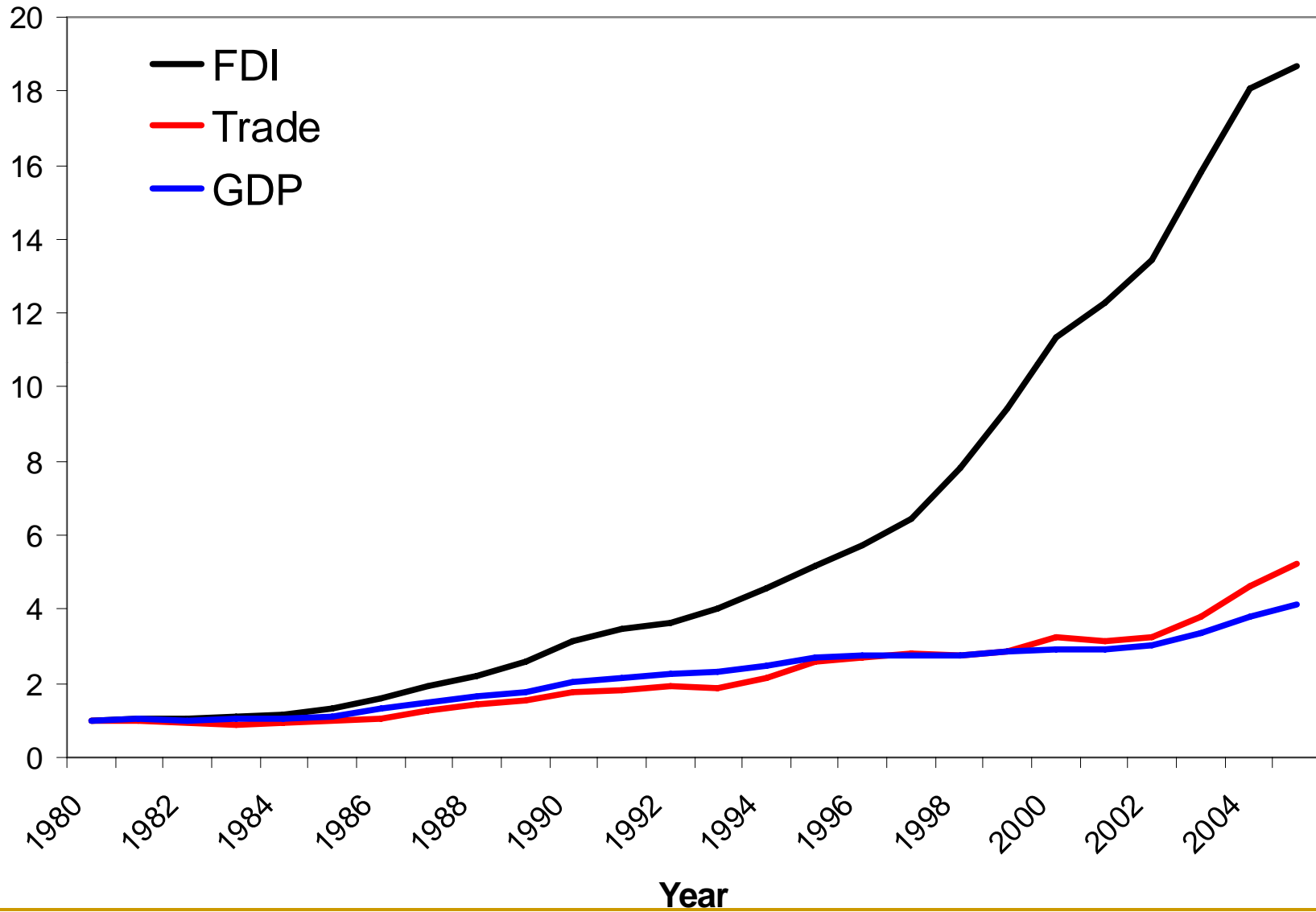
- Basic facts on FDI
 - Why is FDI difficult to model and analyze?
 - Recent models of MNEs and FDI
 - Remaining modeling issues
-

FDI – Basic Facts

- FDI activity is increasing much faster than trade and GDP – it's not even close over the last 25 years!



