Economic Doctrine Is in Flux: What are the Implications for Canada's Regional and Multilateral Trade Engagement?

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The Changing Context for Trade Policy

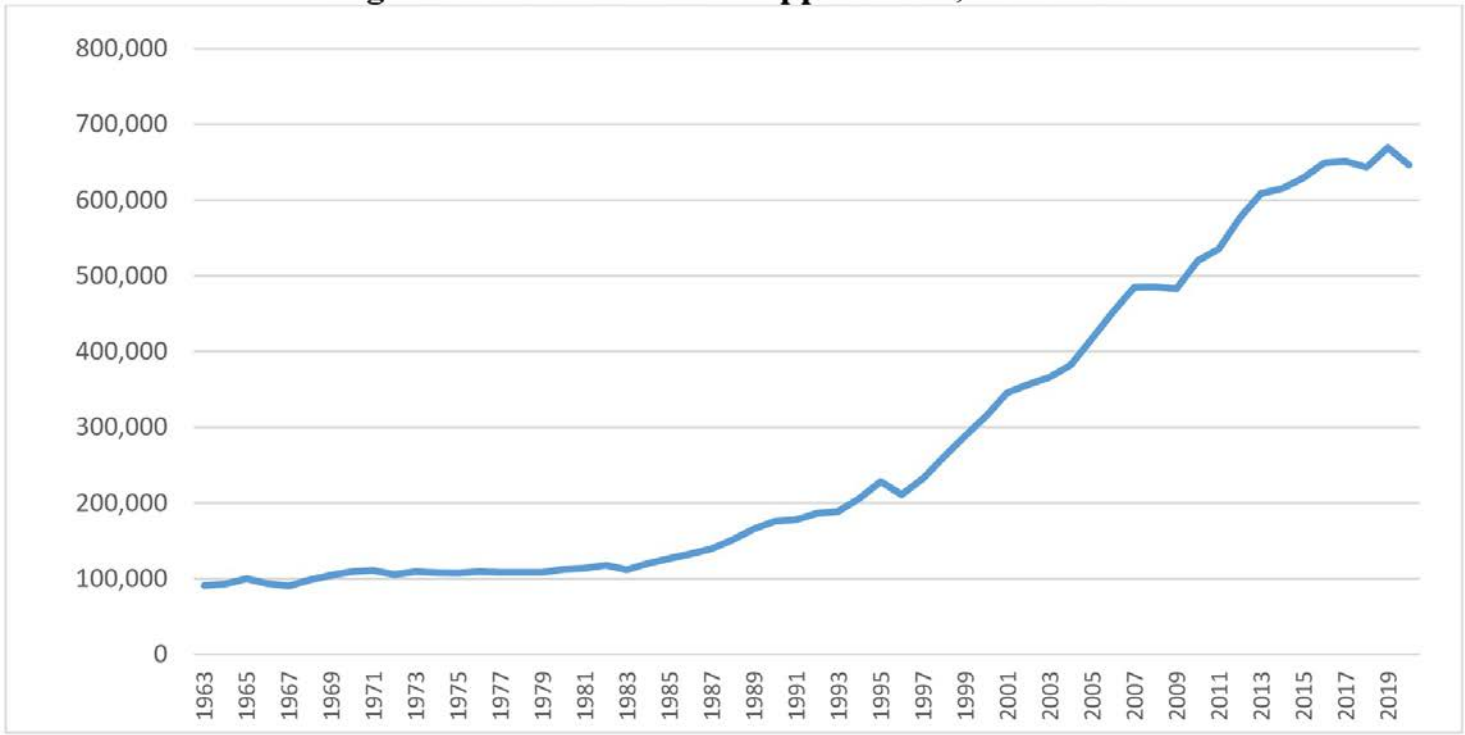
- Underpinnings of the established trade and econ policy framework (WTO/PTAs/"OECD Consensus") are being changed by confluence of secular trends and technological developments
  - Digital transformation and emergence of a data-driven economy (rents / socio-political impacts)
  - New general-purpose technologies based on big data, machine learning and artificial intelligence.
  - Accelerated innovation / rising resource costs for frontier innovation / cloud business models for SMEs
  - The rise of China as a geopolitical competitor to the United States / new multipolar world / alt model
  - Climate change and biosphere impacts which create new societal challenges / role of the state
  - The pandemic shock to supply chains and new economic security concerns / risk of export restrictions
  - The ongoing adaptation of business models to modern tech environment – creative destruction
- Governments, businesses and households are adapting / optimizing in multiple dimensions
- For the trade policy community, the world is moving under our feet - what are the implications for Canada's relations with the US and for the wider multilateral system?

