When Tomorrow Is Not Like Yesterday: Investing at a Breakpoint in Economic History

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What I'll be talking about

Tomorrow is not going to be like today

- Ages of capital – transitions change everything – economic, social, political and geopolitical relations
- Where are we now: riding the shock waves set in motion by the transition to the age of data + predictive AI
- Where are we going? Transitioning to a new age of data + generative/agentic AI ("machine knowledge capital")

What to watch for

- Economic perspectives - from tangible to intangible assets – factors of production – implied societal dynamics – impacts on political organization (rise of populism)
- Geopolitical perspectives – no permanent personas of countries, no permanent friends/coalitions, no permanent interests
- Technological perspectives – from minimum efficient scale + transport costs to increasing returns with no transport costs
- Investment perspective - acceleration of the pace of innovation means shorter time to recoup capital costs + increased uncertainty about future market conditions + increased outstanding stock of IP + increased difficulty of preserving FTO

Punchline: study history, read science fiction, and hedge

Ages of Capital (Overview)

- Land (pre-1820)
- Industrial Capital – Machinery of Mass Production (1820–1980)
- Intangible Capital – Knowledge-base economy (1980–2010)
- Intangible Capital – Data + Predictive AI (2010–2022)
- Intangible Capital – Data + Generative/Agentic AI (2023 – the present)
- Everything changes – social and political organization, location of wealth, economic structure, geopolitical power and international institutions

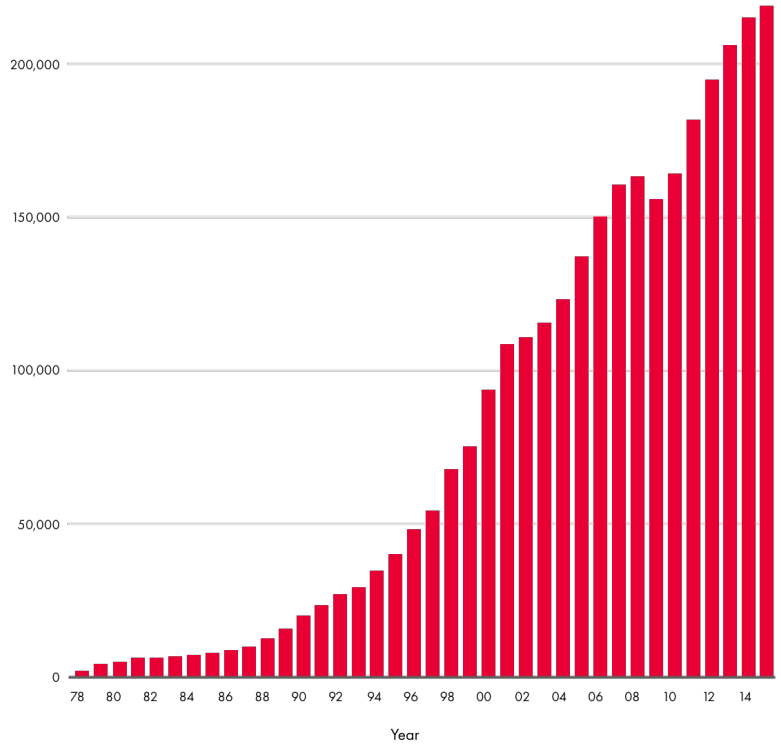
From Land to Machinery of Mass Production – Everything changed – instructive to see just how much

- In the agrarian age, land was the key asset - Agriculture accounted for 50% of GDP.
- Wealth came from agricultural rents - Manufacturing was small-scale artisanal
- Population was overwhelmingly rural – no agglomeration pressures because land does not agglomerate
- The elites in the manorial system were the landed gentry.
- Power over the purse in England: land-based House of Lords
- Legal/policy innovation: centred on real estate & inheritance

- With the industrial revolution, the factory system of mass production created economic rents through economies of scale
- GDP Shift: Agriculture ↓ to <10%; Industry ↑ to >50%
- Mass migration to cities to create working class (Marx's "Lumpen proletariat")
- Elites were the tycoons in top hats – wealth was in the industrial capitals
- Politics was re-organized around a new polarization – labour vs. capital in the contest for shares of manufacturing rents
- Power shift (control of the budget) in the UK from House of Lords to House of Commons
- Legal innovations - joint stock company for scaling manufacturers + social safety nets to support internal migration + trade liberalization