Growth in World Trade, FDI, and GDP, 1980-2005

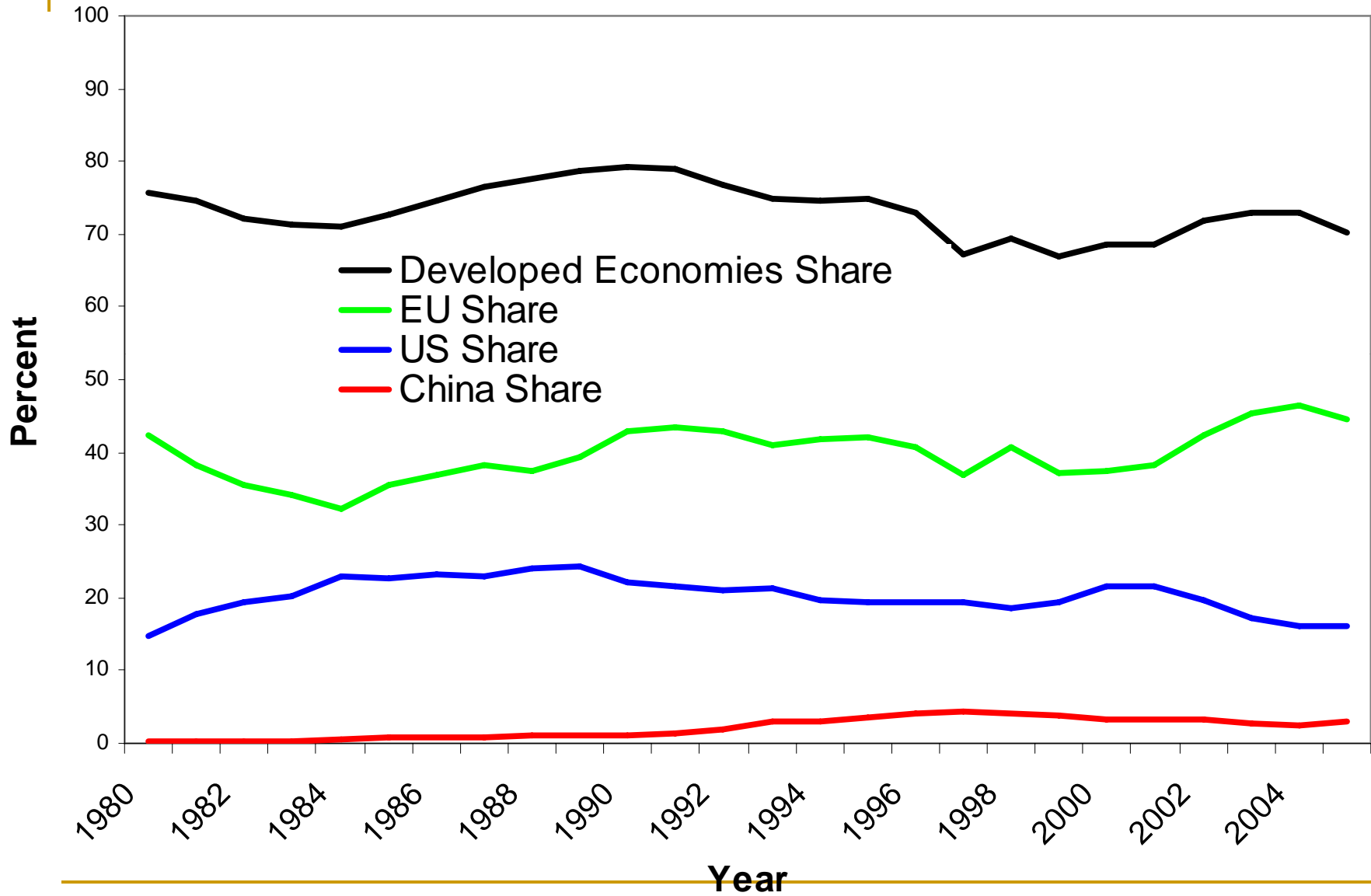


FDI – Basic Facts

■ Inbound FDI

- Which countries are hosting FDI is fairly stable over time
 - Developed countries account for roughly 75% of all inbound FDI stock
 - But there is some interesting heterogeneity across countries in the share of inbound FDI to GDP
-