The Technological Conditions that Defined the WTO Era

- The mature industrial era (pre-1980) featured constant returns to scale and stability of the shares of national income flowing to capital and labour (the so-called “Kaldor facts”).
  - These conditions imply competitive market conditions and by extension only a limited presence of economic rents.
  - Under competitive market conditions, markets allocate production and market share efficiently and indeed fairly.
  - Under the principle of comparative advantage, all nations find their niche and share in the benefits through trade.
  - In the absence of rents, it is convenient for nations to allow commercial disputes to be settled by legal principles.
- Ca. 1980 things started to change. Markers include:
  - New trade theory (increasing returns, product differentiation, imperfect competition), implying rents – leading to “strategic trade policy”
  - MNE literature describes shift from vertically-integrated national systems of production to GVCs (driven by capital account liberalization, multi-modal logistics, wide-body Boeing 747) - supply-chain management enters the lexicon
  - Bayh-Dole Act / introduction of the IBM personal computer in 1981 which enabled the widespread adoption across industries of computer-aided design and manufacturing (CAD/CAM) - industrialization of R&D / upturn in patenting
  - Rise in the share of intangibles in corporate assets / decline in labour share of national income / start of the concentration of income/wealth in the 1% (Pikkety 2014 / Krugman, 2014).

Rise in patenting ca. 1980 – start of the KBE

Figure 1: US Total Patent Applications, 1963-2020

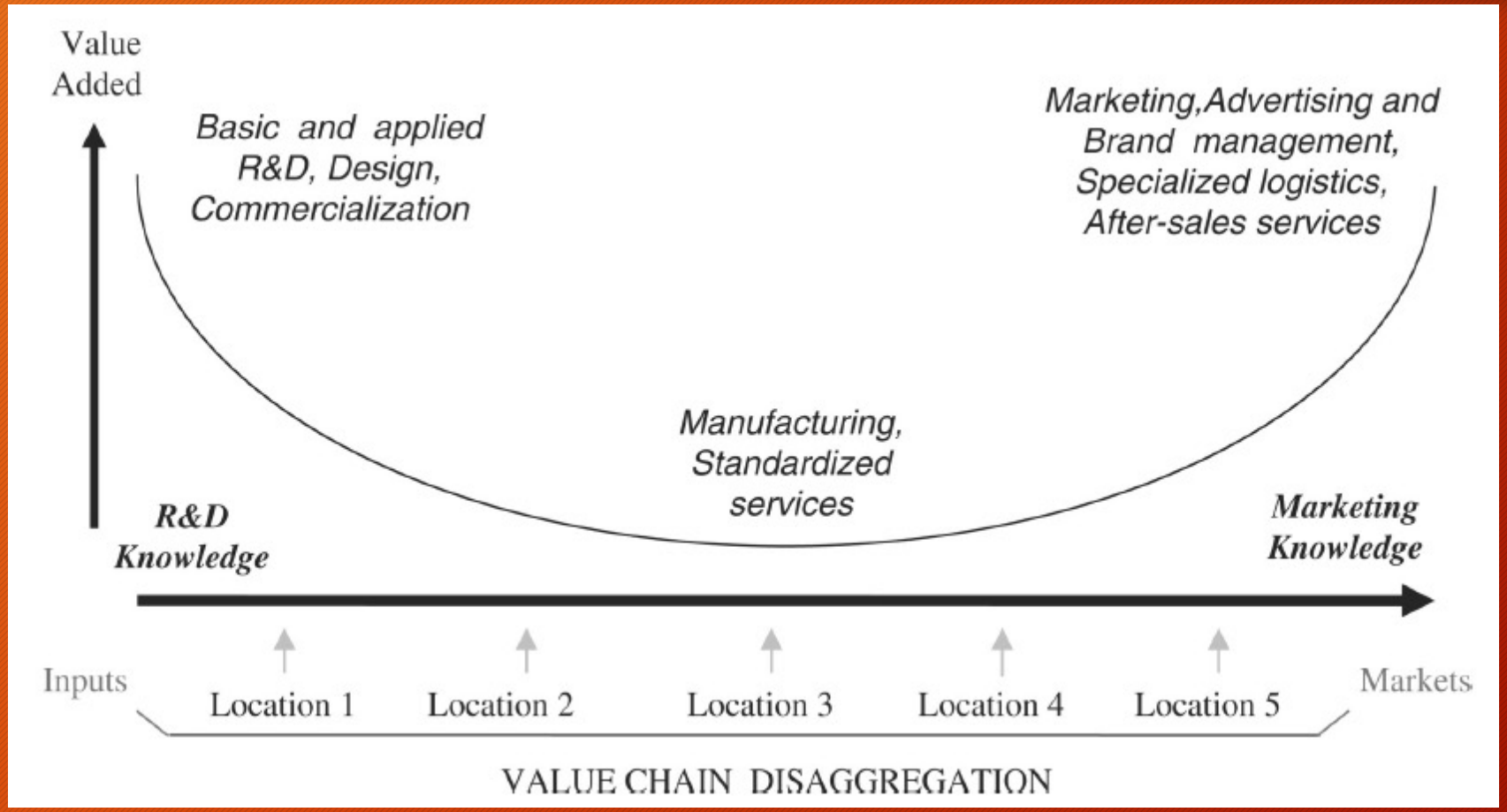


Source: US Patent and Trademark Office (USPTO). https://www.uspto.gov/web/offices/ac/ido/oeip/taf/us_stat.htm

