Intellectual Monopoly in Global Value Chains

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Outline

1. Overview on global value chains
2. Endogenous asymmetries of market structures
3. The GVCs-IPRs nexus
4. Network externalities and increasing returns on intangibles
5. Intangibles profits and investment

Global Value Chains:
Just the Rage or Reality of 21st Century Capitalism?

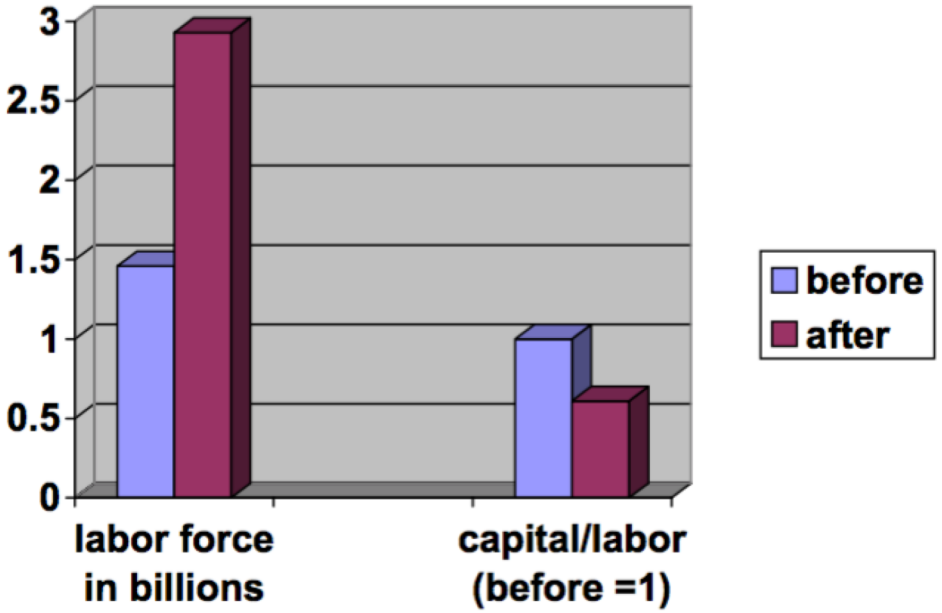
- GVCs have grown in magnitude, scope, and complexity, driven by technology, managerial strategy, geo-political change and development policy, trade and investment liberalization
- GVCs offer theory of capitalist development ("upgrading"); also central to deindustrialization ("downgrading")
- GVCs raise problems of measuring trade (gross vs. VA trade)
- GVCs raise issues about the theory of trade (upgrading as defiance of comparative advantage)
- "G" is a misnomer: GVCs are largely regional and have very lumpy geographical impact on development
- GVCs present new political economy of globalization, shift toward private governance and a "governance deficit"
- Backlash against globalization threatens GVCs

Stylized Facts

- “Outsourcing”/”Offshoring” (the share of imported intermediates in total intermediates use) has grown among OECD countries.
- There has been a steady increase in developing country reliance on exports for demand and this export orientation is increasingly south-south.
- 50% of trade is in intermediates. Biggest share growth is developing country manufacturers (Sturgeon)
- These exports rely heavily on imports. That is, export growth depends on import growth (Jensen, OECD/WTO, UNCTAD).

“The great doubling” and ”second unbundling”

Exhibit 1: Workers in the Global Labor Force and the Global Capital/Labor Ratio, 2000, Before and After China, India, and ex-Soviet bloc join global economy



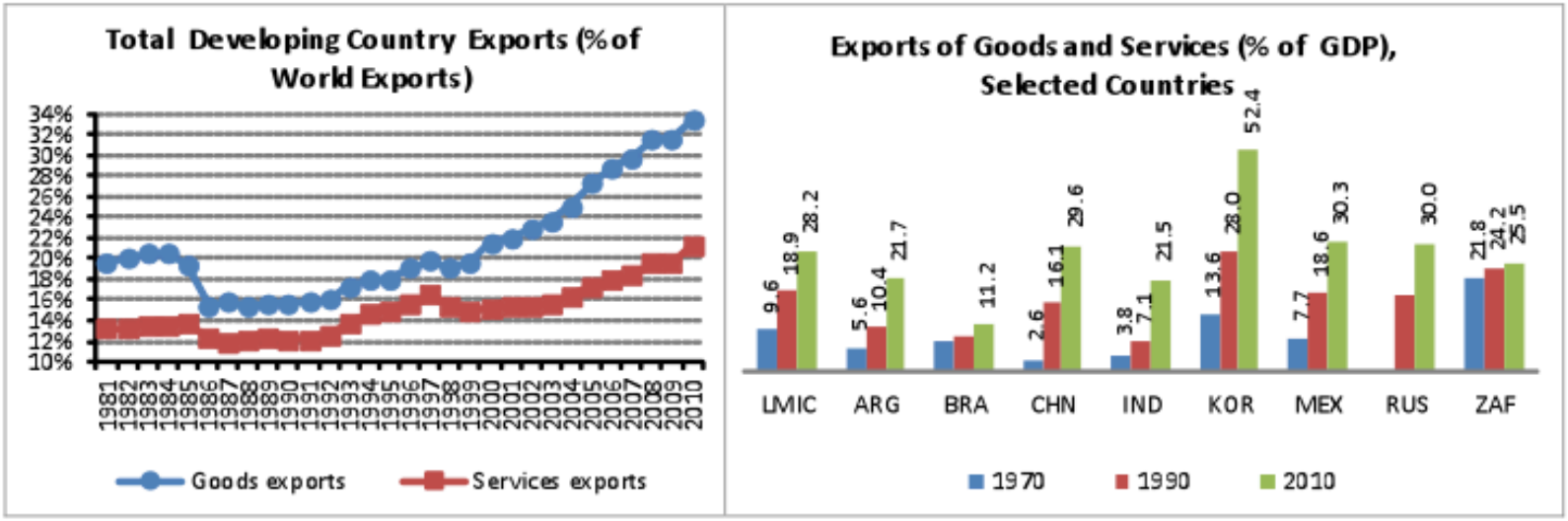
Source: Employment from ILO data, laborsta.ilo.org/ Millions of Economically Active Persons, 2000 Capital-labor ratio, calculated from Penn World Tables as described in Freeman 2005, scaled so before is 1.00.

Growing Export Orientation in Low- and Middle-Income Countries

Exports from Low- and Middle-Income Countries

a. Low- and Middle-income Country Exports (% World Exports)

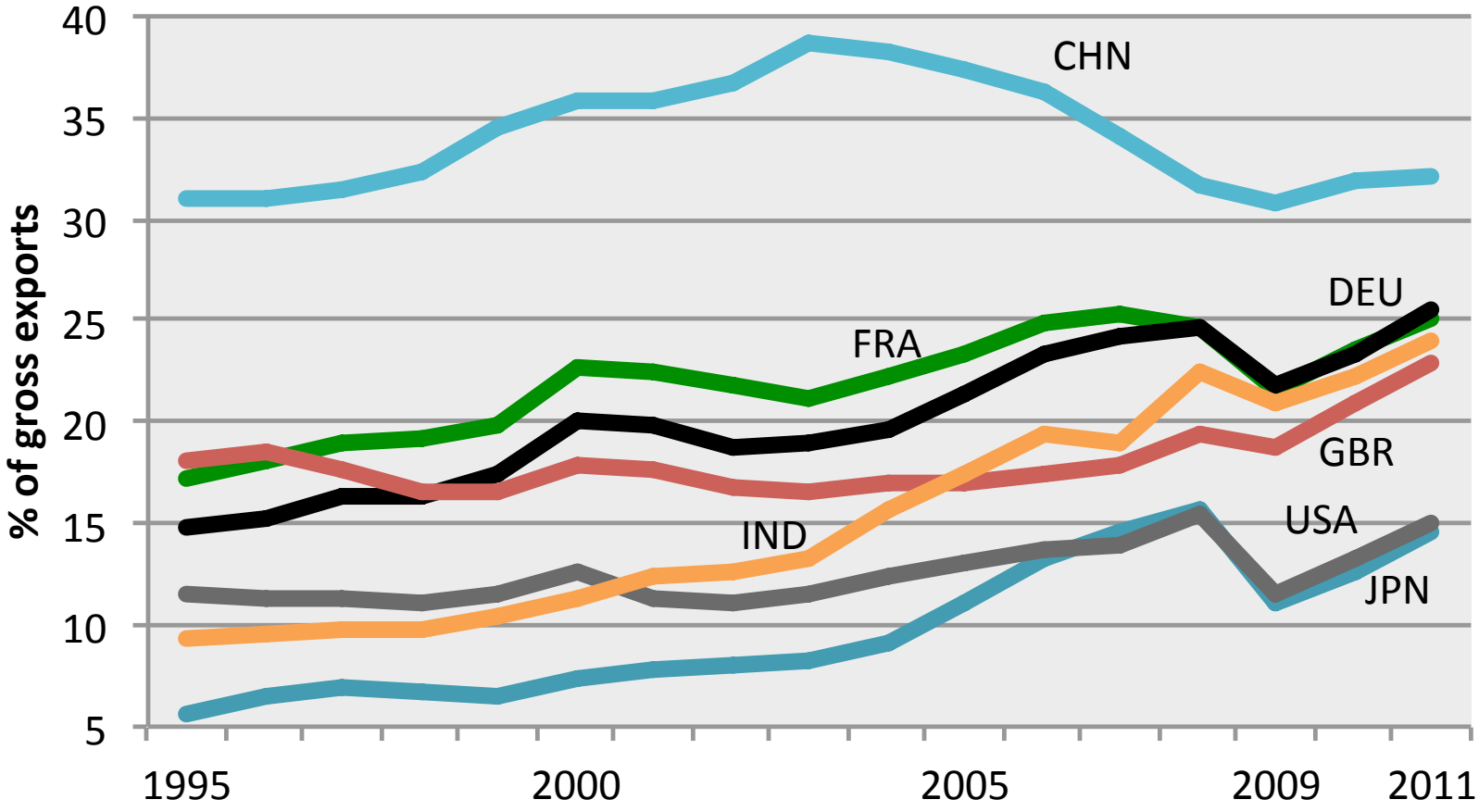
b. Selected-country Exports (% GDP)



Source: Authors' illustration with data from World Development Indicators, World Bank, 2012.
Note: Low- and middle-income countries covers most developing countries.

GVC expansion: 1995-2011

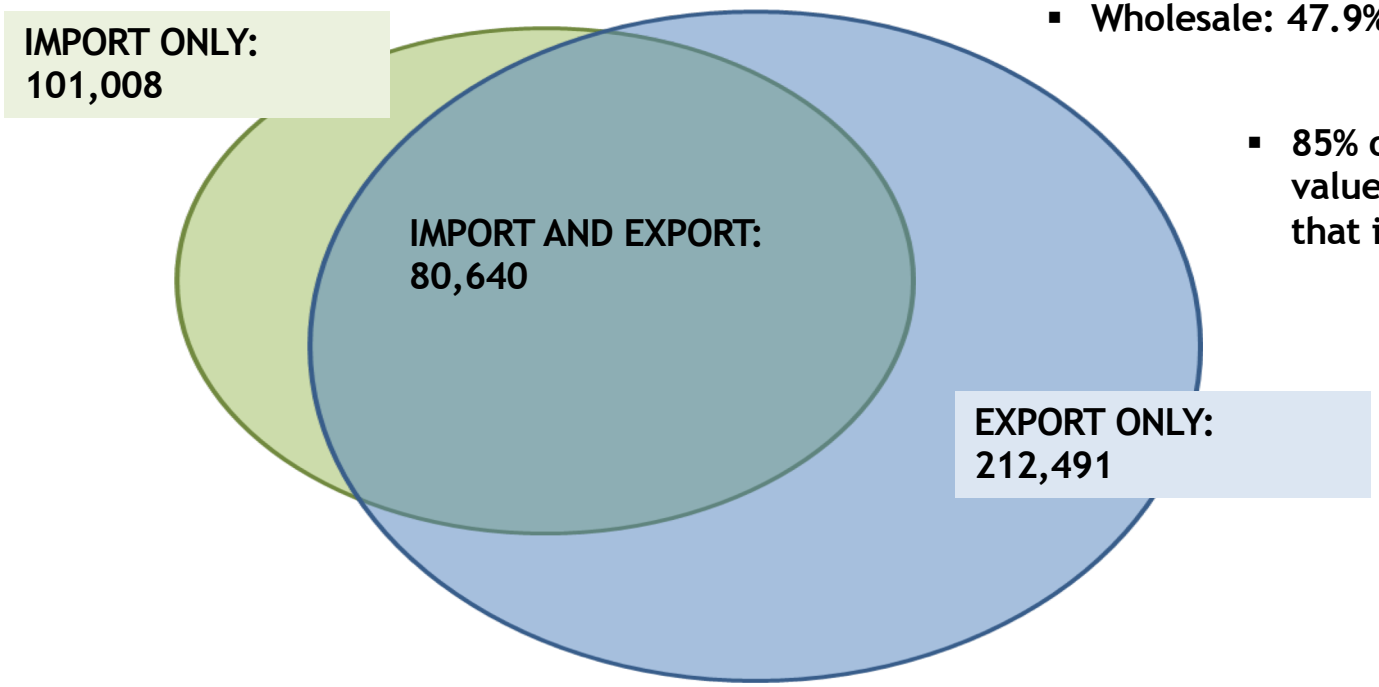
Foreign Value Added in exports of 7 biggest economies



Author's computation using OECD TIVA database

Most Exports Come From Firms That Also Import

- Of firms that import and export:
  - Manufacturing: 30.5%
  - Wholesale: 47.9%



- 85% of known export value comes from firms that import and export

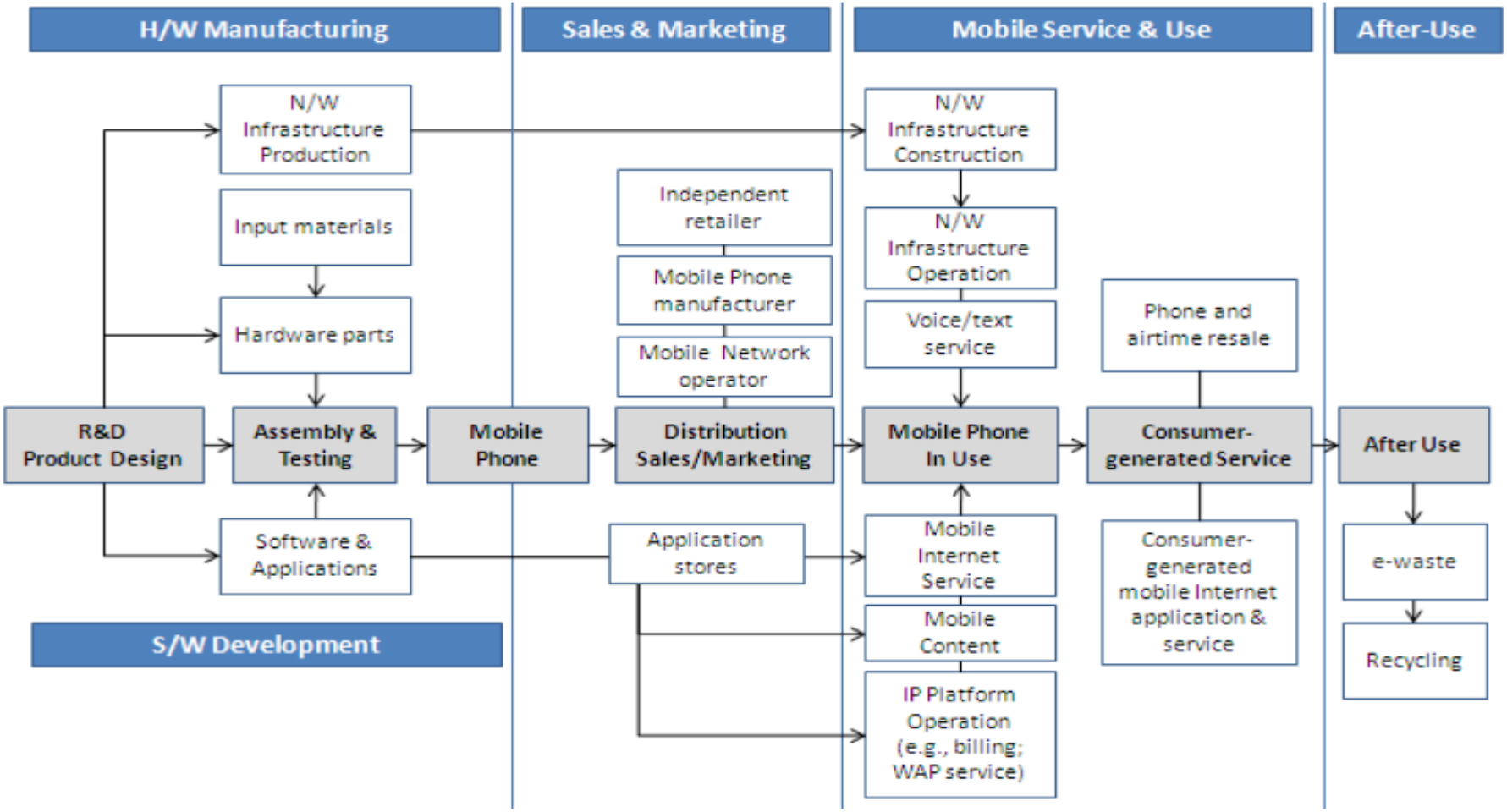
U.S. Department of Commerce (2012)