Shares of World Inbound FDI Stock, 1980-2005



FDI – Basic Facts

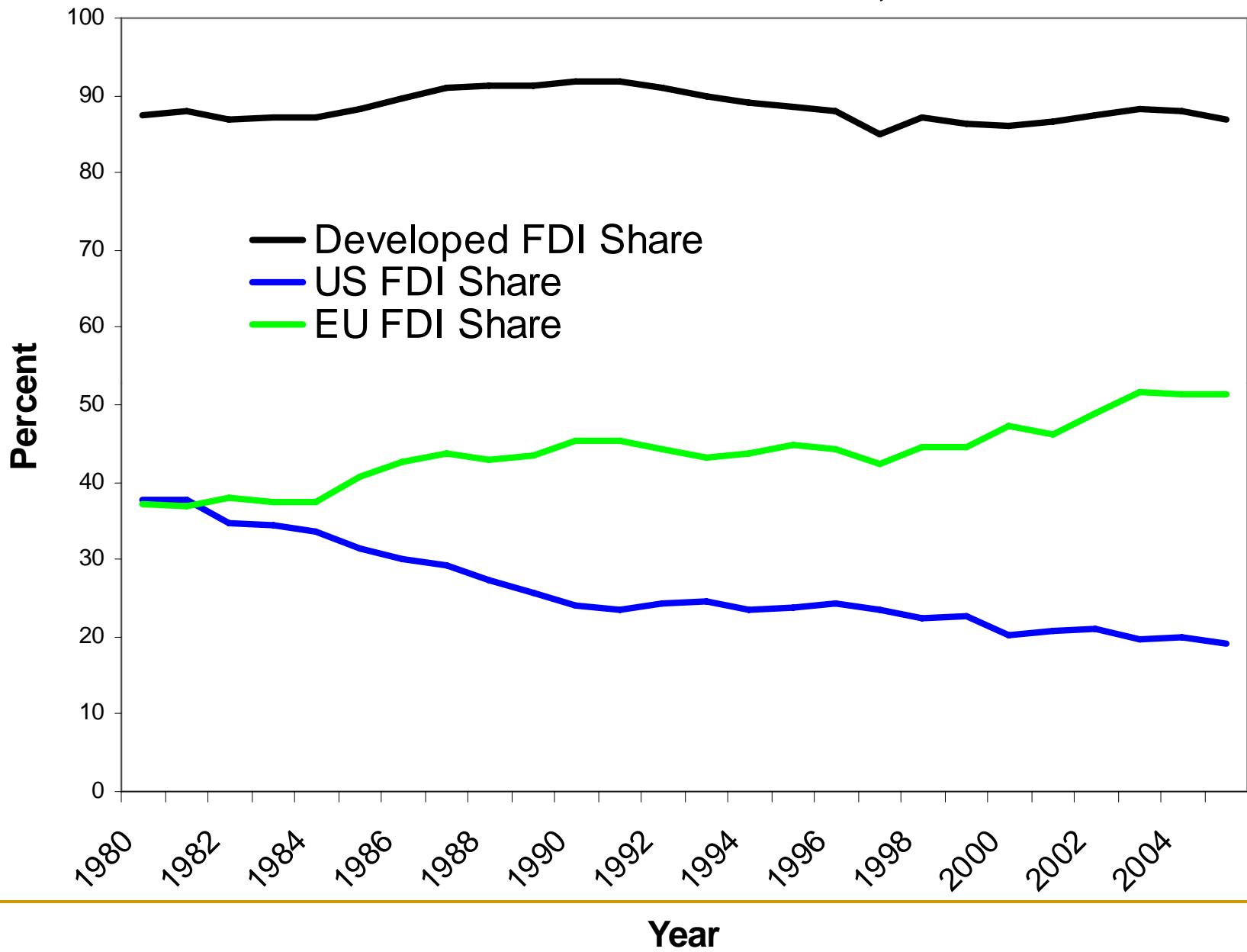
Regions/Countries	Year		
	1985	1995	2005
Developed Economies	6.44%	8.92%	21.40%
EU	9.94%	12.98%	33.46%
Japan	0.35%	0.63%	2.21%
US	4.41%	7.29%	13.02%
Less-developed Economies	8.93%	12.22%	27.00%
Africa	10.45%	16.72%	28.20%
Asia	8.26%	12.12%	23.15%
Central and South America	8.17%	11.05%	29.37%
China	2.04%	14.44%	14.29%

FDI – Basic Facts

- Outbound FDI

- Investing in other countries is almost exclusively the domain of developed economies
 - Europe's role relative to the US has increased significantly over time
-

Shares of World Outbound FDI Stock, 1980-2005



FDI – Basic Facts

■ Trade and FDI

- Sales of affiliates can be quite large relative to trade flows for developed countries – especially the US
 - Multinational enterprises (MNEs) account for the majority of trade flows and a significant share of trade is intra-firm (between affiliates of the same firm) – about 40% for the US.
-