Trade Policy Consequences

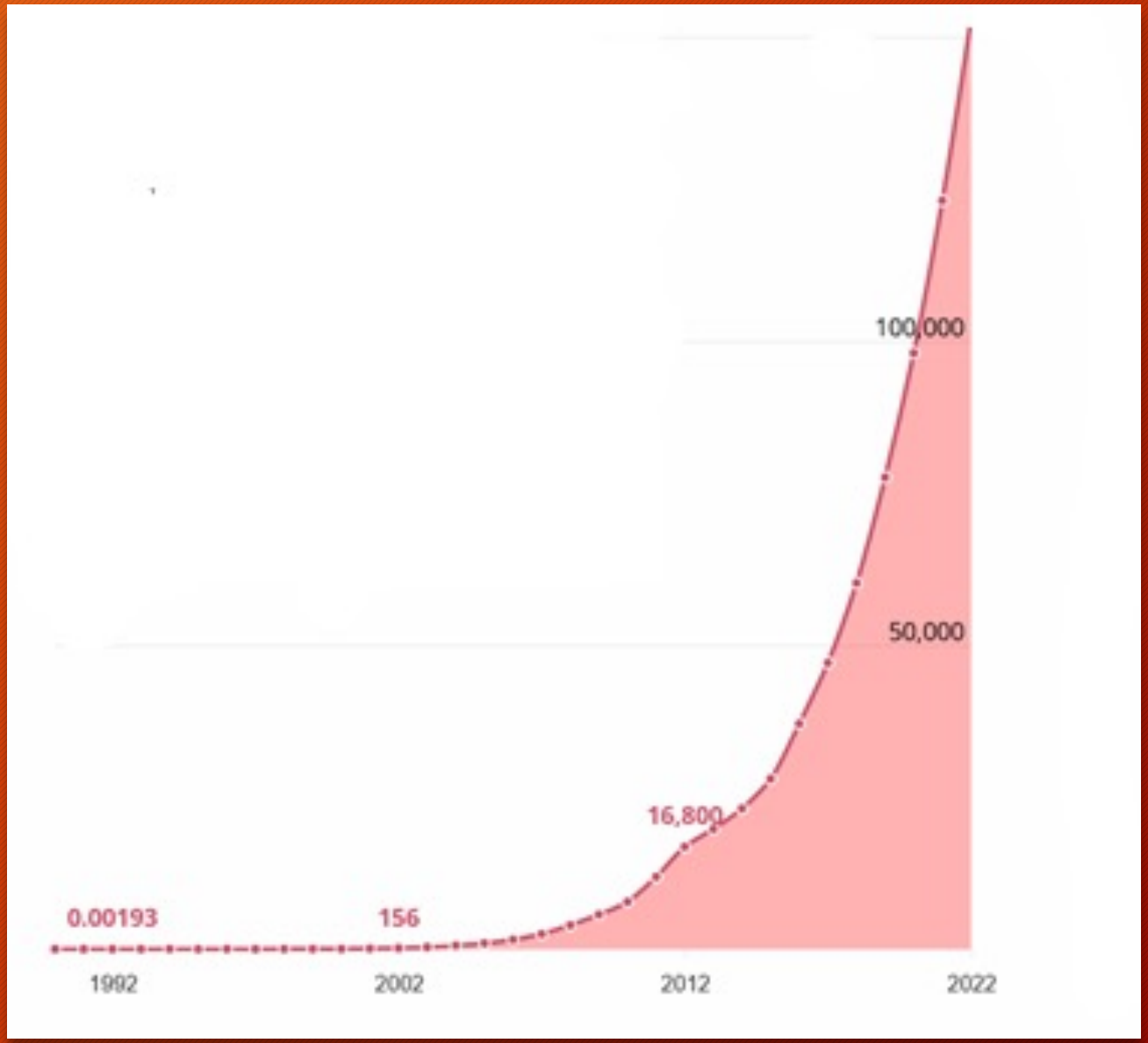
- Shift of comparative advantage away from manufacturing leads to petitions for protection - rise of trade remedies - AD/CVD
  - A major concern for Canada that drove the Canada-US FTA
- Strategic trade policy competition for increasing returns markets (VERs / industrial policy for civilian aircraft / leverage of market power (Super 301) to capture international IP rents / US –Japan Structural Impediments Initiative
- Shift of comparative advantage to IP in US leads to IP-based trade policy:
  - Inclusion of IP in original Canada-US FTA
  - Inclusion of IP in WTO Agreement (TRIPs)
- WTO Agreement in 1995 comes in the middle of the KBE era – designed for a world of largely competitive industrial production, globalizing through GVCs, and expanding rents flowing to IP – but failing to contain strategic competition

The economics of the WTO World Order



The Data-Driven Economy

- Arrival ca. 2010, post Great Financial Crisis
  - Based on new tech in 2000s: deep learning (2006), iPhone/mobile era (2007), GPUs for neural nets (2009)
  - Internet traffic and data accumulation takes off
  - Growth in Internet Traffic, 1992-2022 (projected), Gigabytes per second



Data-driven economy is a rent-driven economy

- Steep economies of scale, which emerge because of the investment costs to capture, classify and curate data (see, e.g., Google's massive server farms) and to successfully monetize it.
- Powerful economies of scope due to the increase in the value of data the more it can be cross-referenced through relational databases.
- Network externalities in many use cases, including two-sided markets that are prone to "tipping" and the emergence of superstar firms.
- Irreducible information asymmetry, which can be thought of as an industrial strength "sixth sense" with all the evolutionary advantages that this implies for those who possess it – this is the "original sin" of the DDE
- All these factors combine to create economic rents – profit share of GDP rises