Simple Taxonomy of Lead-Firm Governance of GVCs

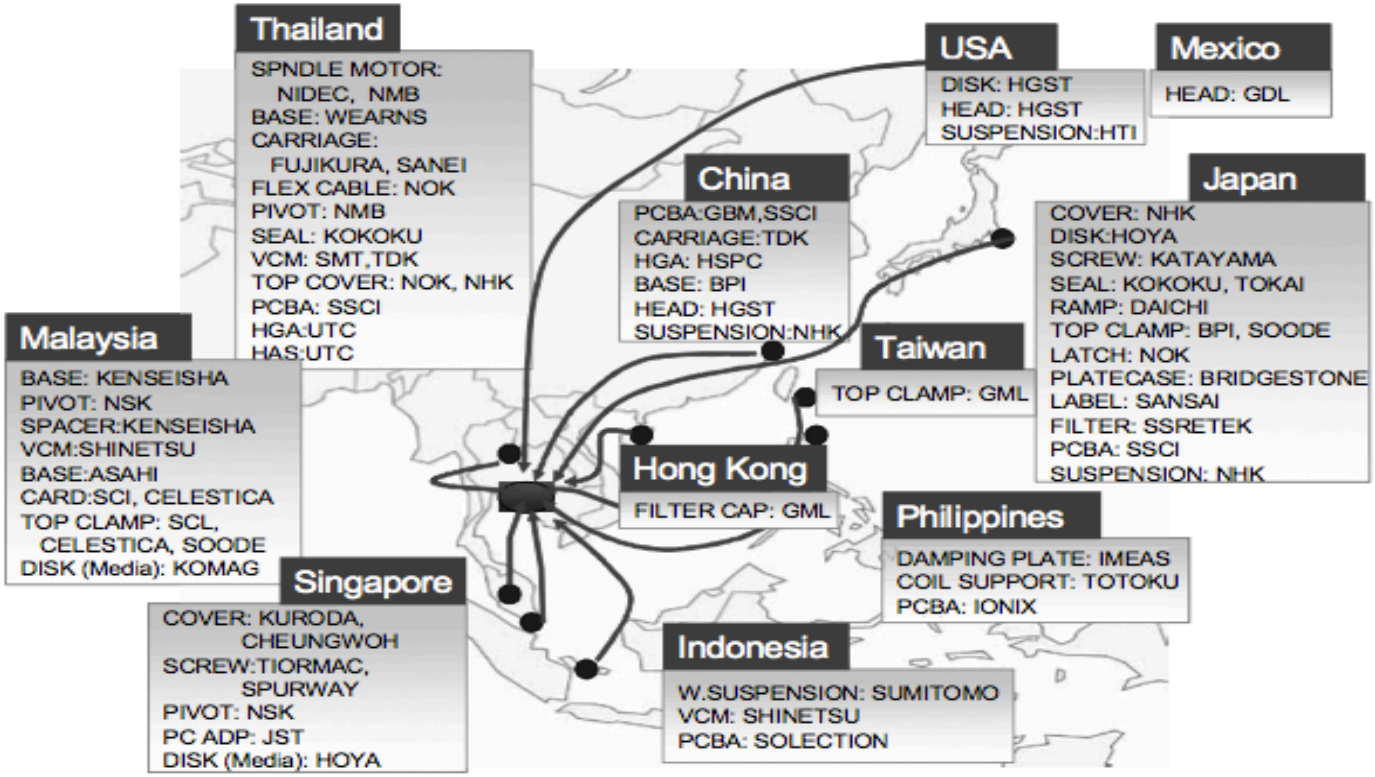
- **Buyer-led:** large retailers or brands, flexibility and timing of delivery, intense competition among suppliers (Wal-mart, The Gap).
- **Producer-led:** more technology sharing between lead firm and first- and second-tier suppliers (Boeing, General Motors) .
- GVCs are complex, regional, nested, varied in structure and governance

Note: Governance perspective differentiates GVC analysis from input-output analysis.

Complex: Mobile Telecom Global Value Chain



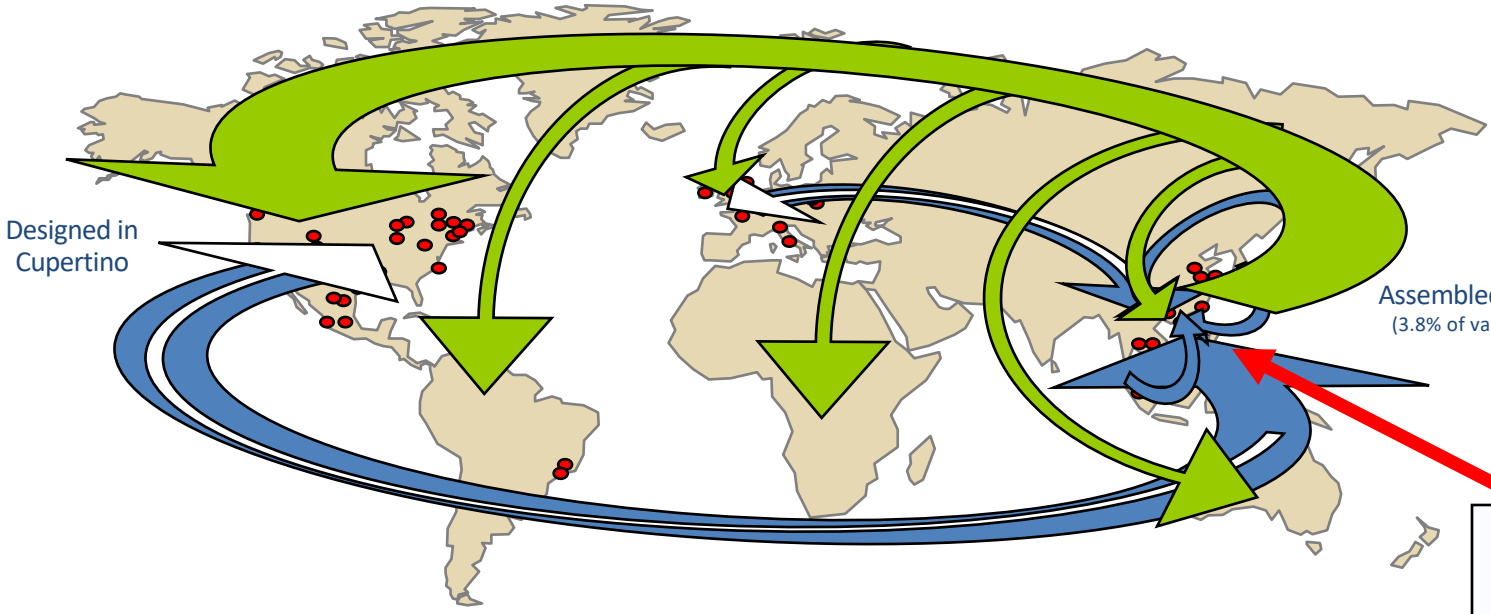
Regional: Hard disc drive assembler in Thailand



Source: Hiratsuka (2006).

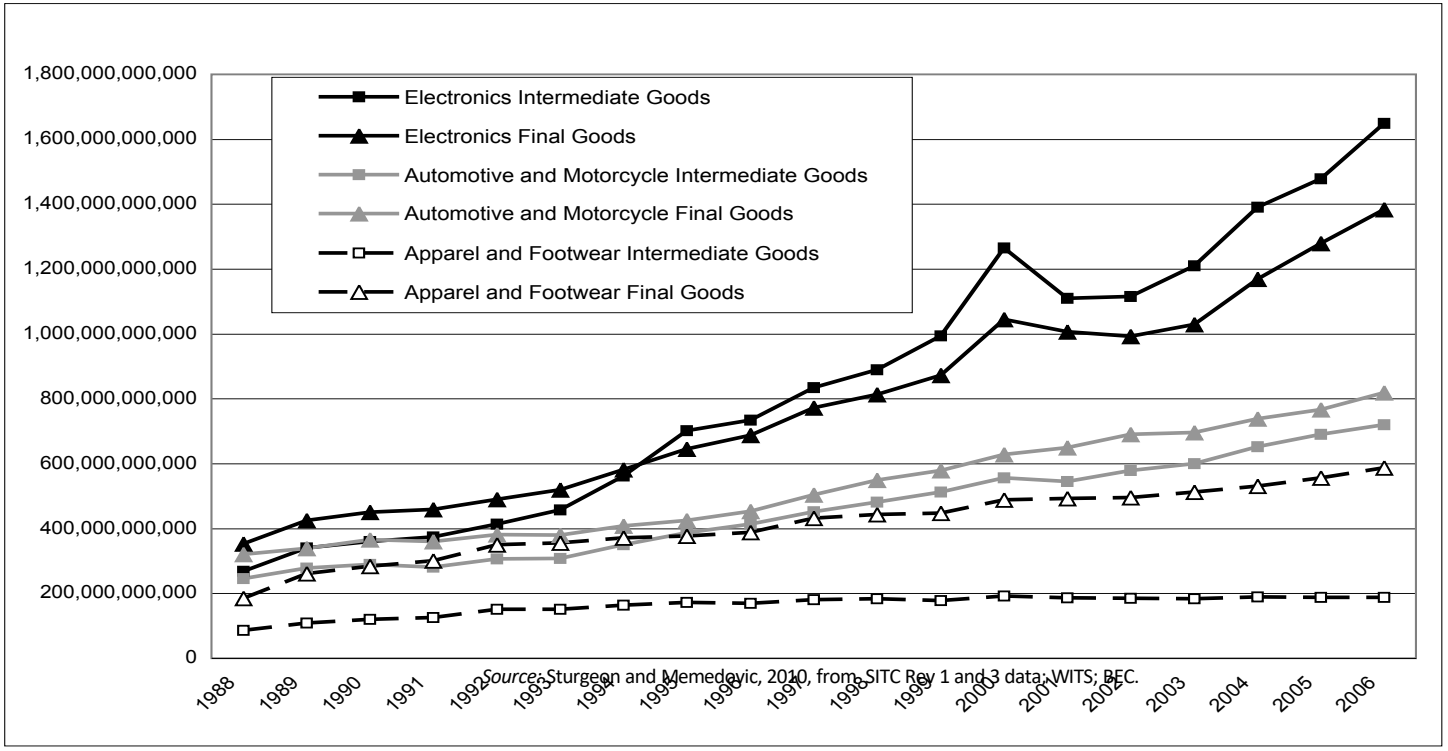
Nested: The Apple iPod (30gb, $300 retail) (Sturgeon)

Low Cost Assembly and Global Sourcing.



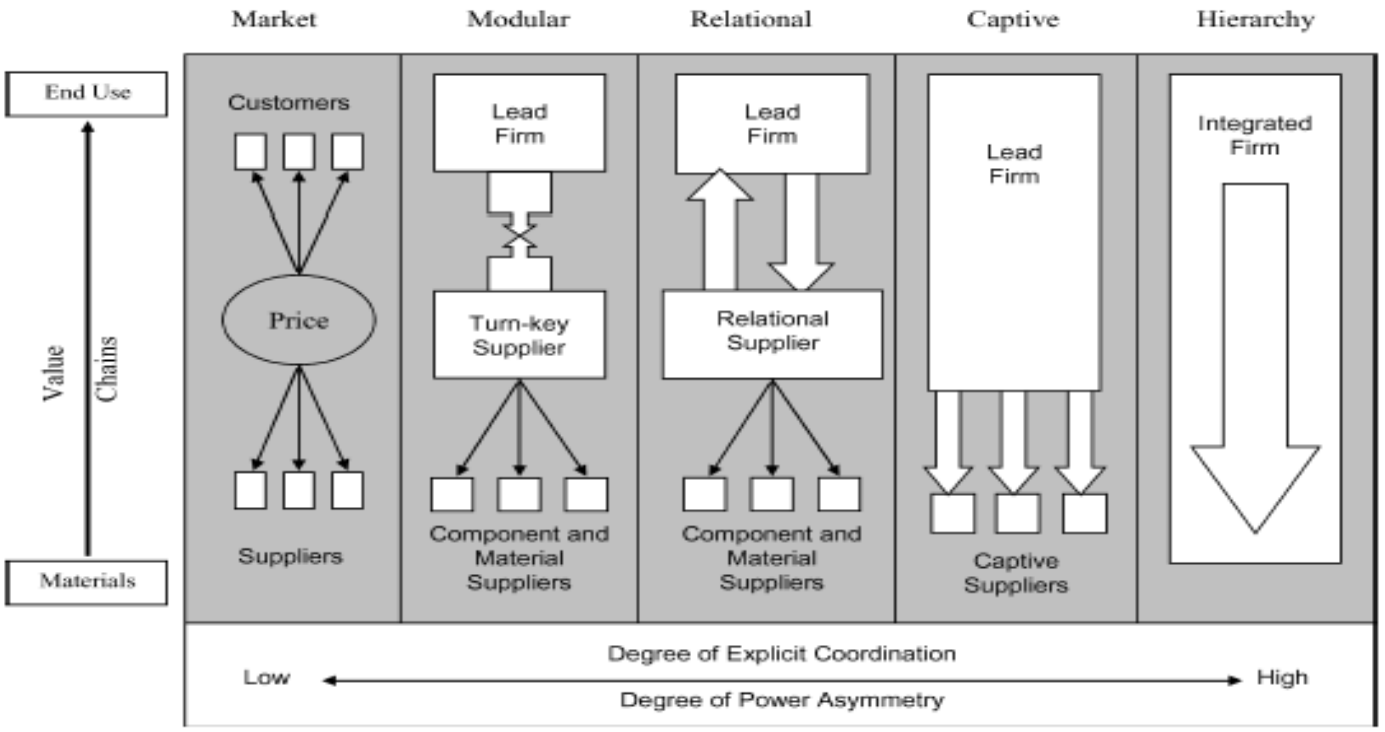
Regional production systems are nested within global production systems

Varied by share of intermediates/final trade: Apparel, Autos, and Electronics, 1998-2006



Source: Sturgeon and Memedovic, 2010, from SITC Rev 1 and 3 data; WITS; BEC.