Knowledge-Based Economy (KBE) - 1980-2010 – Everything changed again

- Bayh-Dole (198), IBM PC (1981), CAD-CAM software (1982) transform the economy
  - CAD revolutionizes industrial design
  - CAM enables automation
  - IP creation soars – Patent Cooperation Treaty Filings
- College towns flourish, industrial towns rust.
- IP captures rents and industrial capital goes from source of rents to a petitioner for protection (rise of AD/CVD)
- New professional “elites” emerged due to “skill-biased technological change” (aka computers)
- And an emerging “precariat” starts to build as work shifts to low-rent jobs – politics realign from labour vs. capital to progressive vs. populist



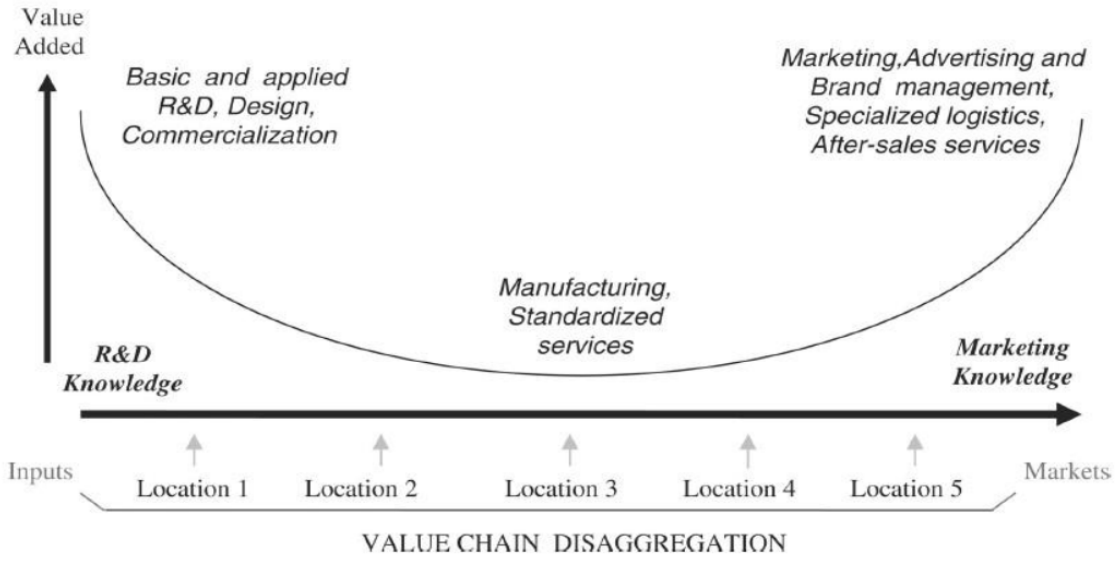
Value capture in the KBE – the Smile Curve

Value capture in the KBE was at the front end and market end of the value creation process

- manufacturing and standardized services were competitive and contracted out
- Stanley Shih's smile curve captures the era