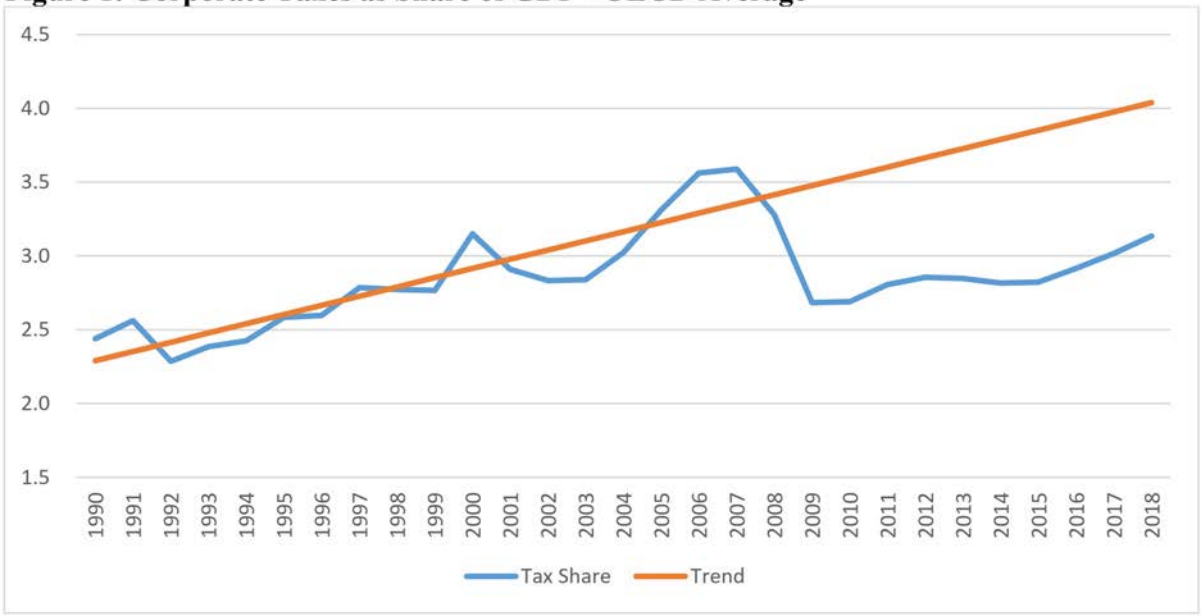
International Trade: Data is Different

- Data is part of the “electronic transmissions”: some data is part of the digital product; other data associated with products (payments, etc.)
  - This used to be “data exhaust” – now it is very valuable constituting a large share of intangible assets
  - In 1976, 16% of the value of the S&P500 was accounted for by intangible assets. Currently, intangible assets comprise about 90% of the S&P500 total value of some $38.23 trillion (August 2021), or over $34 trillion – much of this is data
- This value of data is not found in the national accounts or trade accounts
- It is not part of the discussion of the WTO moratorium on the application of tariffs to digital products; and
- It is not part of the base of the calculation of digital services taxes to be apportioned to end markets under the OECD/G20 Inclusive Framework.
- Data is different and this difference needs to recognized in the trade discussion.

Sharing the rents - trade policy becomes tax policy

- Data is not traded but captured – rent shared through taxation
- Perhaps USD 1 trillion in foregone taxes due to tax haven effects in the OECD – about half of that in the DDE era
- Situation for developing countries even worse due to loss of tariff revenue
- OECD/G20 Inclusive Framework/BEPS: Amount of new tax ($150 billion) is small relative to tax foregone
- The amount of tax rights transferred ($125 billion) seems very small compared to value of data extracted = $800 bn taxed at 20% capital gains = $160 billion in shifted revenues
- Very little of the $125 billion will go the developing countries – hence issue of a digital services tax/moratorium on electronic transmissions may not be settled