Trade Versus Affiliate Sales (in Billions of US Dollars)

	US		Germany		Japan	
	(1990)	(2004)	(1990)	(2002)	(1990)	(2002)
<u>Outbound</u>						
Exports	394	819	421	616	288	417
Affiliate Sales Abroad	1493	2521	462	1334	689	1100
<u>Inbound</u>						
Imports	517	1526	356	490	235	337
Foreign Affiliate Sales	1176	3769	499	761	116	216

FDI – *Ex Ante* Modeling Issues

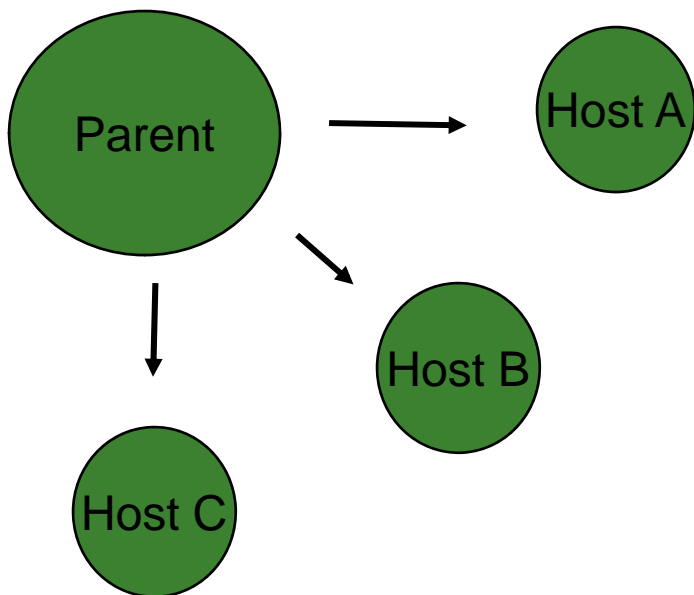
- General points

- Trade theorists had a first mover advantage.
Could one lay down a model of FDI now without trade?
 - More complexity with MNEs and FDI
 - Perfect competition and homogeneous goods are not very reasonable assumptions in this setting
 - Must be clear on difference between capital investment and economic activity of the affiliates
 - MNE/FDI models should model trade as well.
-

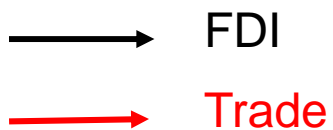
FDI - *Ex Ante* Modeling Issues

- FDI motivations come in potentially many flavors
 - Classic dichotomy between “horizontal” and “vertical” FDI
 - But many other possibilities, including “export platform” FDI, “vertical specialization” and/or “fragmentation”.
 - Implications for trade patterns are quite different depending on FDI motivation
-