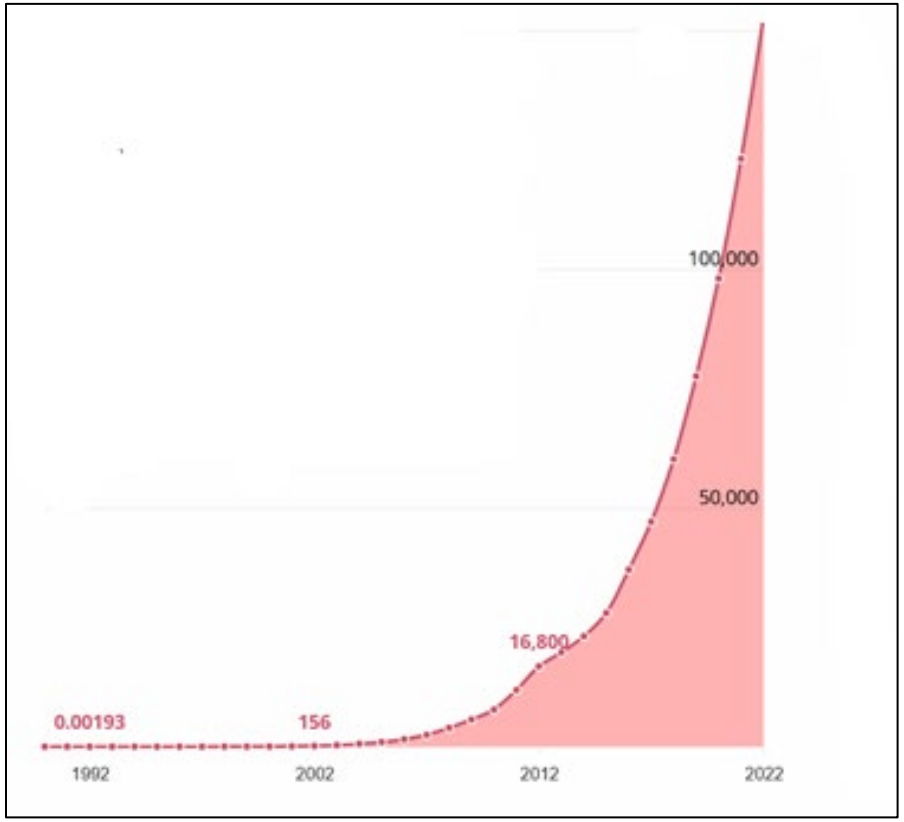
Legal innovations:

- increased penalties for copyright infringement,
- term extension for patents and copyrights (Mickey Mouse!)
- anti-counterfeiting laws to protect brand value
- trade law to pursue international IP rents (TRIPS, Super 301)