Figure 1: Corporate Taxes as Share of GDP - OECD Average

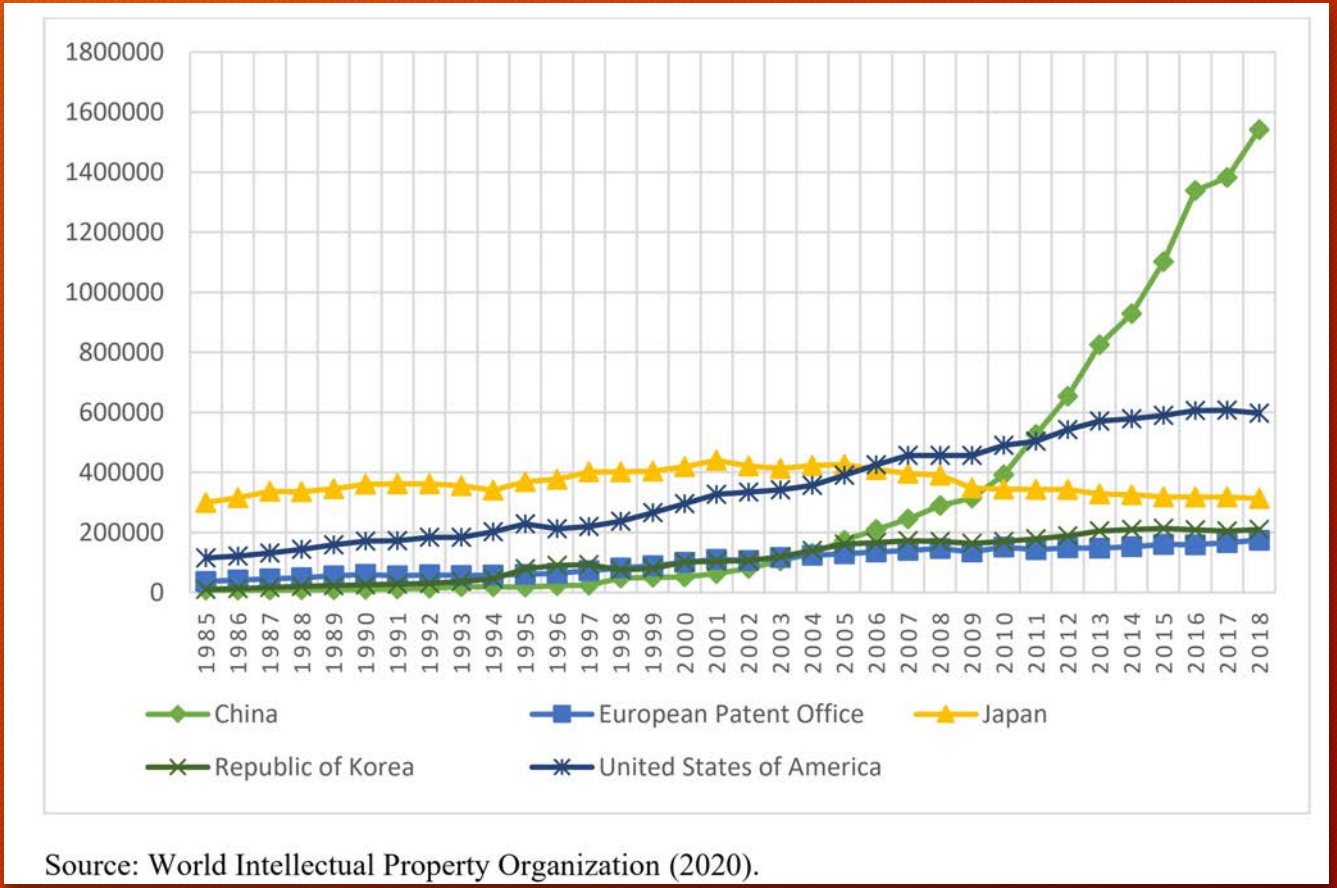


Strategic behaviour rather than rules-based

- The DDE is an economy of superstar firms – often with resources that exceed most countries'
- Competition issues – competition becomes the new market access given implications for market concentration / risk of anti-competitive behaviour
- Innovation issues
  - Industrialization of learning through machine learning accelerates innovation
  - product life cycles shrink
  - first issue of a patent to AI in 2021 is an important marker
- IP issues now centred on trade secrets (indefinite duration / non-transparent):
  - TSMC classifies 146,000 trade secrets
- China's entry into the KBE/DDE thus triggers the major conflict