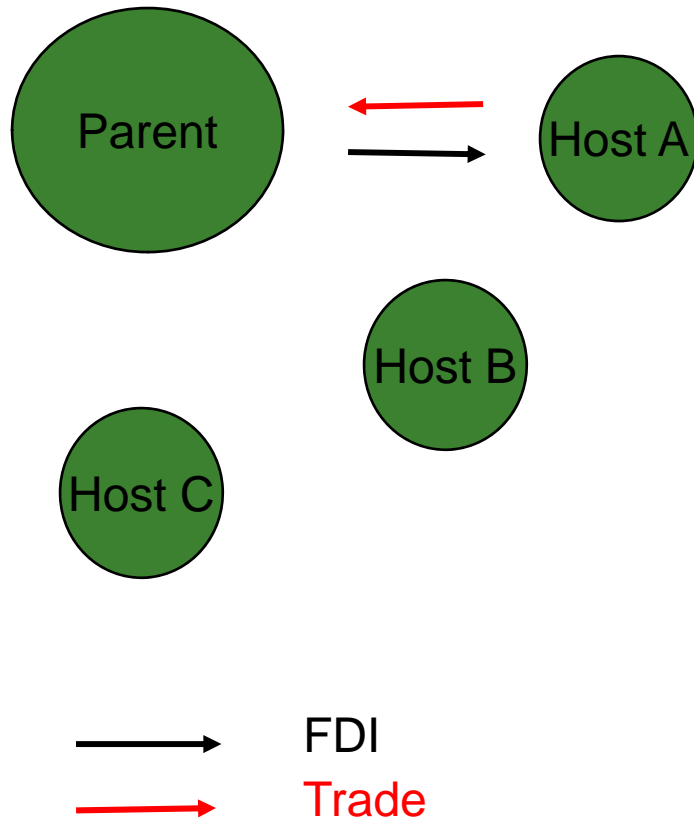
Purely Horizontal FDI



FDI replaces trade flows

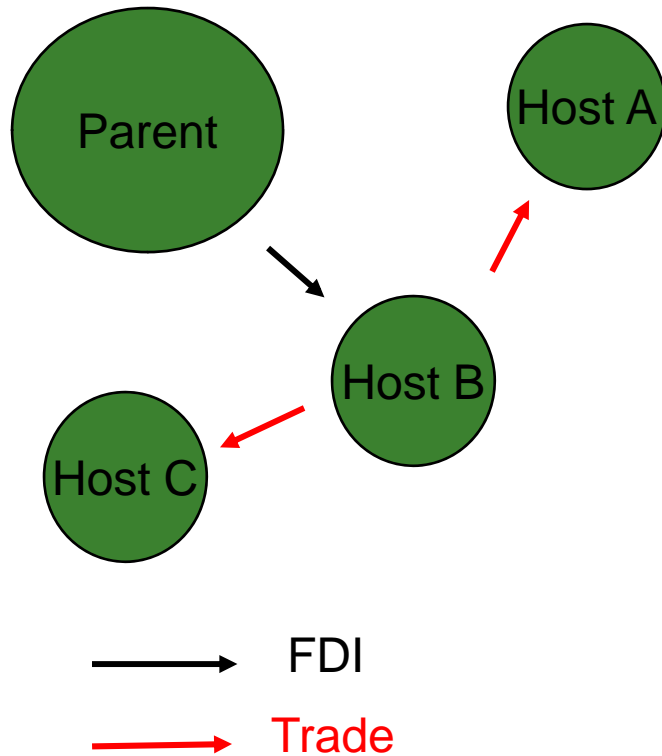


Purely Vertical FDI



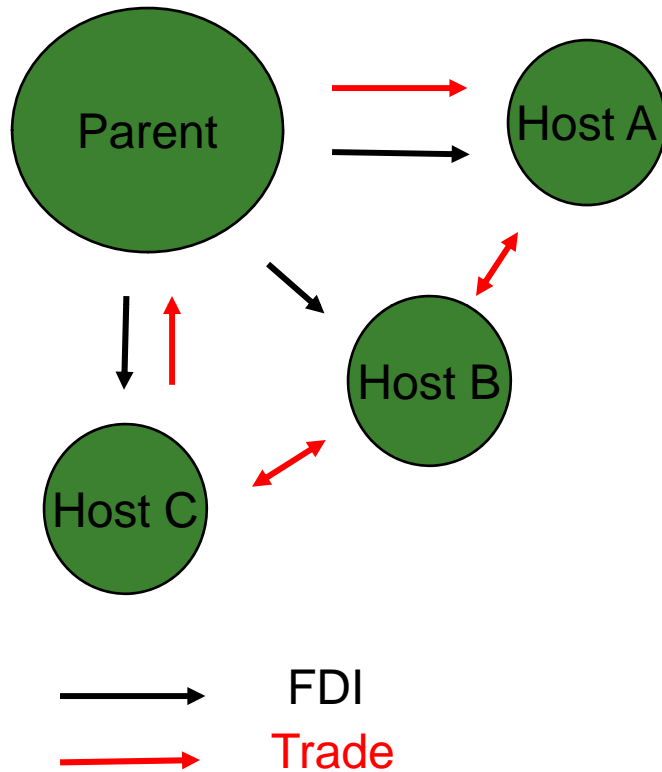
- 1) FDI creates imports back to parent.
- 2) Could also involve exports of intermediates to host country from parent.
- 3) FDI in A at the expense of B and C.

Export Platform FDI



- 1) FDI replaces trade from parent to many hosts.
- 2) FDI creates exports from host to neighboring markets.
- 3) FDI to neighboring markets reduced.