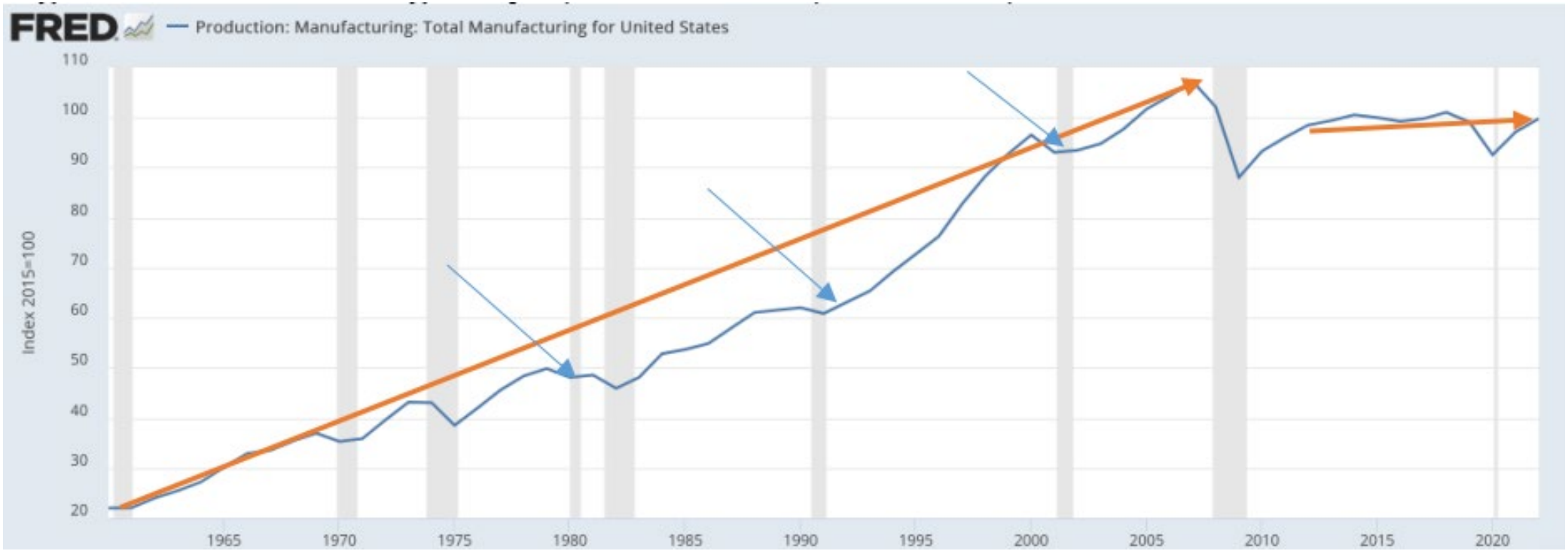


The data-driven economy 2010-2022

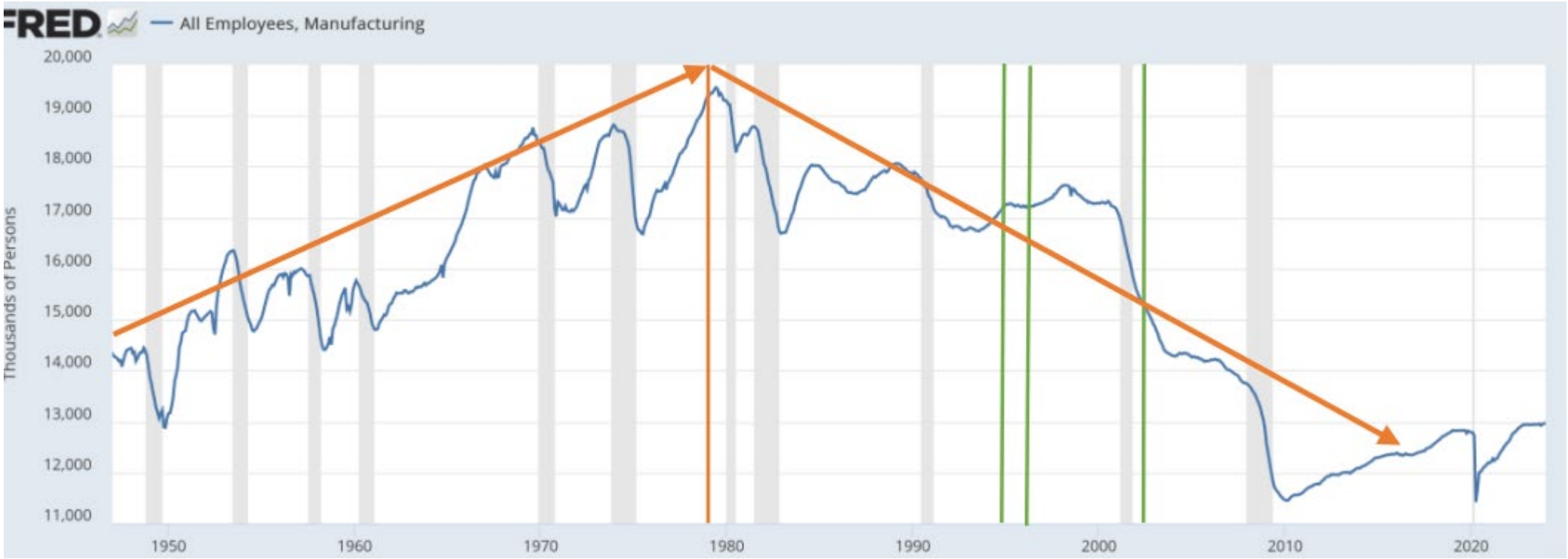
- Technological transition:
  - Deep learning enables extraction of value from big data (2006)
  - Age of mobile sending data flows soaring (iPhone released in 2007)
  - Nvidia's GPUs applied to massively parallel neural nets (2009), starting it on the path to trillion-dollar valuations
- Social media participation soars
  - Eric Schmidt pronounces a new age of mobile at the Barcelona World Mobile Conference in marc 2010
- Major policy frameworks innovations (trade secrets/data free flow and localization bans in FTAs and more)
- Return of industrial policy
  - Internet-of-things devices proliferating
  - Industry 4.0 proclaimed at Hannover Messe in 2011;
  - White House launches Advanced Manufacturing Initiative in 2011