Varied in Governance Structures (Gereffi et al. 2005)



Endogenous asymmetry of market structures in GVCs

Asymmetry of market structures within GVC

(Milberg and Winkler, 2013, p.123-130).

Oligopolistic lead firms at the top

markup pricing power and concentration of industry

Dispersion among lower-tier suppliers

as more developing countries entered lower- and medium-tech industries

Endogenous production of asymmetries

global competition

(i) inducing competition among suppliers

Labor fragmentation, excess capacities, capital mobility

(ii) offloading risk to suppliers

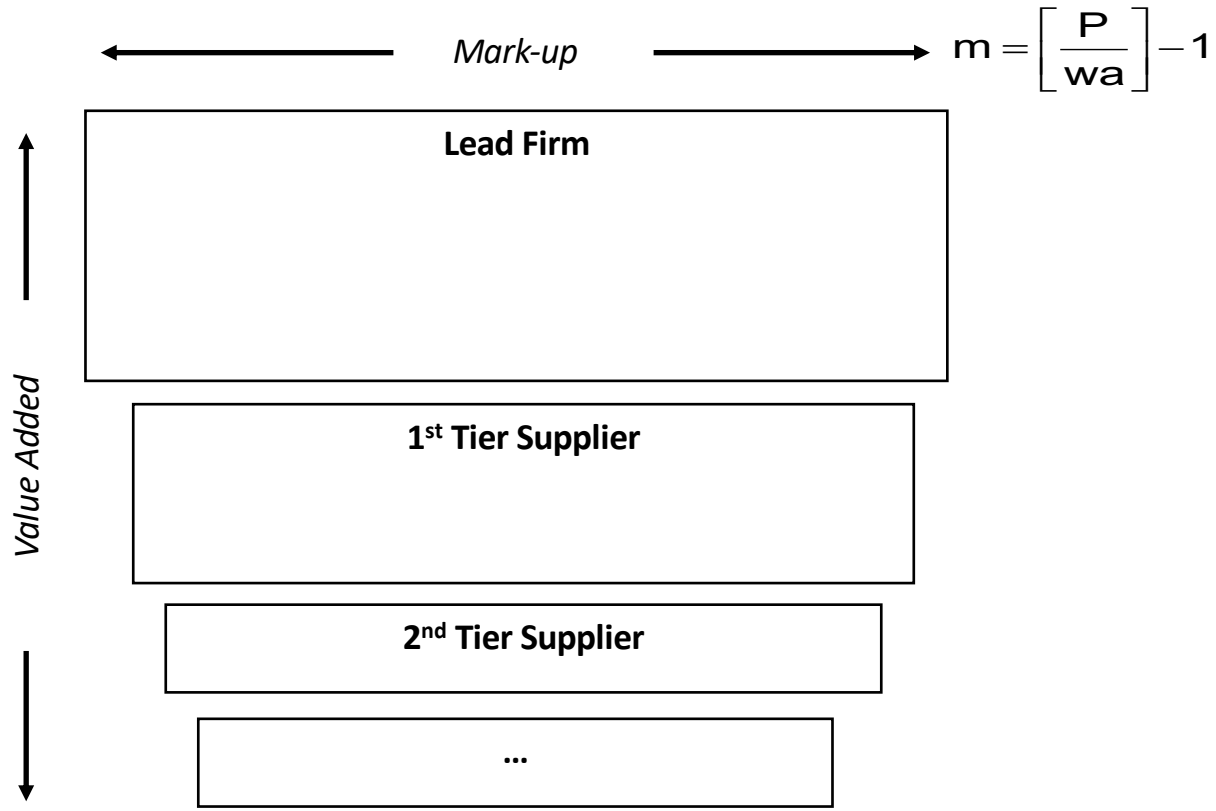
Shareholder value revolution (Lazonick and O'Sullivan, 2001)

Intellectual monopolization

(i) IPRs: entry barriers through branding minimizing technology sharing.

(ii) Information returns, network externalities, IPRs in trade agreements

Offshoring and externalization: Endogenous Asymmetry of Market Structure in GVCs

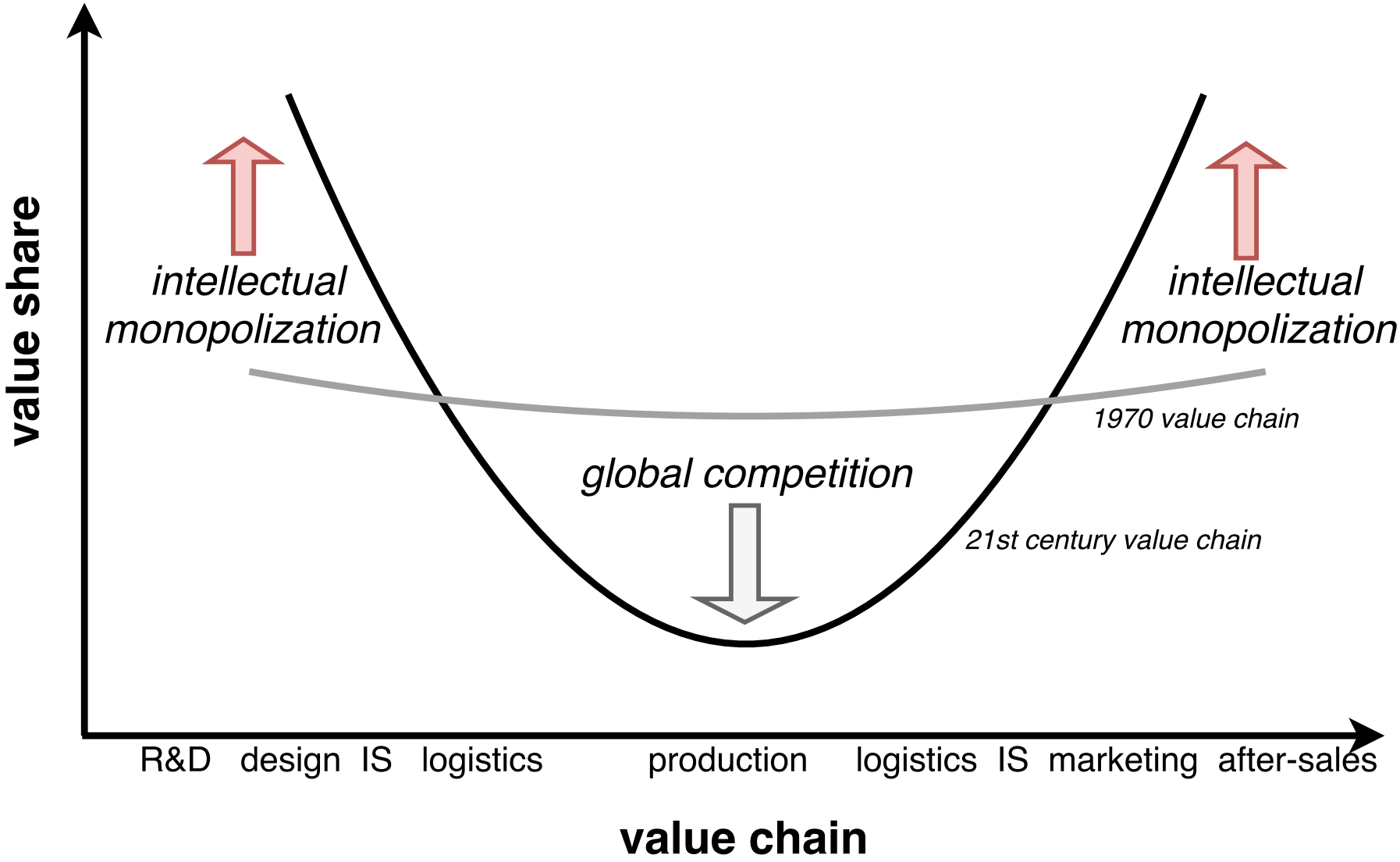


Sources of Asymmetry

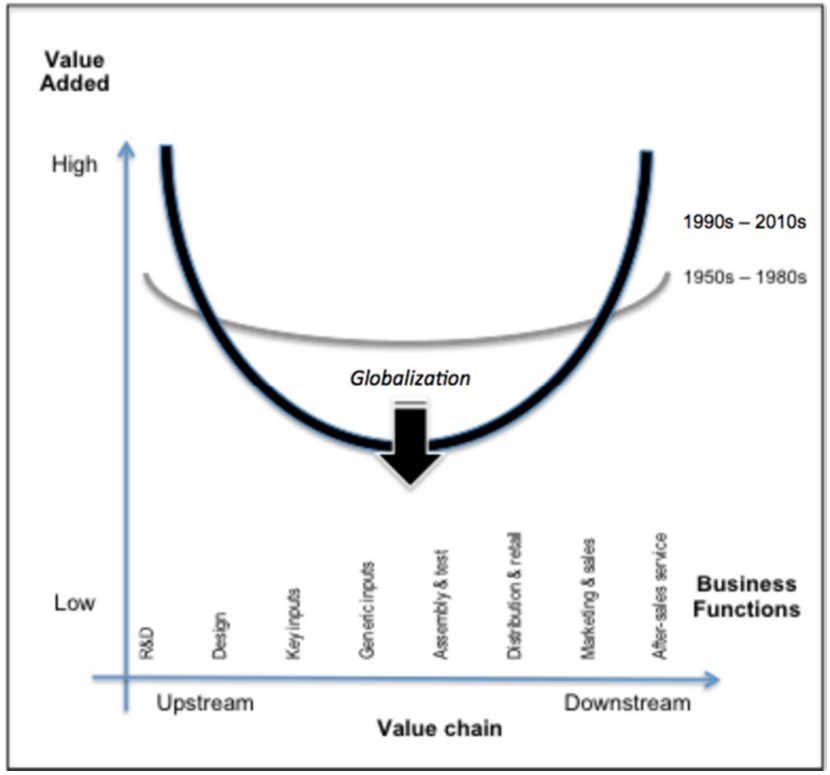
- Labor surplus and export orientation
- Scale economies
- Branding
- Inducing competition among suppliers (factor market power)
- Offloading risk (e.g. of inventory adjustment)
- Limiting technology access
- Notes:
- Theory of externalization rather than internalization.
- Within-link power asymmetries are crucial

«Cost-accounting effect is both fueled and amplified by changes in relative market power»

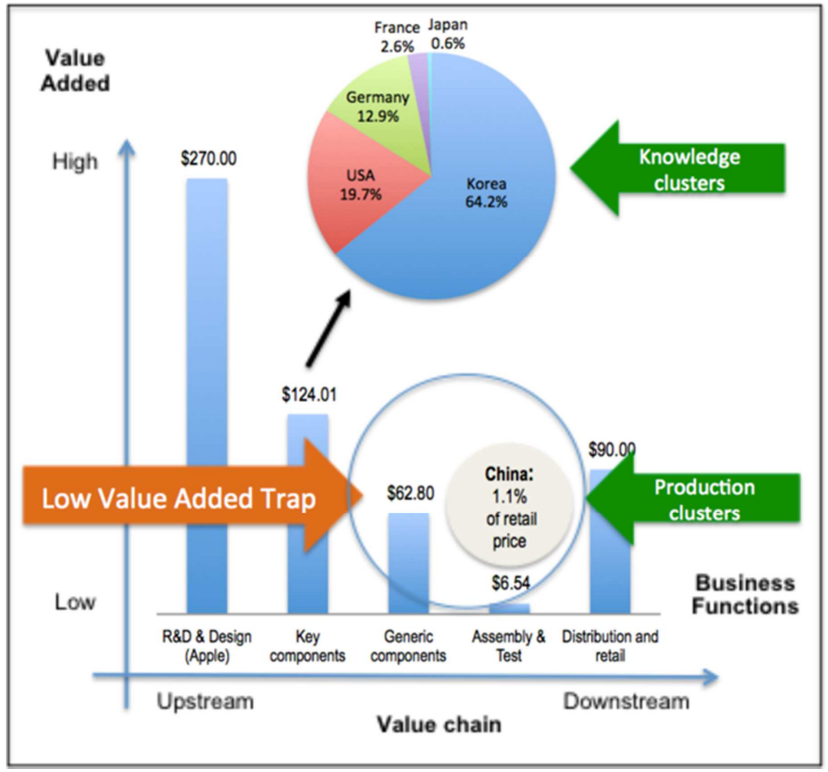
Intellectual monopolization versus global competition



The « smile curve » of value added, with $600 iPhone 4 example



Cost differentials lower the share of value added for routine business functions, which are shifted to developing countries.



Functions become geographically segmented between knowledge clusters, for higher value-added functions, and production clusters, which pool lower value-added functions, creating low value-added traps (China, the exporter of record, contributes only 1.1% of a $600 iPhone's value)

Source: T. Sturgeon, for UNCTAD, with iPhone example drawn from OECD, 2011.

Globalization

THE GVC - INTELLECTUAL PROPERTY NEXUS

Globalization of IPRs:
NAFTA, TRIPS, (DOHA), PTAs

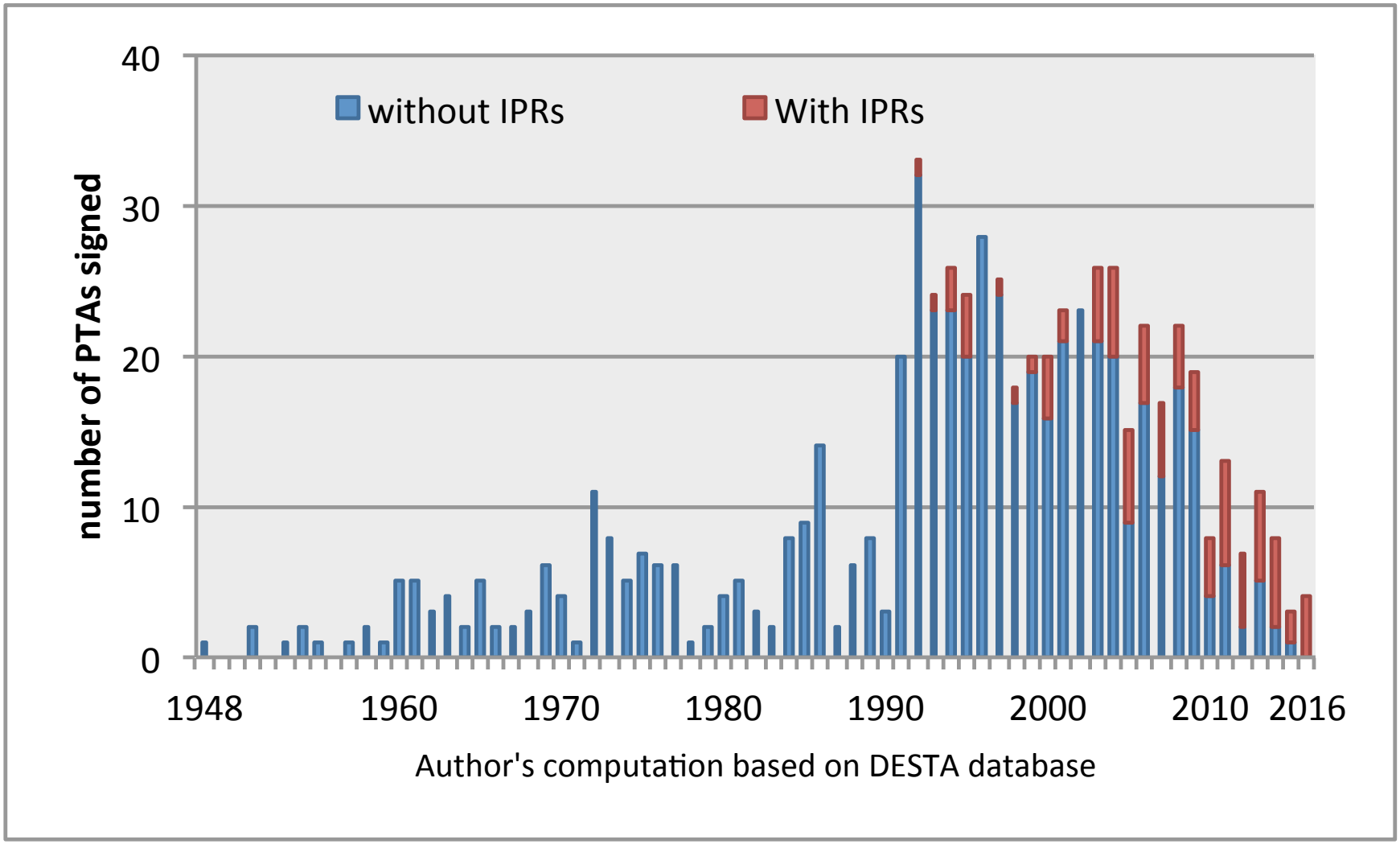
Integrated into the multilateral trade agenda