Vertical Specialization FDI

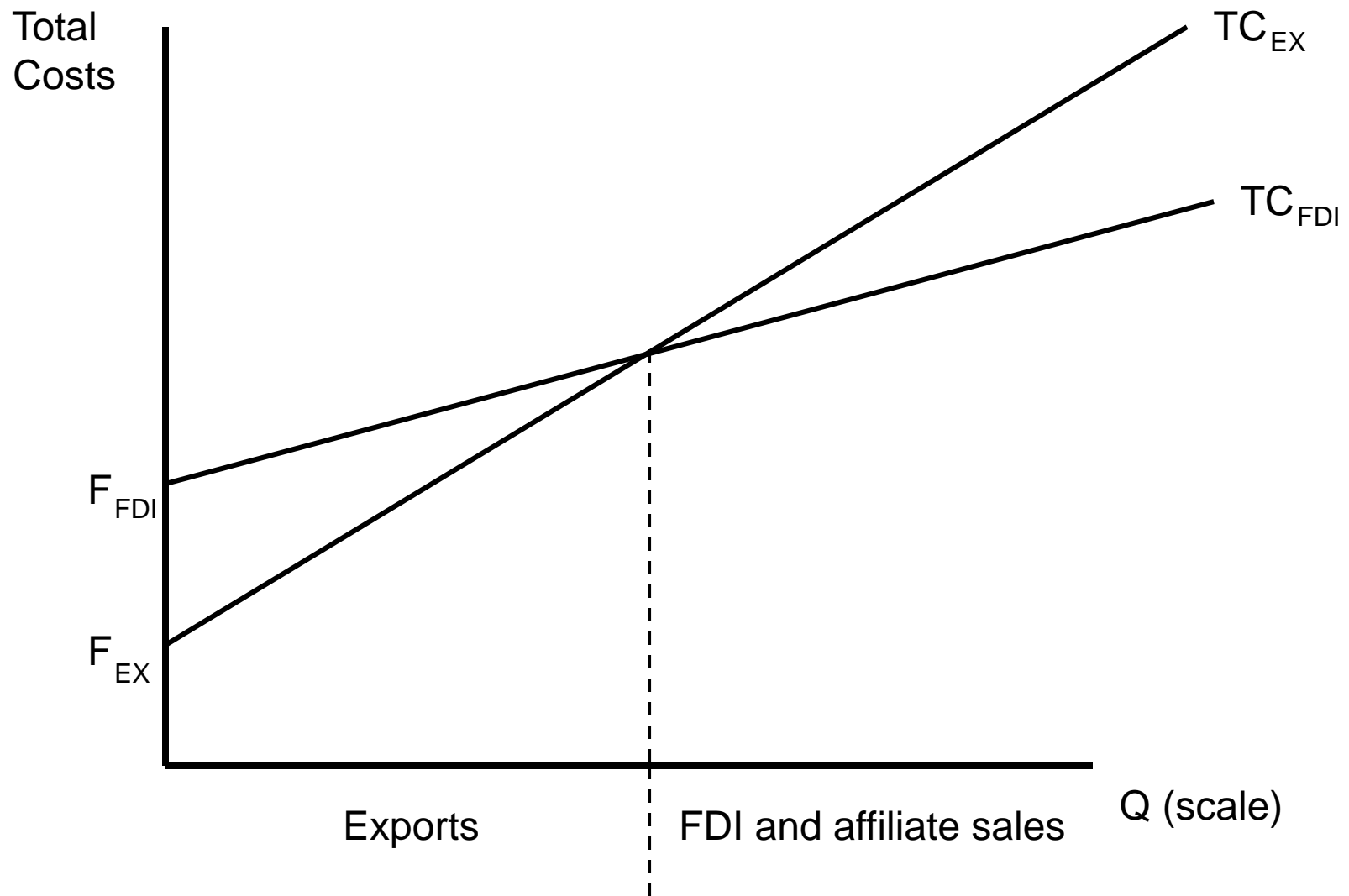


- 1) Trade flows created between host countries, as well as between Hosts and parent.
- 2) FDI in one host may increase FDI in neighboring hosts.

Modeling FDI

- Earliest models are partial equilibrium
 - A firm's decision between exports and FDI
 - Fixed costs of FDI are key for this early literature and future literature
 - Leads to a proximity-concentration trade-off
 - Clearly, a horizontal model of MNE activity
-

Simple model of FDI decision



Modeling FDI – First GE Models

- Markusen (1984) – Horizontal FDI
 - 2-country GE world
 - Fixed costs used in a somewhat different fashion
 - Necessary to build an asset that generates headquarter (HQ) services which is a public good within the firm
 - This generates incentives to have multiple plants
 - With trade frictions, these plants may be foreign affiliates
 - Makes a nice connection to OLI literature
-