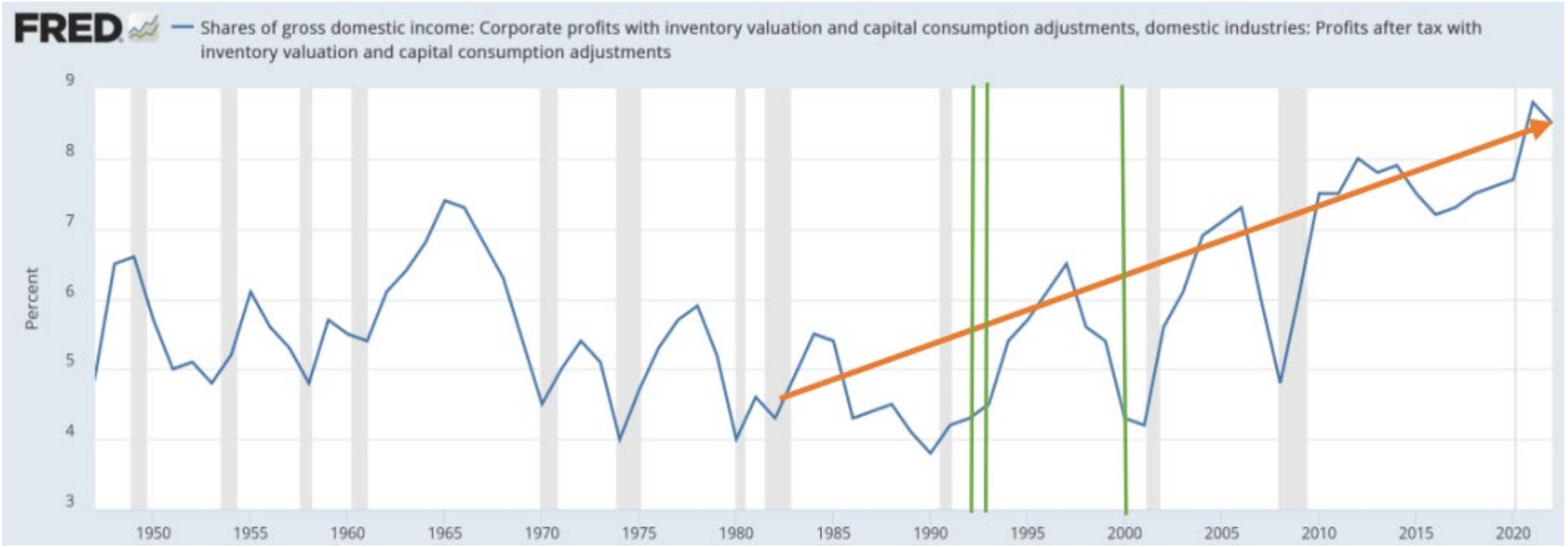
From Kaldor Facts to “Winner Takes Most”: Manufacturing Output, United States, 1960-2023



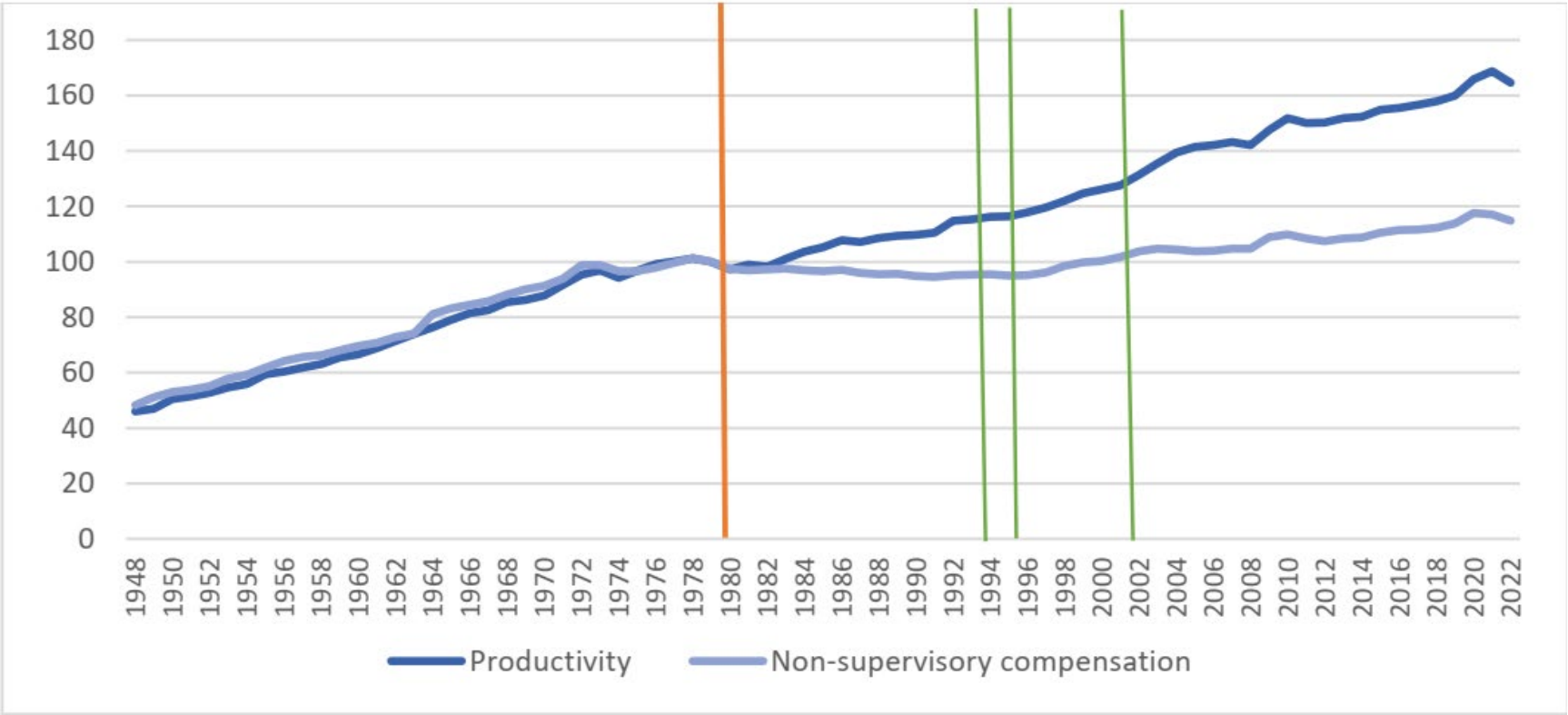
From Kaldor Facts to “Winner Takes Most”: Manufacturing Employment, United States, 1960-2023