- Dramatic change in U.S. IP law in the 80s
- TRIPS agreement within the WTO activated in 1995
  - Set minimum standards for regulation of IPRs, subject to dispute settlement
- Tightening stopped by developing countries at Doha in 2001

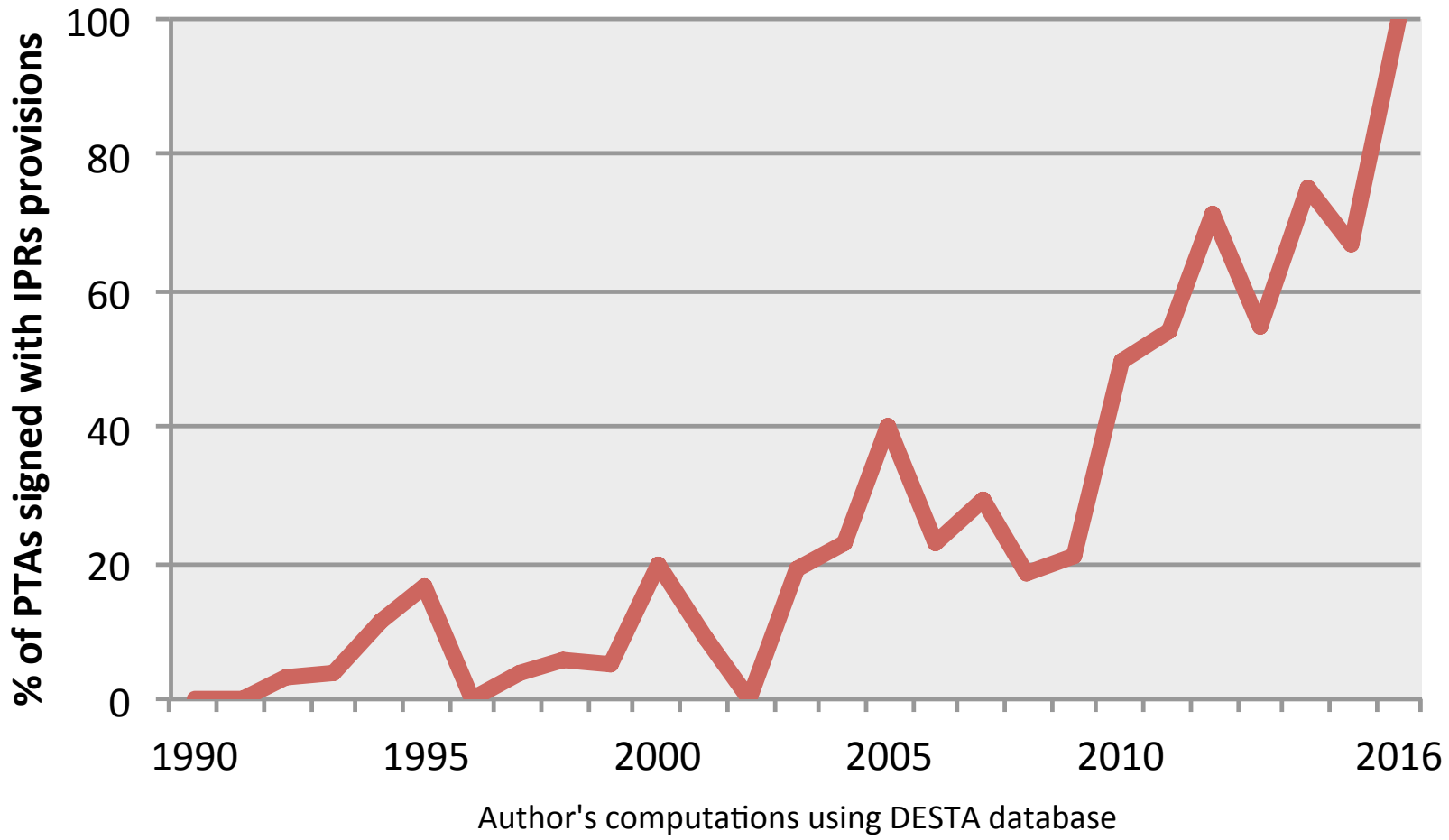
Push via Preferential Trade Agreements (PTAs)

- Supplement to TRIPS: Domestic US and EU IP law as templates
  - (Abbott, 2006; Shadlen, 2008)
- North: Harmonizing regulatory policies and IP advantages, investor rights
- South: Securing market access beyond preferential treatment
  - (Manger and Shadlen, 2014).

Trade Agreements and IPRs

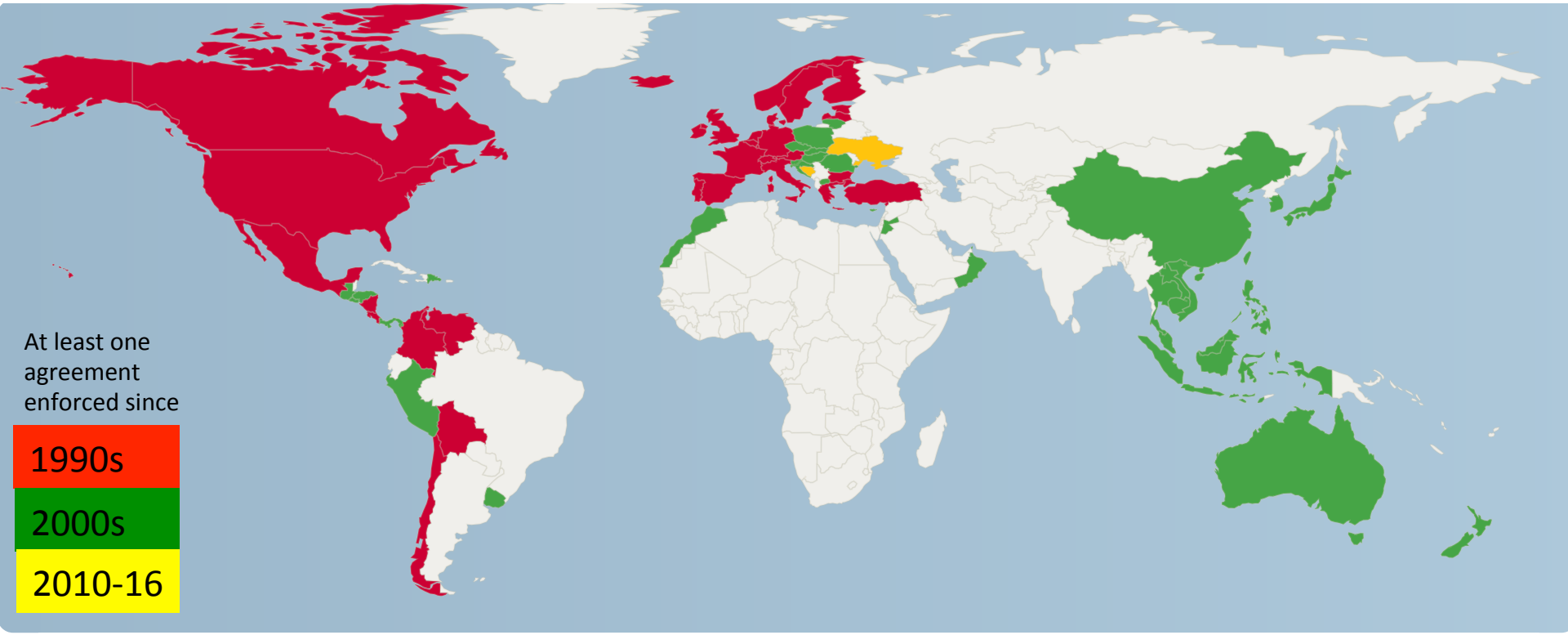


IPRs in trade agreements



Northern Atlantic push to Globalization of IPRs

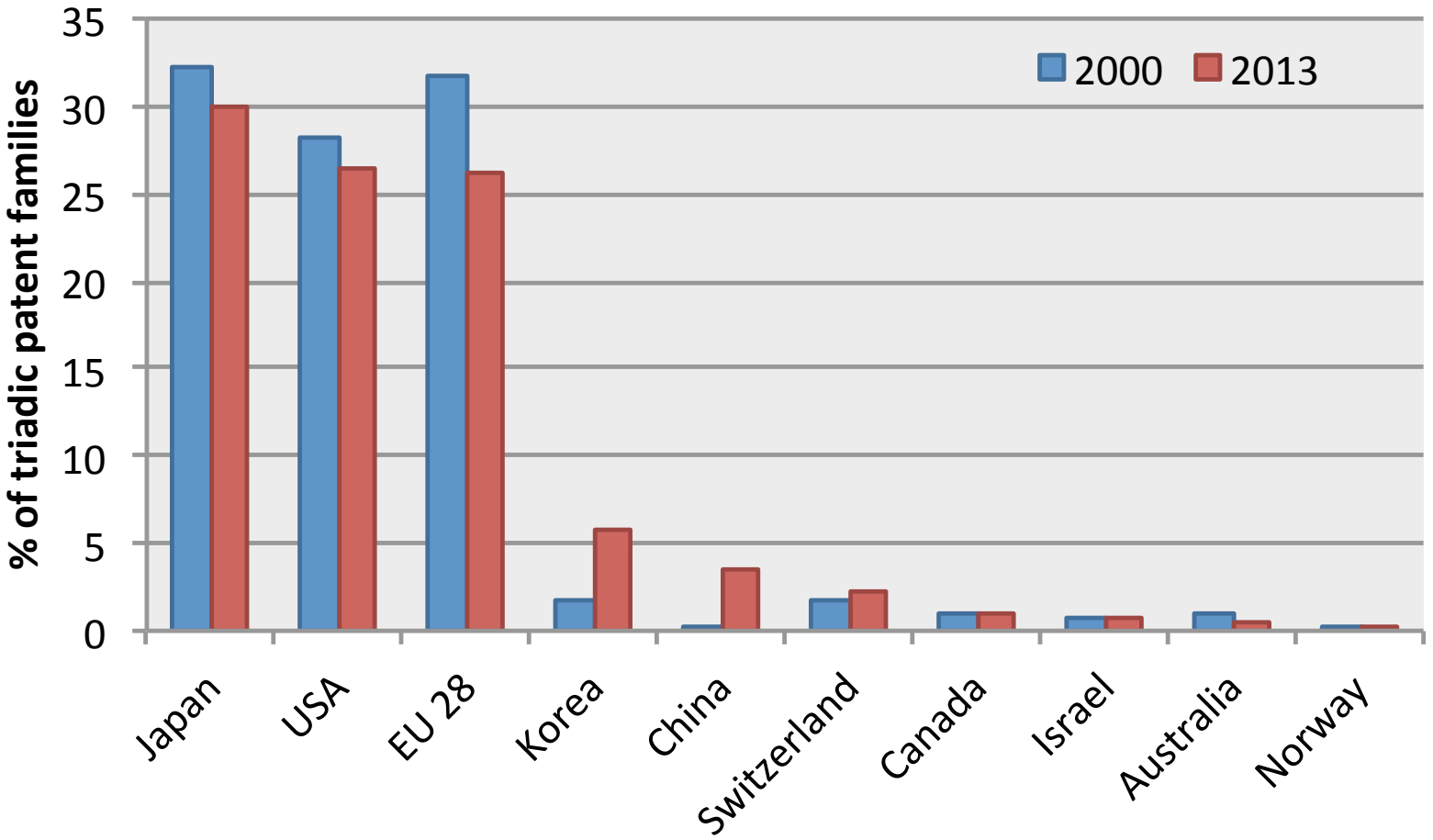
Countries entering in PTAs with IPRs provisions by decade