China enters the KBE and DDE simultaneously

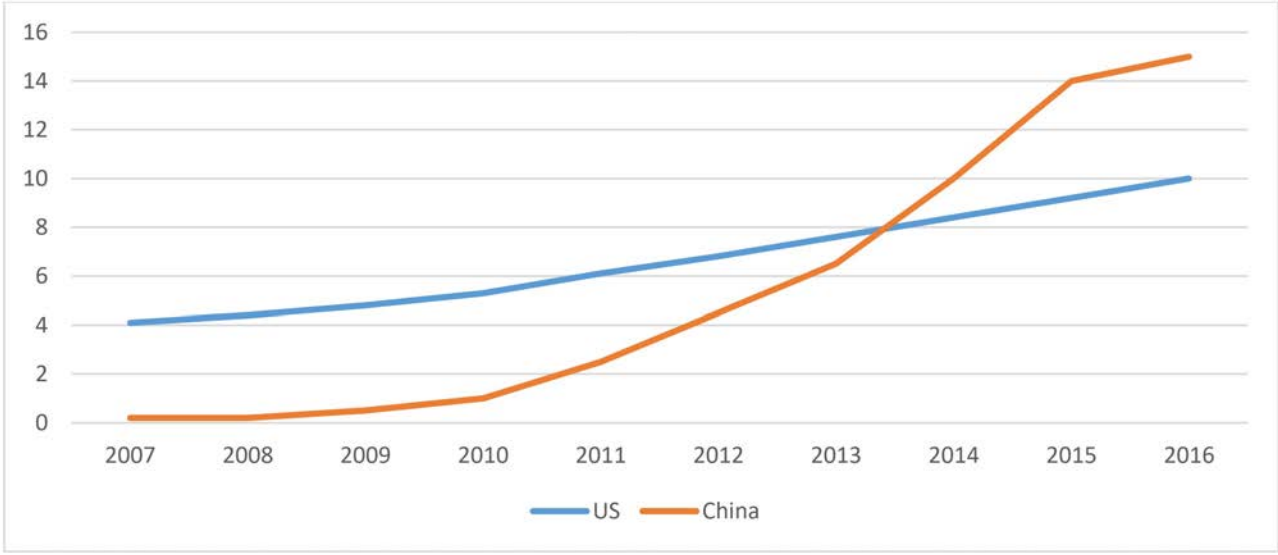
- Total Patent Applications of the Top-5 Offices, 1980-2016
- China's patenting activity really takes off around 2010
- Supported by steady rise in R&D as share of GDP
- Substantially expanded IP infrastructure (thousands of patent examiners, specialized IP courts)
- Much strengthened IP protection
- Sophisticated strategies (SEPs)



Source: World Intellectual Property Organization (2020).