From Kaldor Facts to “Winner Takes Most”: US Profit Share of GDP 1947-2022



From Kaldor Facts to “Winner Takes Most”: Productivity growth and hourly compensation growth, United States, 1948–2022



From Kaldor Facts to “Winner Takes Most”: What Q has to say

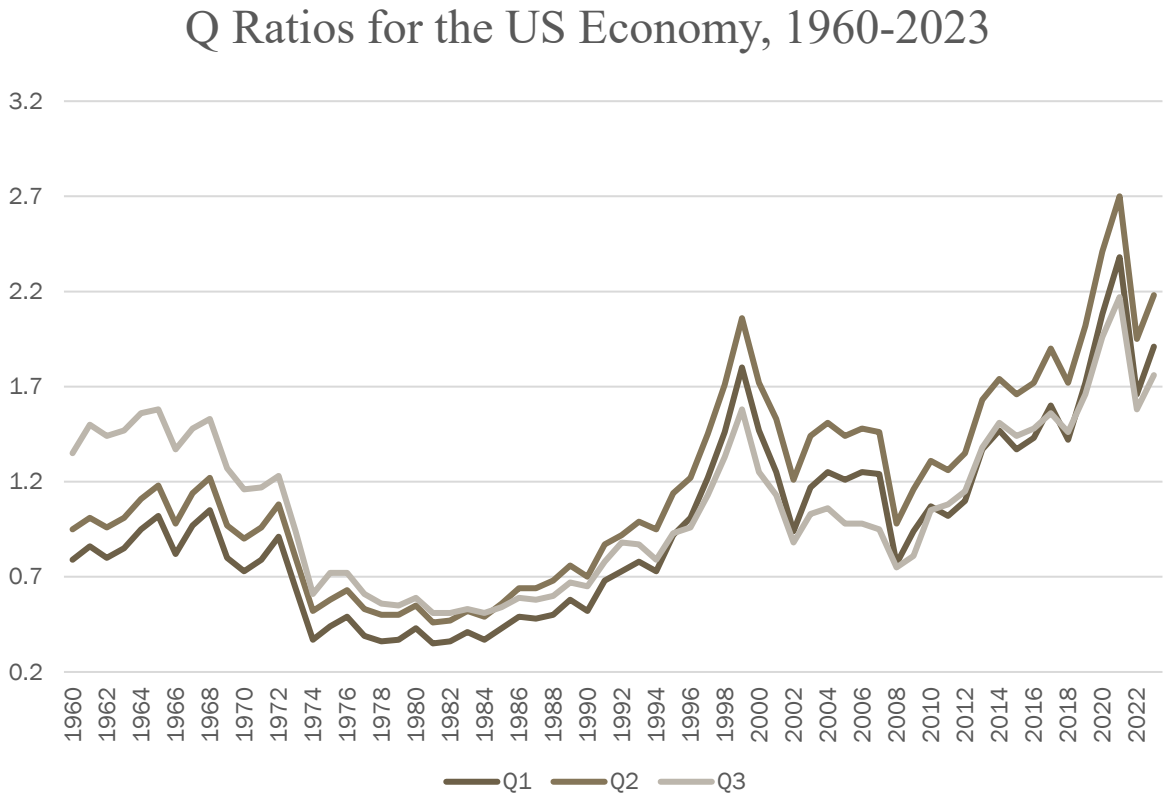
Mature industrial economy conditions prevailed in the postwar economy