Author's computations using DESTA database

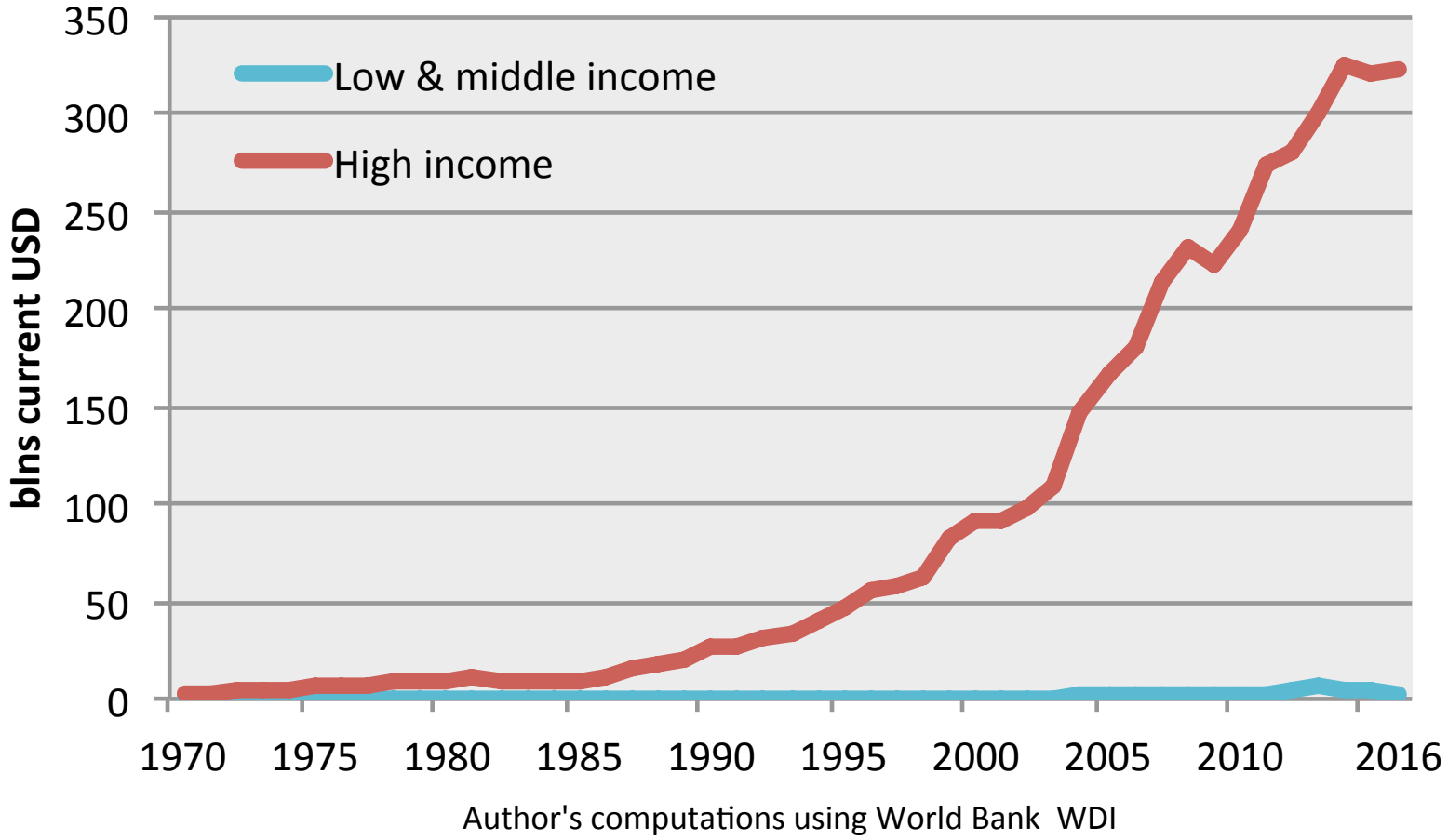
Hegemony in international patents

Main countries contributing to Triadic patent families

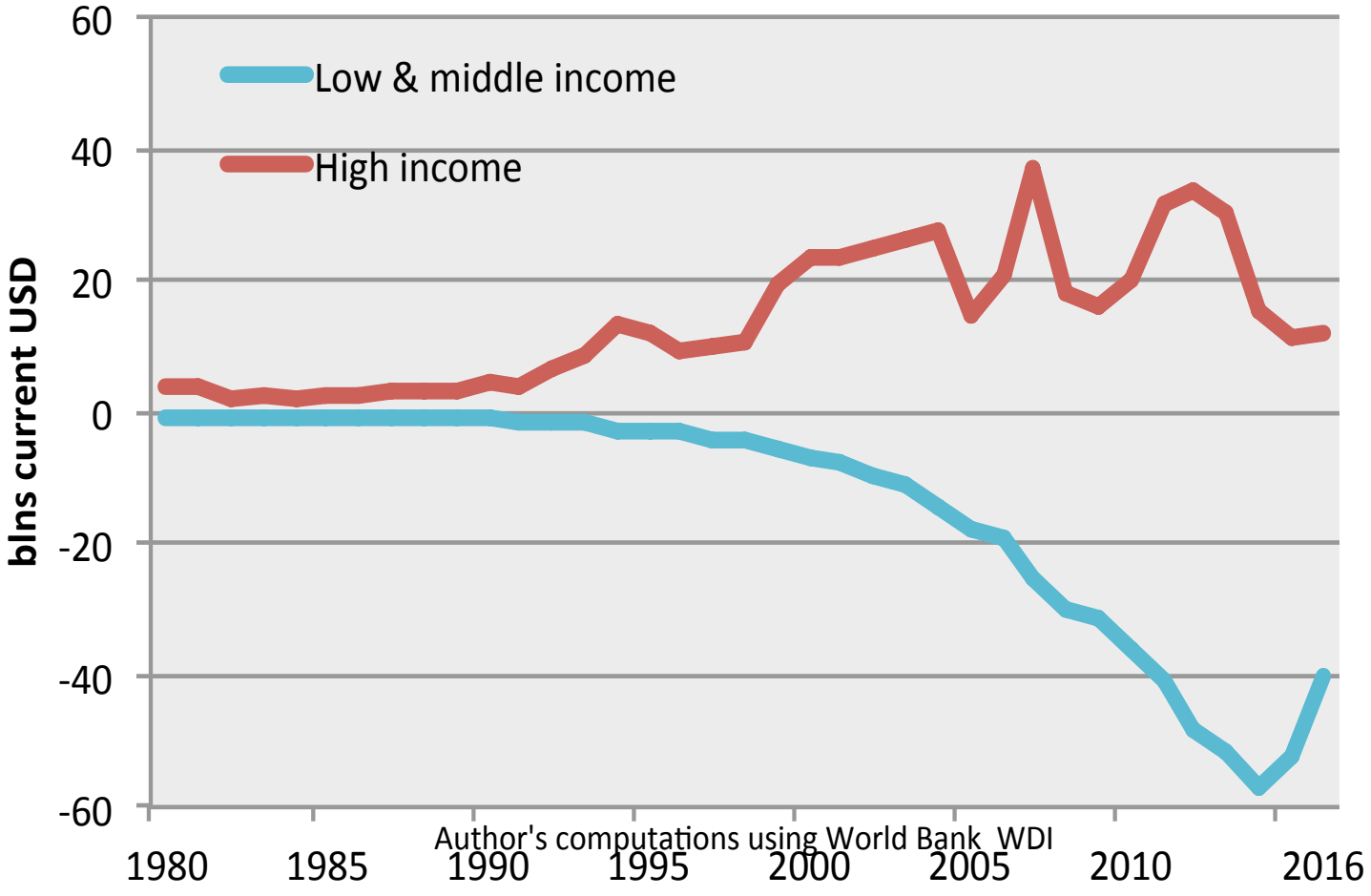


Author's computations using DESTA database

BoP Receipts from the use of intellectual property (1970-2016)



BoP net receipts/payments from the use of intellectual property, 1980-2016



IPRs and Economic Development

*Patents as deviation from competitive ideal – spur to innovation.

*Ongoing debate on role of patents in innovation and economic development (North vs. Mokyr).

*IPRs and knowledge appropriation in LDCS

FDI: in search of spillovers

Trade: middle-income countries import technology, but IPRs reinforce GVC asymmetry (entry barriers and rising IP payments)

*Rodrik (2017): “one needs to assume an implausibly high elasticity of global innovation to developing countries’ patents to compensate for what is in effect a pure transfer of rents from poor to rich countries.”

GVCs and IPRs are self-reinforcing

Fragmentation:

Intangibles circulate to sustain fragmented chain

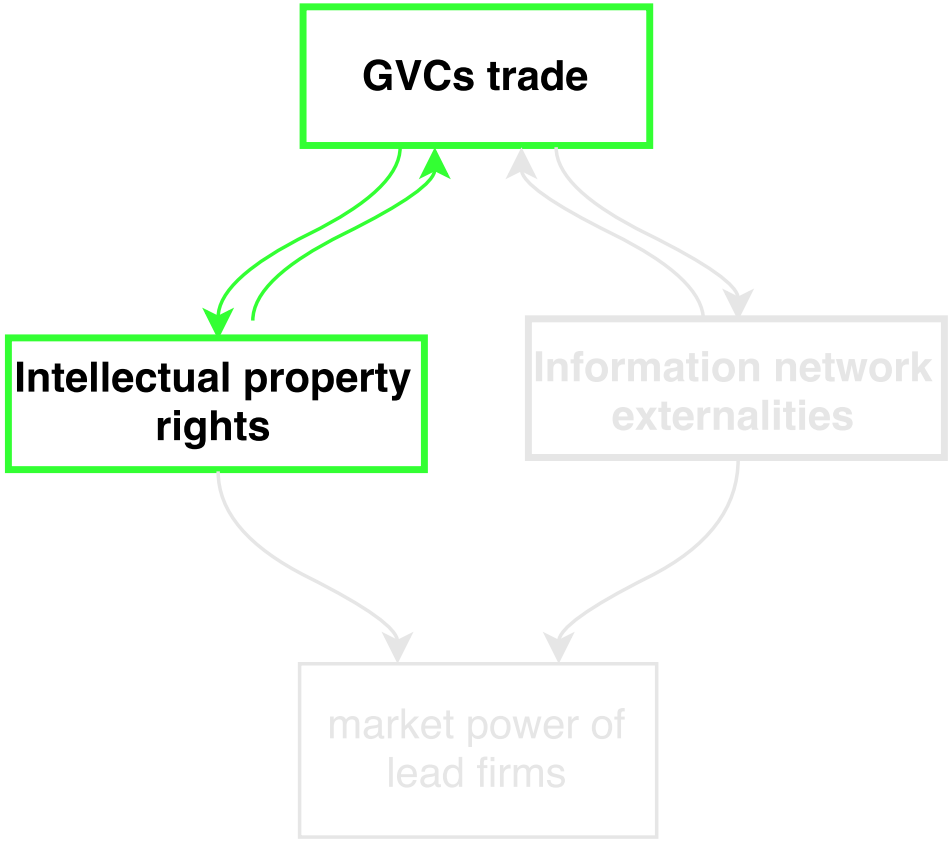
Specifications, know-how

Risk of IP appropriation

IPRs protection:

Induces fragmentation

(Including with sophisticated tech and branding features)

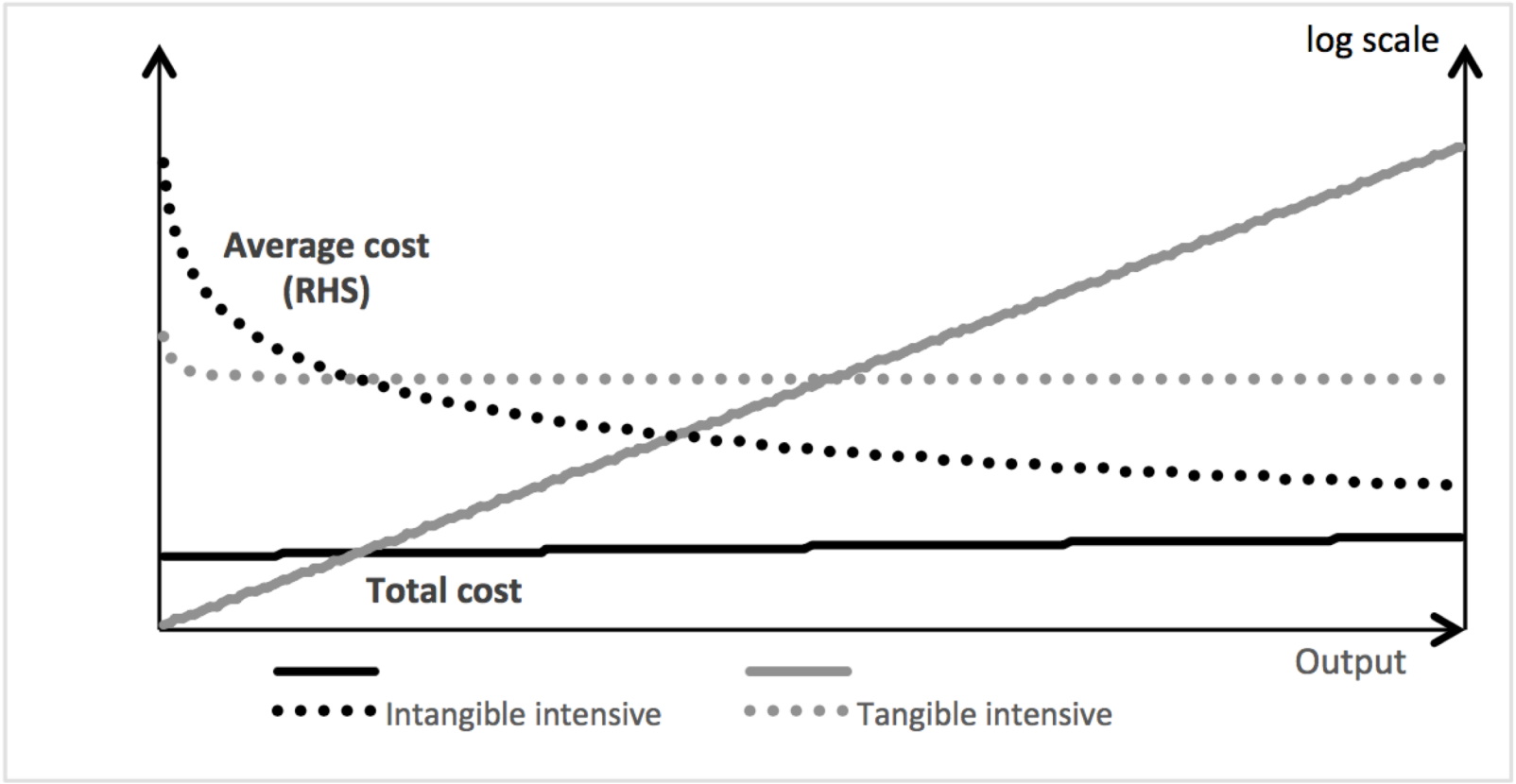


Sources of intellectual monopoly

Natural Oligopoly: Facebook, also Apple (controls IP and demands info from suppliers – “a closed eco-system where it exerts control over nearly every piece of the supply chain from design to retail store” Satariano and Burrows, 2011)

Network externalities through complementarities (e.g. inventory. Control and chain management) data centralization: Google, Facebook, Amazon, Tencent, Alibaba, but also buyer-led (Wal-Mart), and predictive maintenance data in IT (IBM, SAP, Microsoft, Intel, Cisco) and manufacturing (Rolls-Royce, GE, Siemens), construction.

Figure 12: Total and average cost dynamics for tangible intensive and intangible intensive segments (authors' elaboration)



Networks externalities and Scale

GVCs as networks

Externalities from complementarities

Value increased by combination

Necessitate integration:

specifications (Economides, 1996)

IS as informational backbone

Centralization of externalities

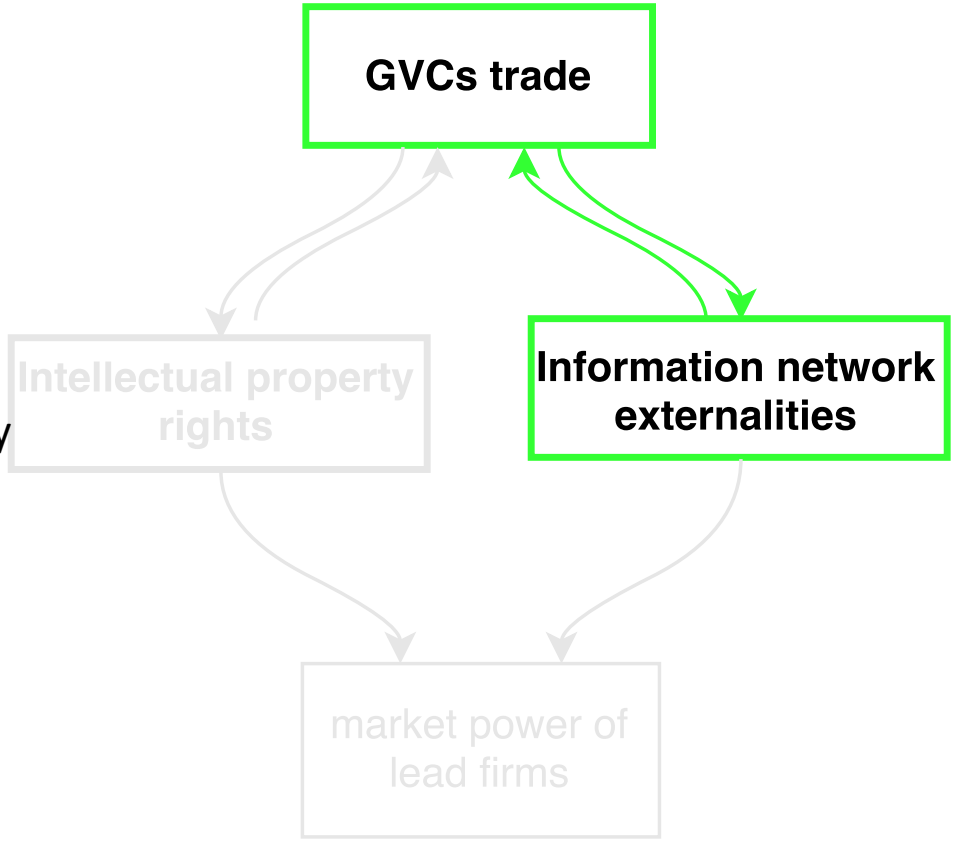
the integrator is in position to reap the benefits => participants "pay-in" through lower prices their entry