Modeling FDI – First GE Models

■ Helpman (1984) – Vertical FDI

- ❑ 2 countries – 1 skilled abundant, 1 unskilled
 - ❑ 2 sectors – 1 competitive, 1 monop. competitive
 - ❑ Fixed costs used to build HQ services with public goods aspect within the firm in monop. comp. sector
 - ❑ HQ services are skill-intensive, production is unskill-intensive
 - ❑ For endowments out of the FPE region, we can see the skilled country “locate” capital in the unskilled country
-

Modeling FDI – First GE Models

■ Issues

- Two very separate models of FDI with different motivations
 - Which is more realistic? Can they be integrated?
 - Neither presented a model that was very tractable for empirical work or even for CGE work
 - Both are two-country models
-

Modeling FDI – Recent GE Models

- Knowledge-capital model by Markusen and co-authors
 - Combines vertical and horizontal motivations
 - Factor-intensities of HQ services, production, transport, etc. are key
 - Suggests gravity model + endowment differences
 - Evidence for vertical FDI is not really in the data
 - Ready-made book on implementing this CGE framework: *Multinational Firms and the Theory of International Trade*, MIT Press, 2002
-

Modeling FDI – Recent 3-Country GE Models

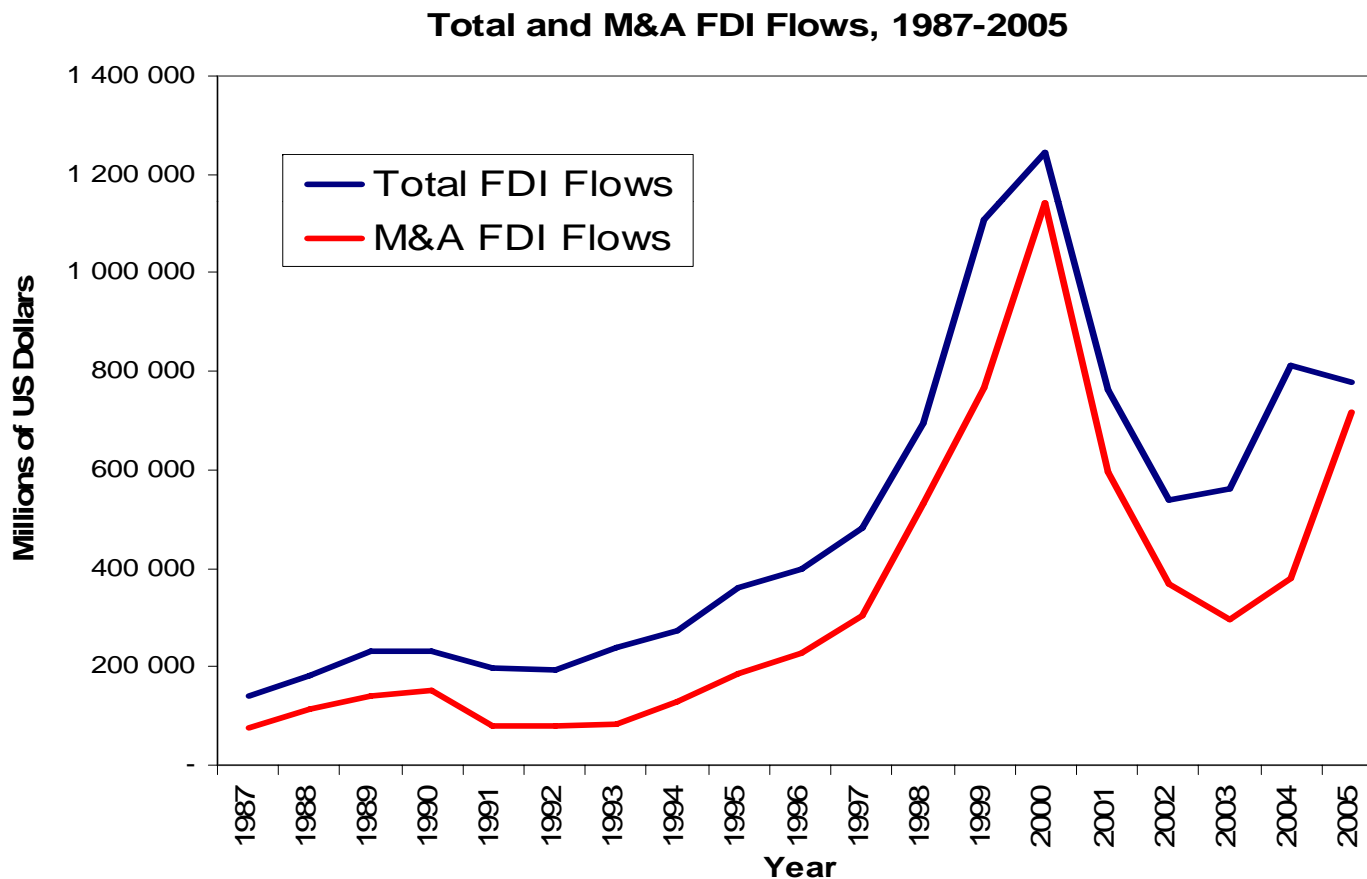
- Yeaple, JIE, 2003
 - 2 Northern countries, 1 Southern country
 - There are complementarities for a Northern country from both FDI into South (vertical) and the other Northern country (horizontal)
 - For certain parameter values, a firm would do both
 - Bergstrand and Egger, JIE, forthcoming
 - Add third country and third factor (capital) to Markusen MNE model
 - Get more realistic co-movements of capital (FDI) and trade
 - Map the MNE model into an empirical gravity framework
-