- Kaldor Facts
- Tobin’s Q < 1 from mid-1970s to 1994

Transition to KBE seen in the rise of Q post-1980

- False early peak in the dot-com boom but Q ratios remained elevated during the 2000s expansion

Further steep rise in Q post-2010 in the “winner take most” economy of data



The advanced economies kept pace in the KBE but "lost" the DDE

The value of data is not captured in GDP stats –2025 System of National Accounts largely attributes the contribution of data to GDP on the basis of the cost of "datafication" – the "sum of costs" of capturing/processing/curating data. But data value is indirectly reflected in companies' market caps and national shares of global GDP – the advanced countries (ex US) were shut out.

Shares of Global GDP ex China	1980	2010	2025	Change 2010-2025 (%)	Change 2010-2025 (USD billions)
US	24.6%	24.8%	32.3%	7.47%	7,063
Other Advanced Countries	49.8%	47.1%	38.5%	**-8.69%**	**-8,209**
of which Canada	2.38%	2.67%	2.35%	**-0.31%**	**-294**
The Rest of the World (BRICs ex China and others)	25.6%	28.0%	29.3%	1.21%	1,146

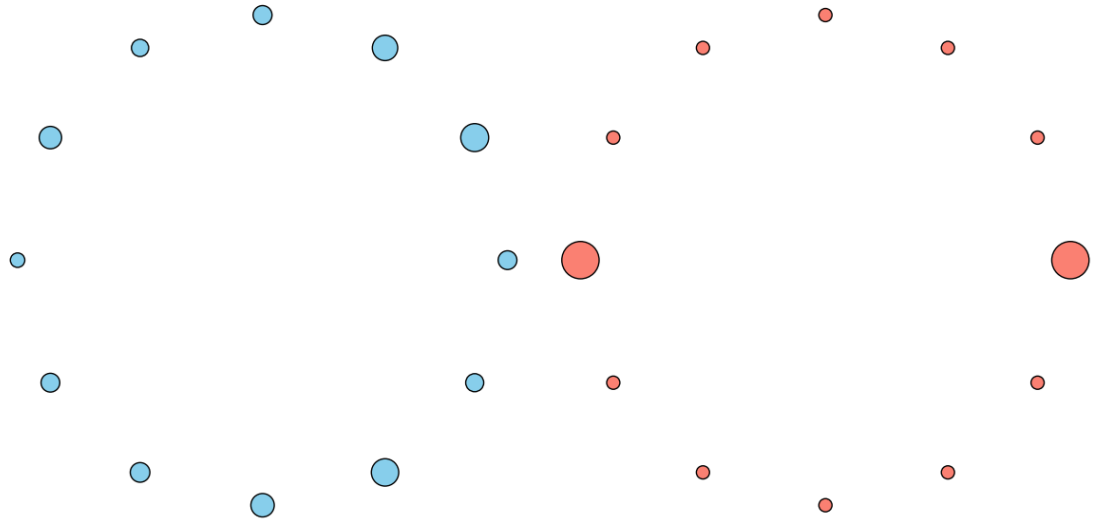
What theory has to say - Agglomeration Effects with Increasing Returns - Krugman's Racetrack Economy

Increasing returns + factor mobility + transportation costs drives an initially multi-nodal economy to converge into a bi-nodal economy