Accumulation of data out of IS

Increasing returns to scale

Non-rival assets with low or zero marginal costs

Intangibles-intensive firms benefit more from increasing returns (no diseconomies of scale as with tangibles)



The battle for information and network returns

Managing the chain: Amazon v/s Wal-Mart

> "retailers need to figure out how to **manage sophisticated supply chains** connecting Southeast Asia with stores in big American cities so that they rarely run out of product**.** They need mobile apps and websites that offer a **seamless user experience** so that nothing stands between a would-be purchaser and an order. (…). Larger companies that are **good at supply chain management and technology can spread those more-or-less fixed costs around more total sales**."
>
> (NY Times, June 19 2017)

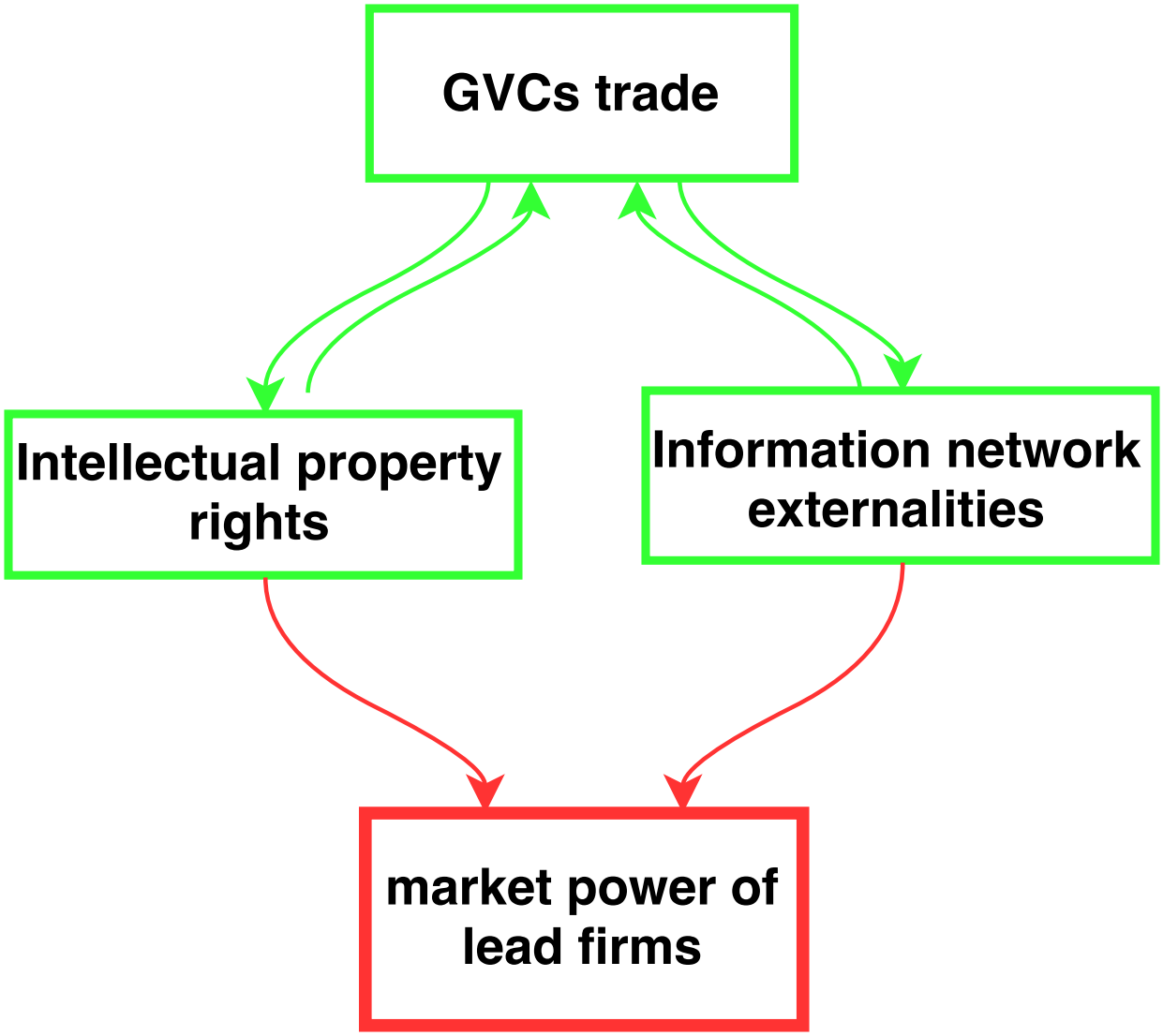
Capturing the data on machinery

> "Manufacturers such as Rolls-Royce, GE and Siemens have been investing in "predictive maintenance" technology for years. It is just one of the myriad ways they **capture data across the value-chain to improve efficiencies and automate** work."
>
> (FT, April 27 2017)

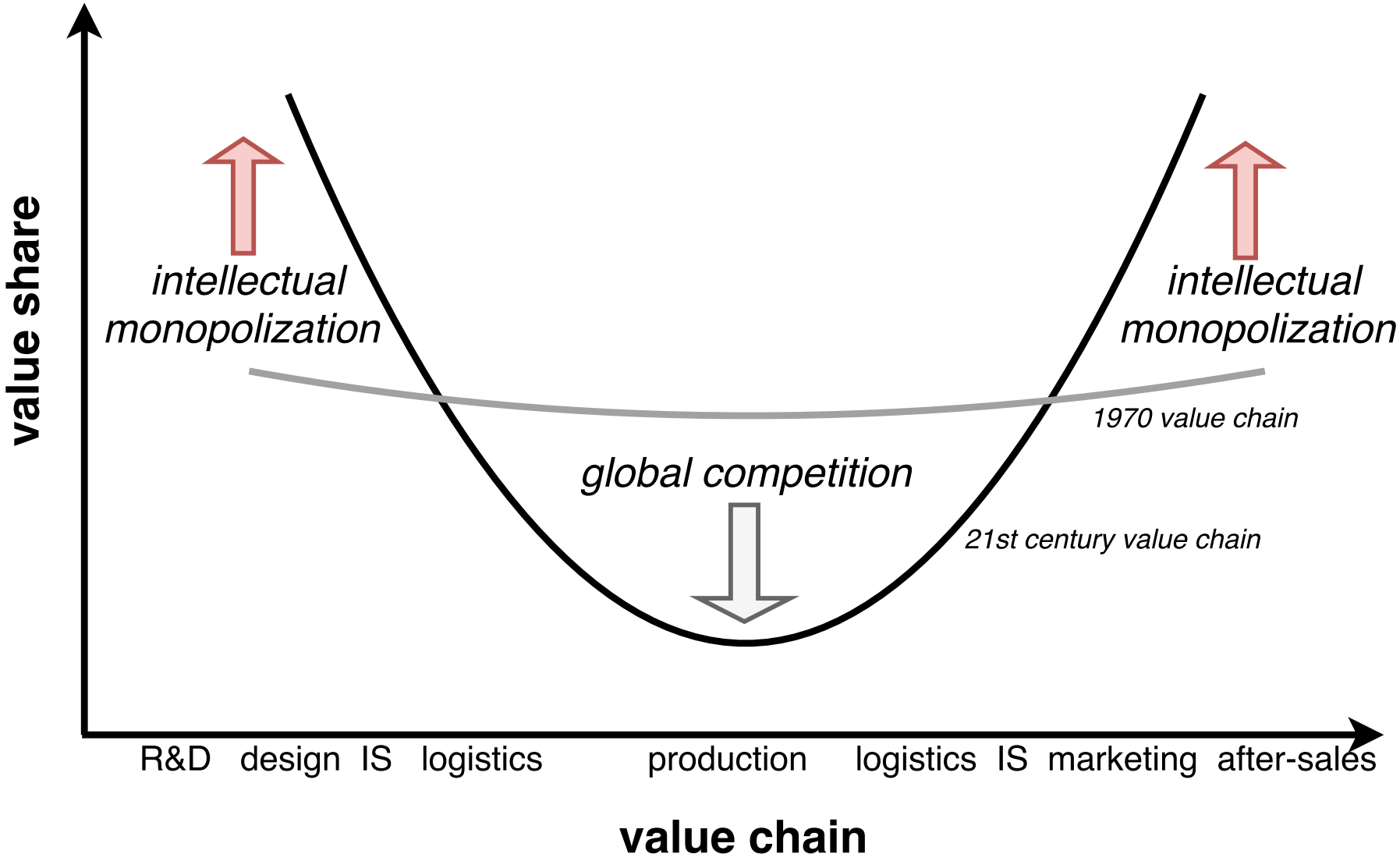
*« We **manufacture products that generate** power, that automate manufacturing processes, that scan people (like CT and MRI machines), and that move people and goods from place A to place B. That's a lot of products, and all those products have sensors. (…), once we get the **data**, we have the data analytics platform and the cloud. We have a proprietary cloud, for example, an on-site cloud. Our customers care about manufacturing and engineering data and intellectual property rights because* **[this type of data]** ***is the holy grail of innovation*** *».*

Joseph Kaeser, Siemens CEO, 2016

Intellectual monopoly in GVCs



Intellectual monopolization: natural monopoly, network externalities and uneven returns to scale



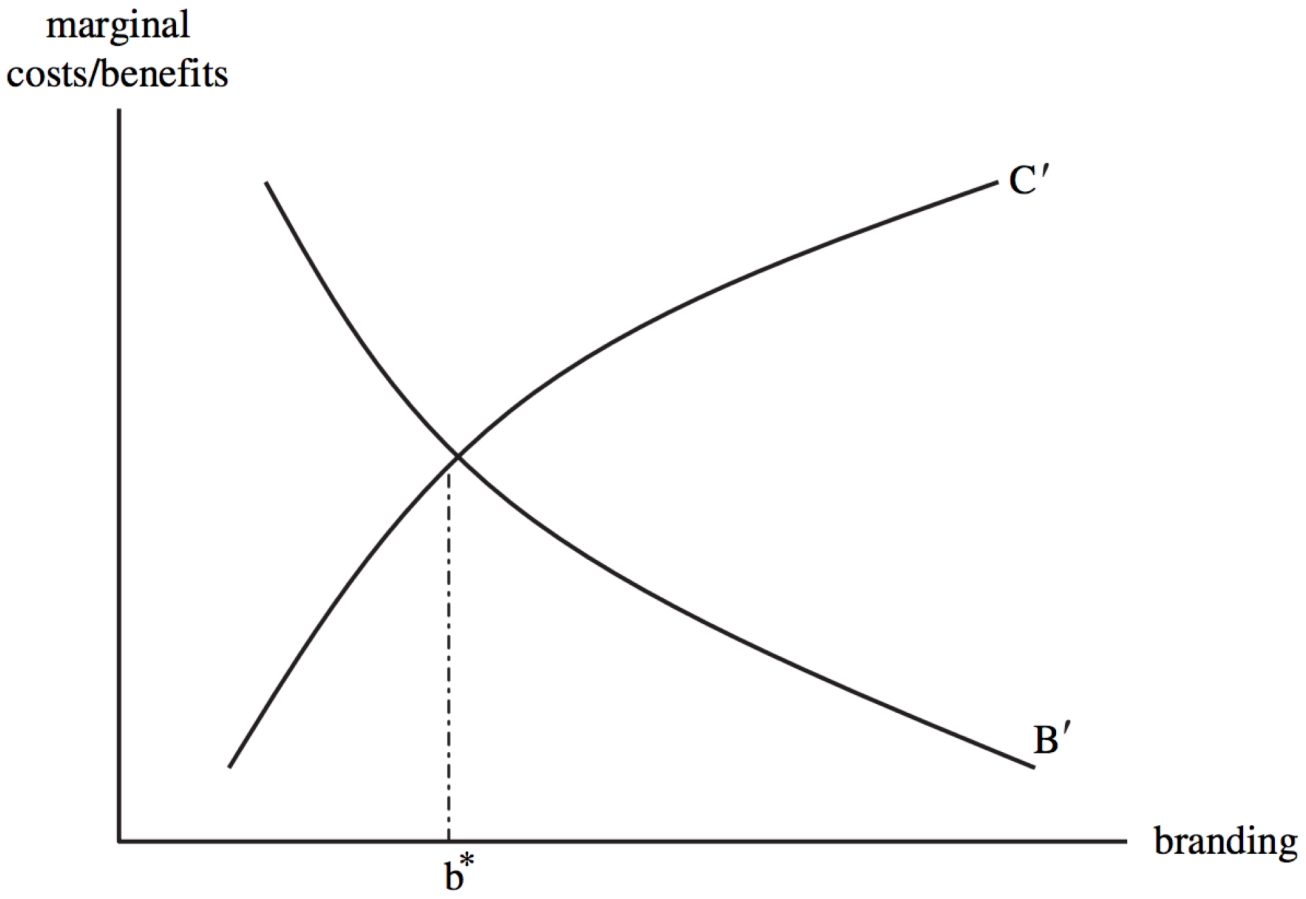
Intellectual monopoly in GVCs: A taxonomy of rents related to intangible assets

TYPE	DESCRIPTION	EXAMPLE
LEGAL IP RENT		
	Rationing via exclusive rights on product production, process uses, cultural and scientific items, and marketing investment	Patents on pharmaceuticals, software copyright on features and coding, trademark protection (Nike, Louis Vuitton)
VERTICAL NATURAL MONOPOLY RENT		
	Returns on intangibles underlying the integration Network complementarities within GVC Sunk costs resulting from asset specificities	Apple supply chain management Valeo, Bosch supply chain management of auto parts
INTANGIBLES-DIFFERENTIAL RENT		
	Uneven returns to scale on intangibles versus tangibles allow intangible intensive segments of the chain to capture a larger share of the gains	Apple and Nike fabless manufacturing versus assembling factories Nespresso versus coffee producers
DATA-DRIVEN INNOVATION RENT		
	Central control of data generated along GVCs via asymmetric information systems Data access fuels innovation	Siemens sensors on machinery, Goodyear tires sensors Wal-Mart retailink software Amazon shopping histories