Modeling FDI – Recent N-Country GE Models

- Helpman, Melitz, and Yeaple, 2003
 - Generalization of the partial equilibrium model of the proximity-concentration tradeoff to symmetric, n-country, GE model with firm heterogeneity.
 - Greater heterogeneity leads to more (horiz.) FDI
 - Lai and Zhu, ReStat, 2006
 - Standard symmetric n-country, GE, monop. comp. trade model, but allow firms to endogenously choose location
 - Firms may be choosing export-platform FDI
 - Simultaneous structural estimation of exports and affiliate sales regressions
 - Policy experiment shows that decrease in trade costs has much larger impact on affiliate sales than exports.
-

Remaining FDI Modeling Issues

- Vast majority of FDI is through acquisitions



Remaining FDI Modeling Issues

- Vast majority of FDI is through acquisitions
 - What does this mean? Nobody really knows.
 - Suppose that acquisitions are just about a market for corporate control with FDI simply an accounting entry when it's across international borders.
 - Would we guess that country-level endowments matter that much for FDI in this setting?
 - Export-platform FDI patterns show up when one MNE acquires another MNE, but doesn't represent creation of any new trade linkages per se.
-

Remaining FDI Modeling Issues

- Vast majority of FDI is through acquisitions
 - First step in this area – Nocke and Yeaple (forthcoming, JIE)
 - Two-country GE model with heterogeneous firms
 - Introduce an acquisition market where firms can look for complementarities between their mobile “capabilities” (think technology) and immobile “capabilities” (think local marketing knowledge)
 - Which firms acquire depends on whether heterogeneity more in the mobile or immobile capability
 - Nocke and Yeaple also have other working papers with alternative acquisition FDI models
-

Remaining FDI Modeling Issues

- Are these models realistic for services?
 - 50% of US inbound and outbound FDI is in services
 - Significant heterogeneity across sectors
 - Wholesale trade
 - Obvious connection to trade flows
 - Financial
 - Much of it is non-tradeable
 - Horizontal FDI, but no export choice
 - Business services
 - Some of it is tradeable, some not
 - Transport, communications, energy
 - Nontradeables, often highly concentrated or nationalized
-

Remaining FDI Modeling Issues

- Data are poor

- While decent data across countries on FDI stock and flows to 1980, very little on affiliate sales, employment, etc.
 - Much data is valued at historical cost – US estimates suggest that could understate US FDI by about 40%
 - The difference between China's estimate of FDI from a country and the country's report of its FDI in China can often be off by an order of magnitude
-

Remaining FDI Modeling Issues

- Data are poor
 - Some firm-level data, but difficult to get access
 - Restrictions on FDI are very difficult to measure
 - Restrictions can be informal or even cultural (e.g., acceptability of acquisitions)
 - FDI decision depends much more on other country's attributes (such as institutions) than trade. So liberalization of FDI restrictions without other improvements may have little effect in practice.
-

Conclusion

- **BAD NEWS:** Modeling of MNE and FDI is in its infancy for many good reasons
 - **GOOD NEWS:** CGE modeling may be the only tractable way to tackle many remaining issues on FDI because of complexity
 - For example, theoretical MNE literature has not tackled asymmetric n-country case in any shape or form
 - There's much more room for us to take these GE models to the aggregate data regularities, rather than regression frameworks.
-