China enters the KBE and DDE simultaneously

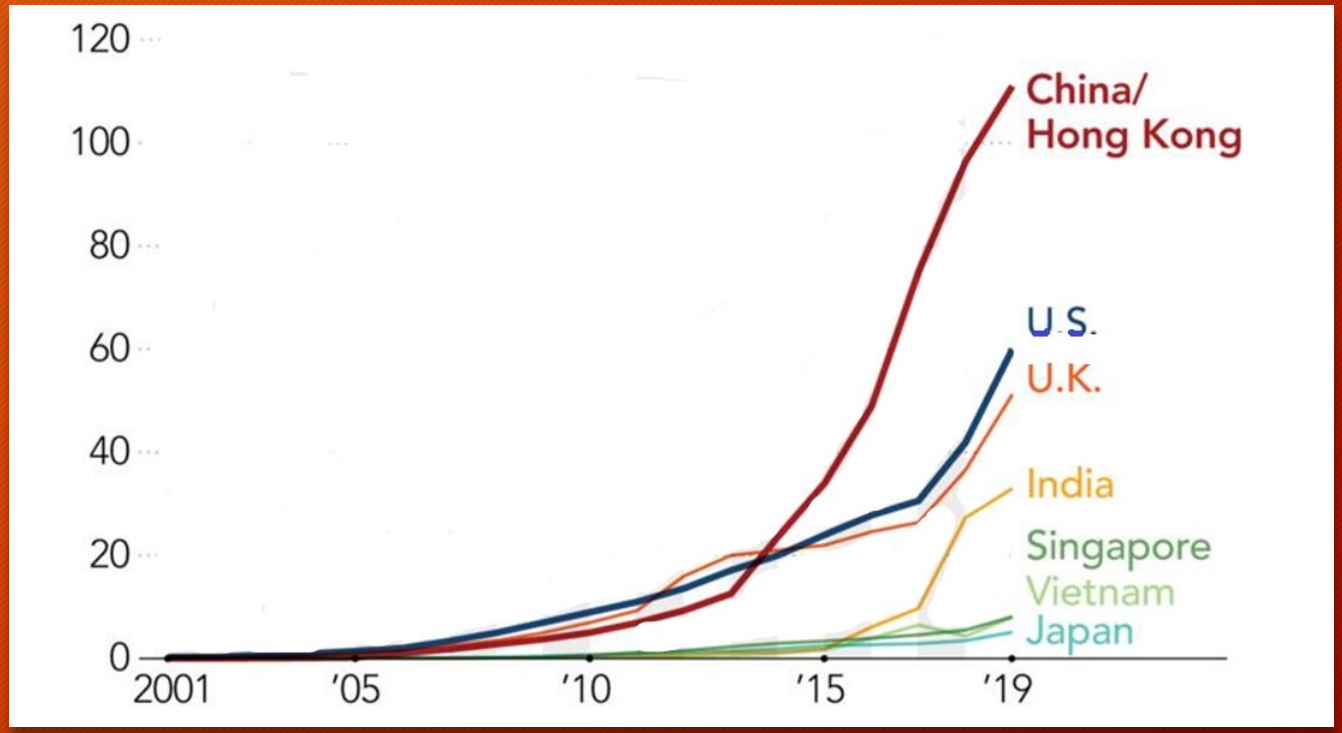
- E-commerce Revenues as Share of Total Retail Sales, 2007-2016
- Apple released the iPhone 3 in China in January 2008 - China's mobile phone consumers transitioned en masse to smart phones
- The rest is history…



Source: Reproduced from Zhang and Chen (2019), based on Alibaba data.

China enters the KBE and DDE simultaneously

- Cross-border Data Flows by Economy, 2001-2019 (millions of megabits per second)
- Adapted from Tsunashima (2020), based on data from the International Telecommunications Union
- China's interests have evolved – interest in DEPA and CPTPP should not come as a surprise



Strategic competition in capturing data – submarine cables

Source: 2Africa cable chart from https://www.submarinenetworks.com/en/systems/asia-europe-africa/2africa; China's Digital Silk Road from Haq (2021).

Discussion

- The major societal challenges are in public goods space (climate change, pandemic, digital transformation)
  - The economics of public goods hasn't changed – no new "doctrine"
  - But the optimal share of public goods in production has increased
  - The acceleration of innovation shifts more investment into a space that is suitable for the public sector based on risk-return metrics – not a horizontal/vertical or soft/hard distinction
- The post-pandemic DDE will be shaped by sustained competition to capture rents
  - China's path to the tech frontier is open (think Baidou/GPS, space station, Mars lander) – exclusion won't work – FDI is flooding into China
- The next big thing is machine knowledge capital – unlike human capital this scales and has major implications for mature services-oriented economies (see Baumol effect)
- Bottom line: changing economic conditions mean that the rules-based system developed for the mature industrial economy and emerging KBE is not set up to govern the DDE
- Whither Canada? In an innovation-intensive world of superstar firms and geostrategic competition, the focus should be on innovation and firms (count unicorns), R&D/VC support