Extending Heintz's model of branding rents to IP

(Cambridge Journal of Economics, 2006)

$$\max\ \alpha(b)\delta(P,Y) - c\delta(P,Y) - \mu(b)$$

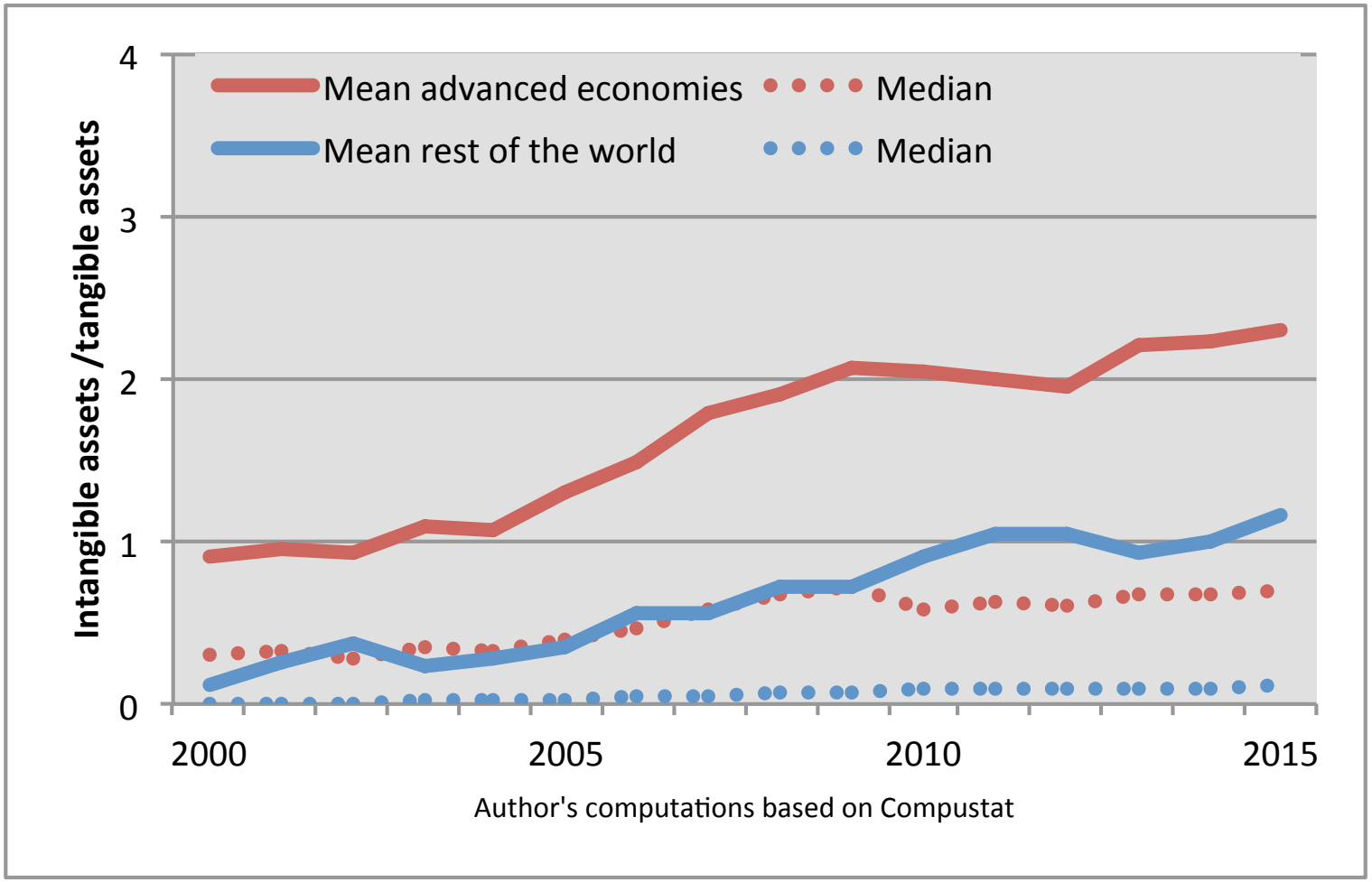


INTANGIBLES, PROFITS AND INVESTMENT IN GVCS

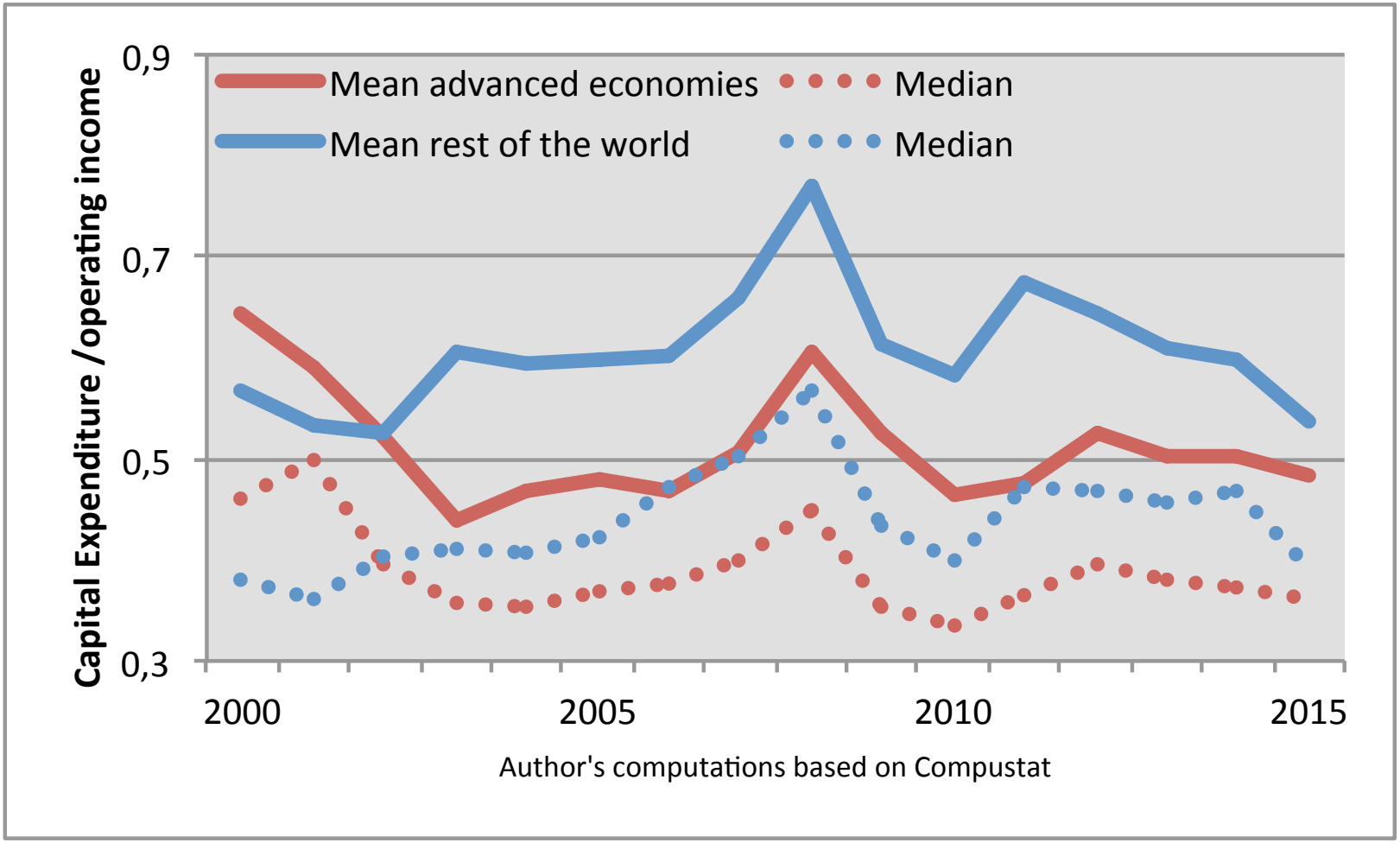
NON FINANCIAL ASSETS: COMPUTERIZED INFORMATION, TECHNOLOGICAL KNOW-HOW, ARTISTIC ORIGINAL ART, DESIGN AND NEW PRODUCTS, BRANS, EMPLOYER-PROVIDED TRAINING AND ORGANIZATIONAL STRUCTURE

Intangibles intensity growing and higher in advanced countries

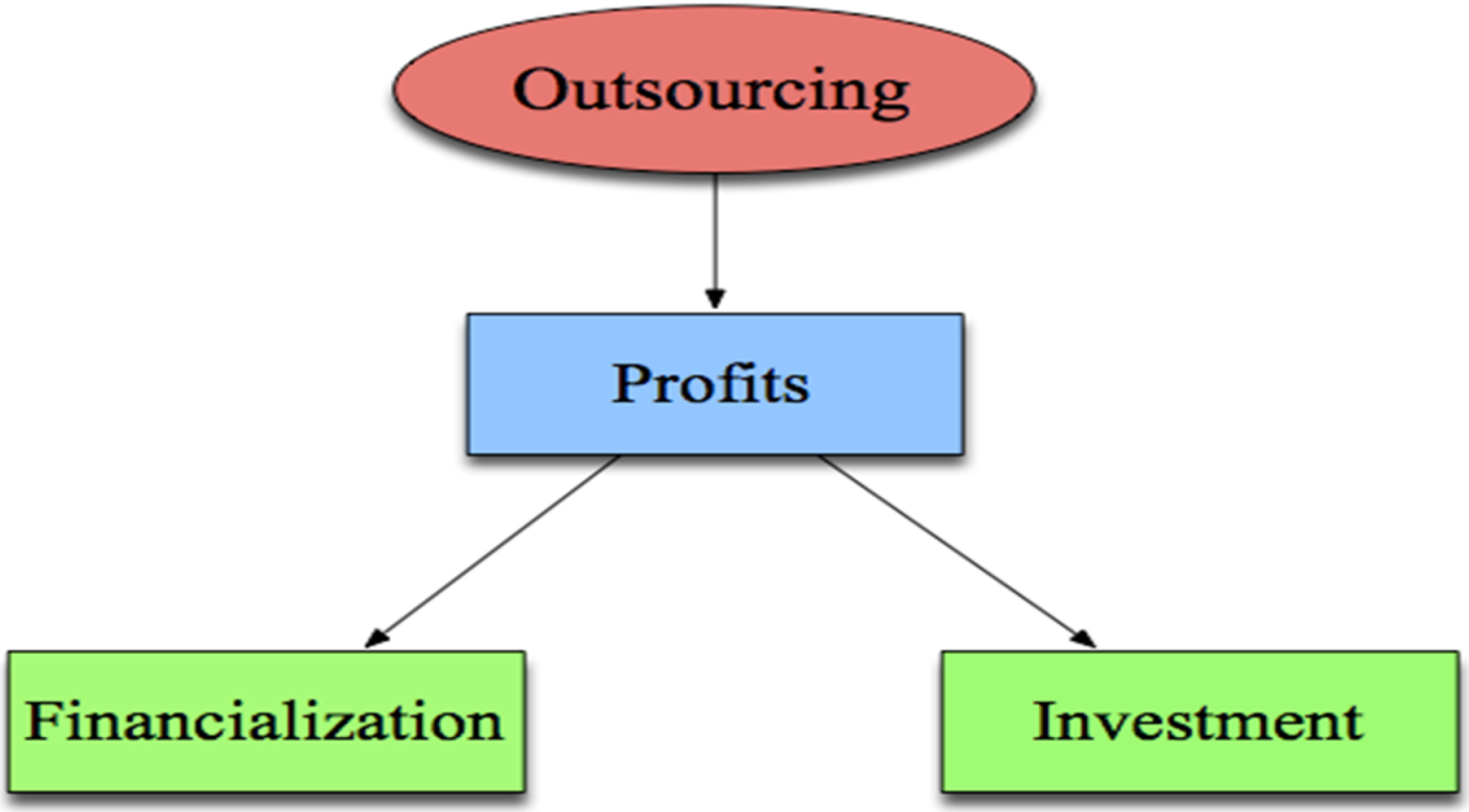
average and median of industry/country revenue (weighted average)
Source Compustat North America & Global (assistance by O. Vallès)



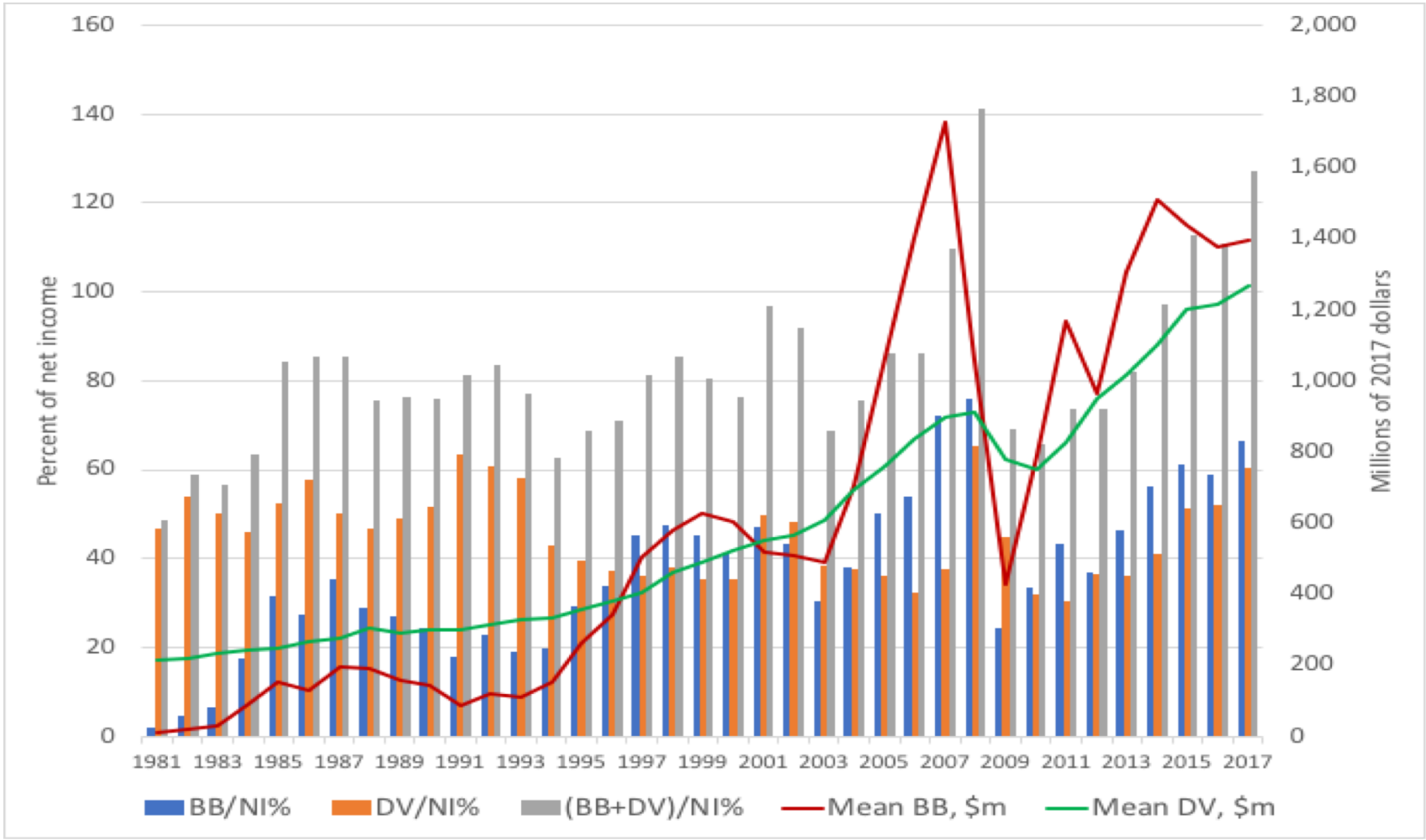
Industries investment/profits in advanced economies and developing countries (2000-2015)



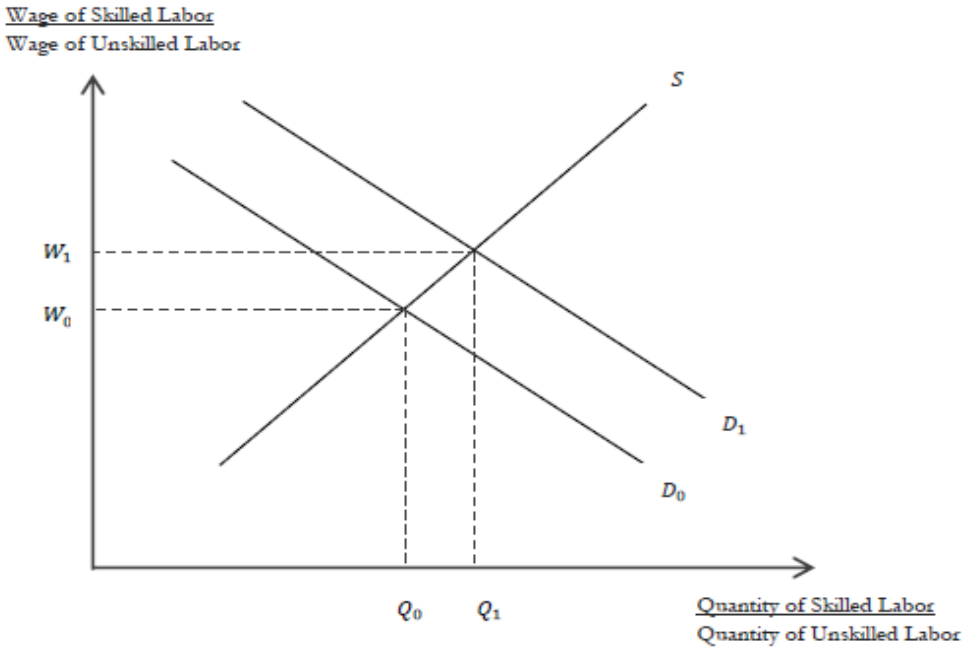
Intellectual monopoly and GVCs: spurring financialization?