In the KBE era, no "death of distance" because intangibles were embodied in material goods that faced transportation costs

Factor movement ("brain drain") was limited because people have social roots – agglomeration effect is powerful but not total

In the DDE, absence of a minimum efficient scale and no transportation costs, agglomeration is virtually total – "Black Hole" effect – i.e., "winner takes most"



Where we're at

We have studied history through the lens of an "ages of capital" approach

- In recent history, we have gone through three major transitions driven by connected technological changes that introduced a new form of capital
  - Everything changed – the structure of the economy, the political economy, the location of wealth, the demographics of wealth, the political orientation – with consequential implications for the characters of nations
- We are now riding the shock waves of the DDE transition even as the next transition to a new age of data + generative/agentic AI ("machine knowledge capital") is building

Where are we heading: Economic Perspectives

America's role in the world has changed

US is channeling "populist trade economics"

- Intellectual roots: Pettis, Cass, Lighthizer, Miran, Vance, nationalist "originalism" invoking Hamilton's tariffs.
- Dollar as "Exorbitant Burden": Global demand for USD assets → capital inflows → forced deficits.
- Predator Industrial Policies: China, Germany suppress consumption, subsidize exports → U.S. overconsumes through imports.
- Resource Curse Analogy: Dollar exports crowd out manufacturing like a natural resource boom.
- Result: Chronic U.S. trade deficit and loss of economic sovereignty – U.S. industrial policy is "made" by predator countries

The manufacturing mis-diagnosis

US is twice as manufacturing-intensive as China in per capita terms

Manufacturing boom, if it materialized. results in massive over-capacity

Manufacturing jobs won't come back because of tariffs – factor content of US production is not determined abroad.

Table 1: Manufacturing Output Per Capita, Canada, United States and China, 2021

	Manufacturing Output (USD billions)	Population (millions)	MFG/Pop (USD)	Ratio to China
US	2,497	332	7,521	2.2
Canada	149	38	3,927	1.1
China	4,909	1,412	3,477	1.0

Source: World Bank, Manufacturing, value added (current US$); author's calculations.

The role of the dollar – a U.S. version of Dutch Disease? Or Tech-Driven Appreciations

Tariffs and Cultural Revolution Creating a Crisis

Tariffs

- Policy incoherence: reduce trade deficit/increase capital account surplus
- Trade cost increase over and above tariffs: certificates of origin for USCMCA, transshipment (“China value content”),”derivative products” (in case IEEPA tariffs overturned) onerous penalties under uncertain guidelines, zero de minimis
- Lerner Symmetry guarantees US export collapse
- Peak uncertainty undermining investment (real options theory)

Cultural Revolution

- Auslaender ‘raus policy creating labour market gaps;
- Cultural revolution: science exit
- America closing itself off - Las Vegas as the canary in the coal mine

Where are we Heading: Geopolitical Perspectives

Hegemonic system cannot survive US withdrawal

- Fed under fire (Lisa Cook next and then Trump has a majority)
- From global insurer to extractor of profit – invites self-insurance
- Napkin Trade Deals are a non-starter
- Dollar's role in question
- Technological developments create new possibilities – central bank digital currencies
- China is building up its alternative structures – CIPS vs. SWIFT – not there yet but where will be five years from now?
- China's technological rise is inexorable - China is dominating the electrical age
- What is the "landing zone" for US-China relations?

Recall the transition from Bretton Woods to Jamaica Accords

- From gold-backed dollar standard to "anything but peg to gold"

Where are we heading: technological perspectives

Short term

- Generative/Agentic AI may be in the post-peak phase of the buzz cycle following ChatGPT 5 disappointment
  - 50% of venture capital is going to AI startups
  - AI funding in the first half of 2025 surpassed 2024 full-year total.
  - Startups are raising at sky-high valuations, with multiples crossing 100x.
  - Dot-com reprise?

Structural Change

- Hundreds of thousands of firms developing apps in the West and China
- introduction of scalable factor of production for services (“machine knowledge capital”) relieves the “Baumol Effect”
- Scalable competition for human capital will be transformative for economic structures built on human capital – as profound as changes in economic structure generated by the introduction of scalability into manufacturing
- Scalable competition for manual labour from newly flexible robots undermines the “precariat” – robots replace deportees – train one robot, you train a million

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Thank You!