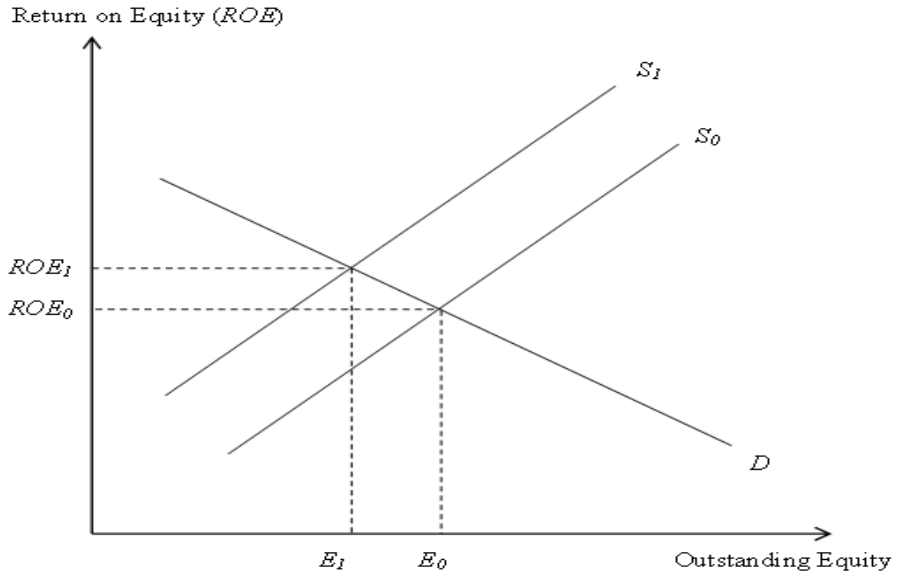


Dividends and Share Buybacks as share of net income, 1981-2017 (Source: Lazonick, 2018)



Skills-biased labor markets and finance-biased equity markets: implications for U.S. income distribution





Source: Milberg and Winkler (2013).

Summary and hypotheses

- Need to break out tangible and intangible capital in GVCs
  - Linked to a tightening of IPRs
  - And uneven distribution of network externalities gains
- IP monopoly favors market power of lead firms
  - Value capture support profits margin
  - Diminishing pressure to invest
    - stagnation with higher distributed profits
- IP monopoly is obstacle to catch-up by developing countries
  - Ambiguous impact of IPRs
    - More ideas circulate but limited appropriation
    - Restrain investment opportunities
  - No countervailing force to networks externalities
    - natural monopoly dynamics
  - Limits value capture and room for social upgrading

Policy implications

- "Trade liberalization" a misnomer
  - Beyond trade agreements, a regulatory agenda
  - With crucial implication for GVC dynamics
- Privatization of ideas is adverse to development
  - An issue beyond IPRs
  - Network externalities, an underestimated problem
- Intellectual monopoly
  - A new outlook on GVC upgrading possibilities
  - A progressive agenda on weaker IPRs and data openness
  - Dilemma of regulating a natural monopoly

Thank you !

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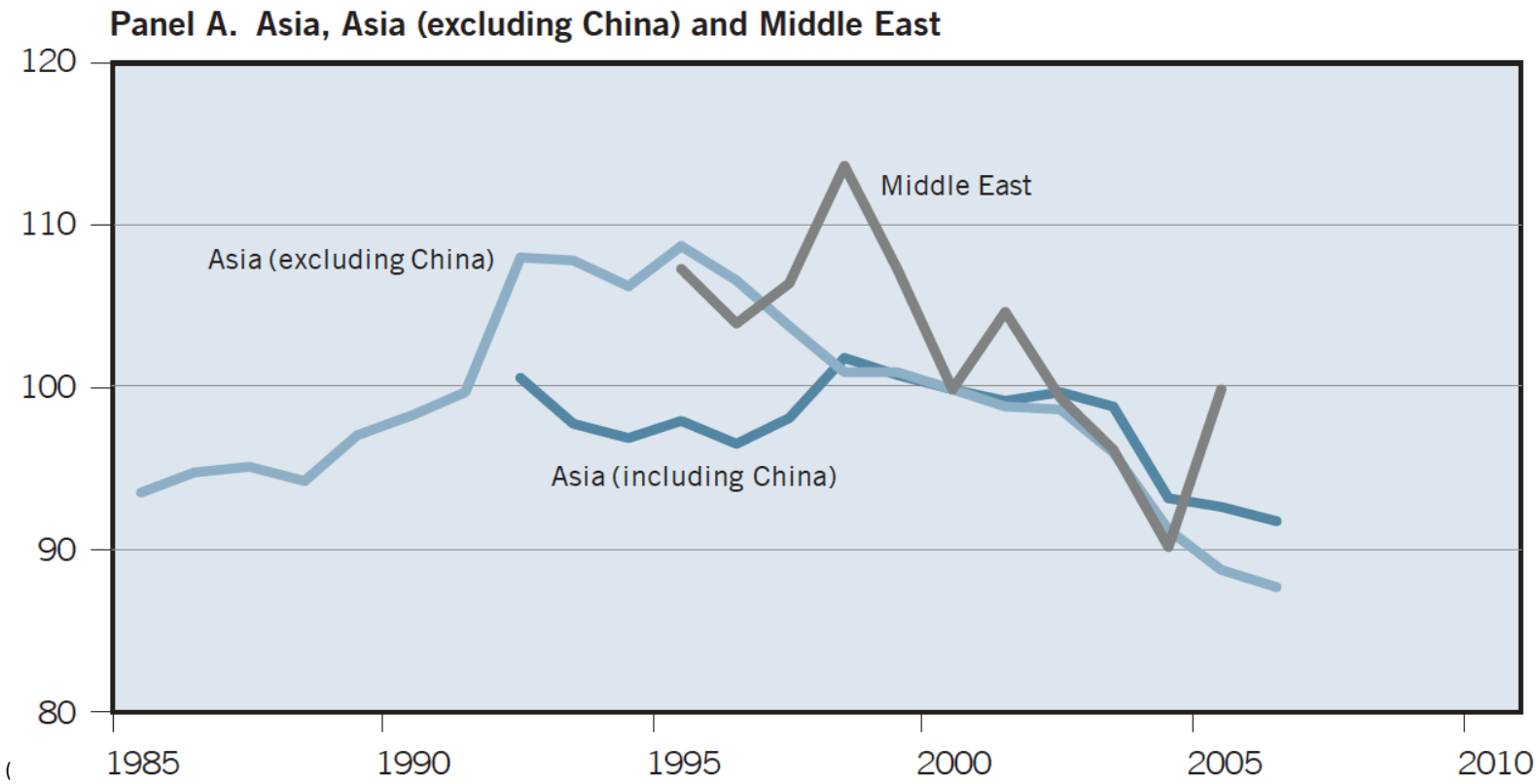
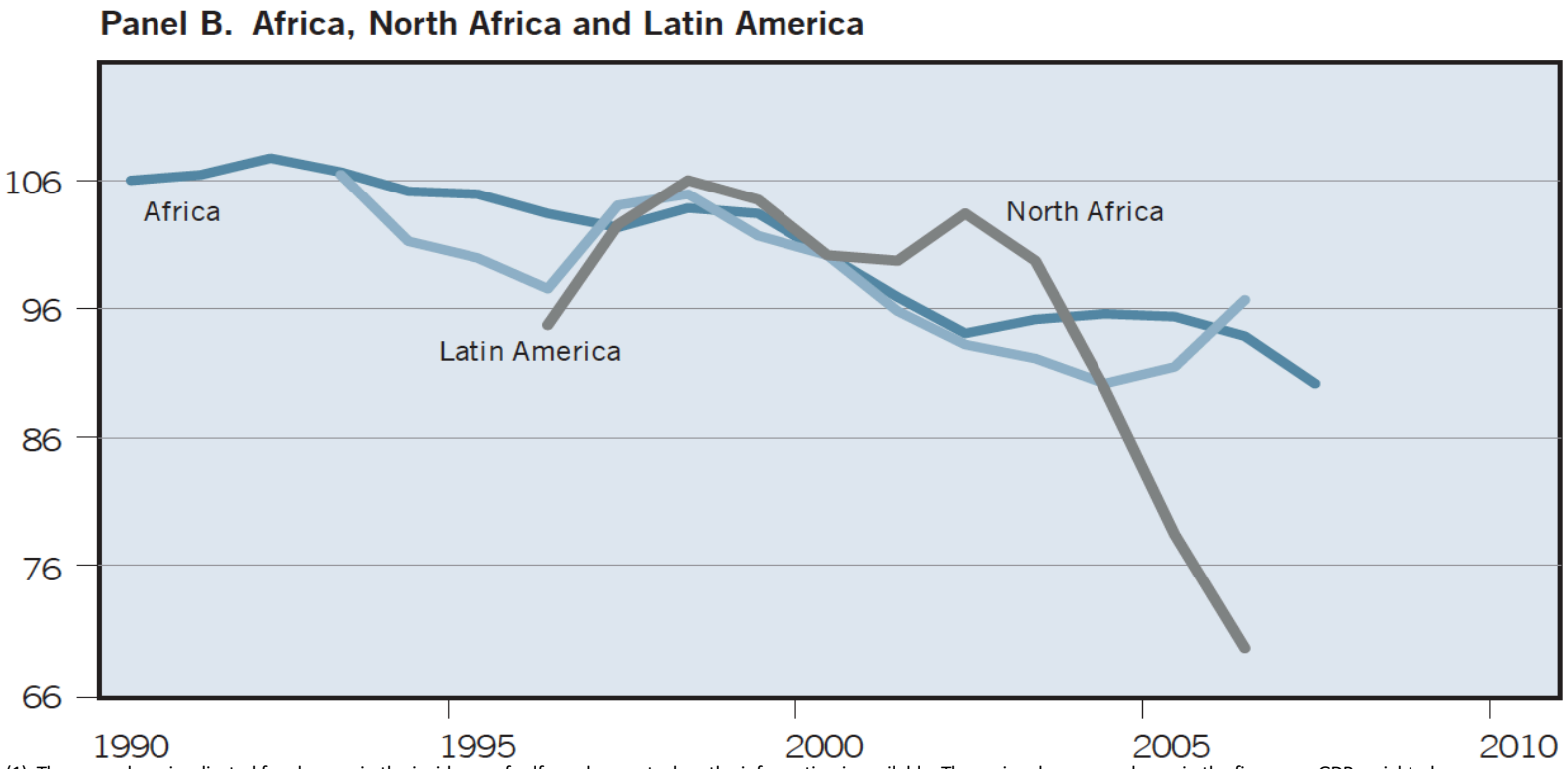
Trends in Wage Shares: Asia, Asia (excluding China) and Middle East (index = 100 in 2000)



Notes:

- (transformed into an index to facilitate the comparison of trends.
- (2) The wage share measures the share of income created that goes to workers. This is in contrast to the profit share, which measures the share of income that goes to capitalists.
- *Source: ILO World of Work Report (2011)*

Trends in Wage Shares: Africa, North Africa and Latin America (index = 100 in 2000)



Notes:

- (1) The wage share is adjusted for changes in the incidence of self-employment when the information is available. The regional averages shown in the figure are GDP-weighted averages, transformed into an index to facilitate the comparison of trends.
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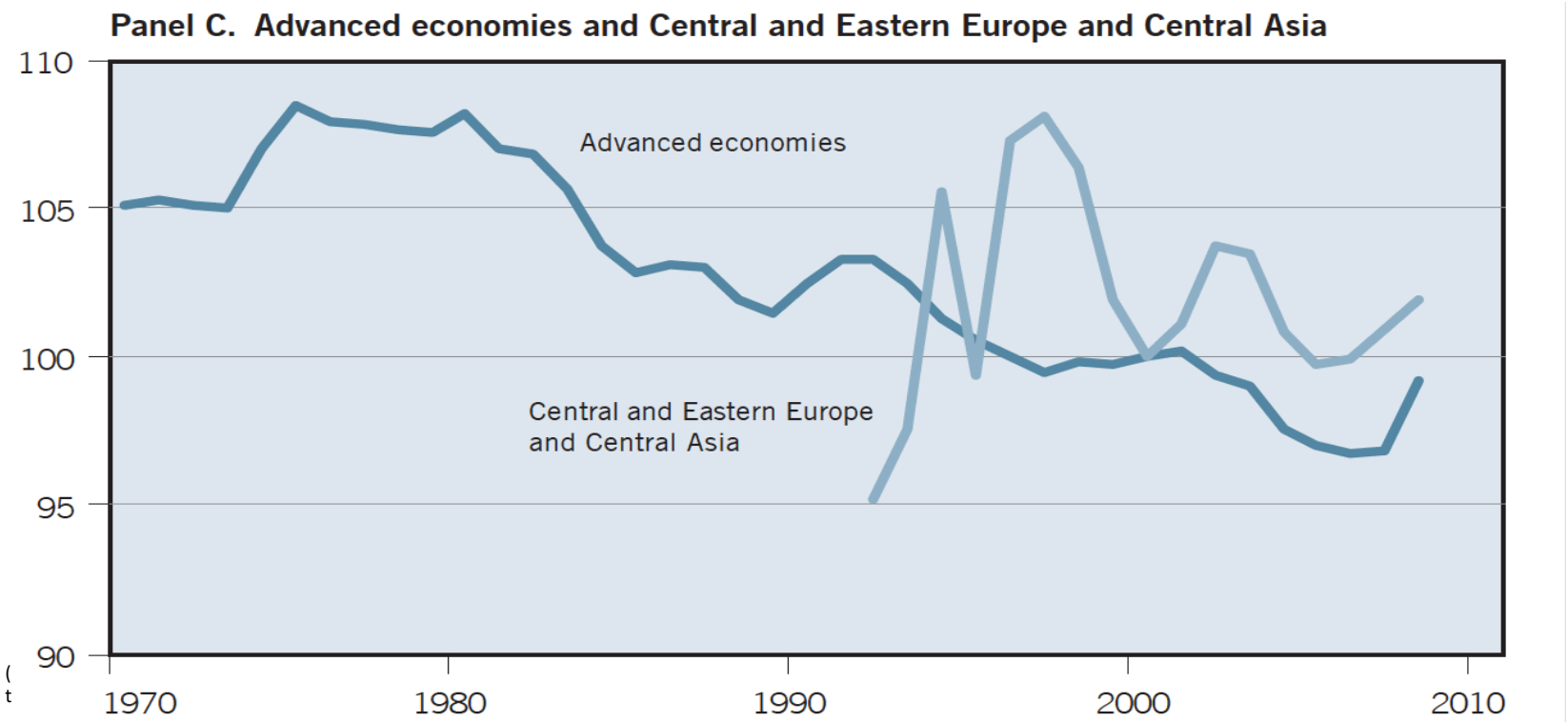
Trends in Wage Shares: Advanced Economies and Central and Eastern Europe and Central Asia (index = 100 in 2000)



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