Measuring Intangible Assets (IP & Data) for the Knowledge-based and Data-driven Economy

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Big Data, Artificial Intelligence and Machine-learning Challenges

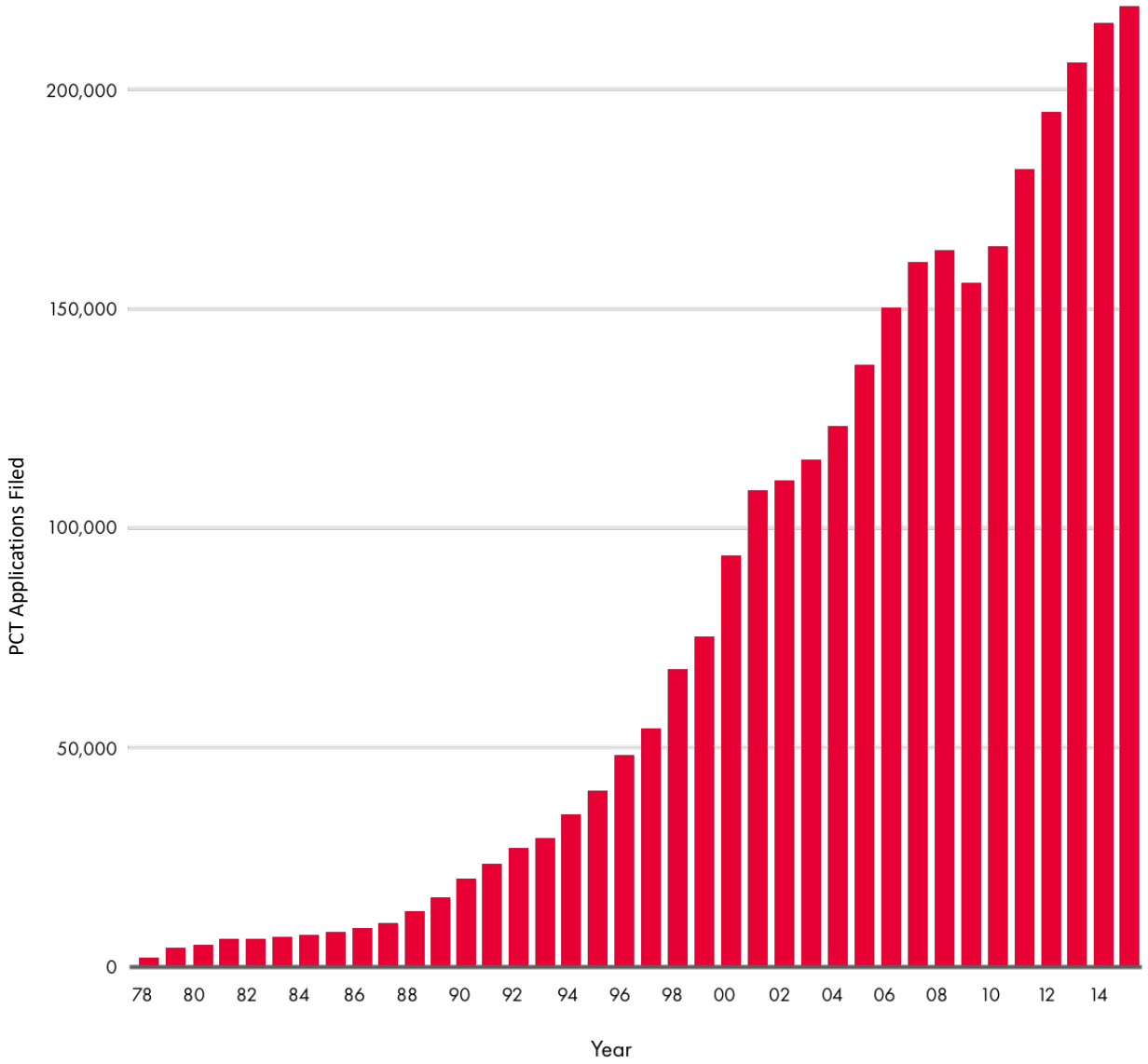
1. The implications of “winner take all” economics and emergence of a new factor of production – machine knowledge capital – for market frameworks;

2. The implications of increased concentration of wealth for distributional equity and the integrity of democratic process;

3. New risks to national security; and

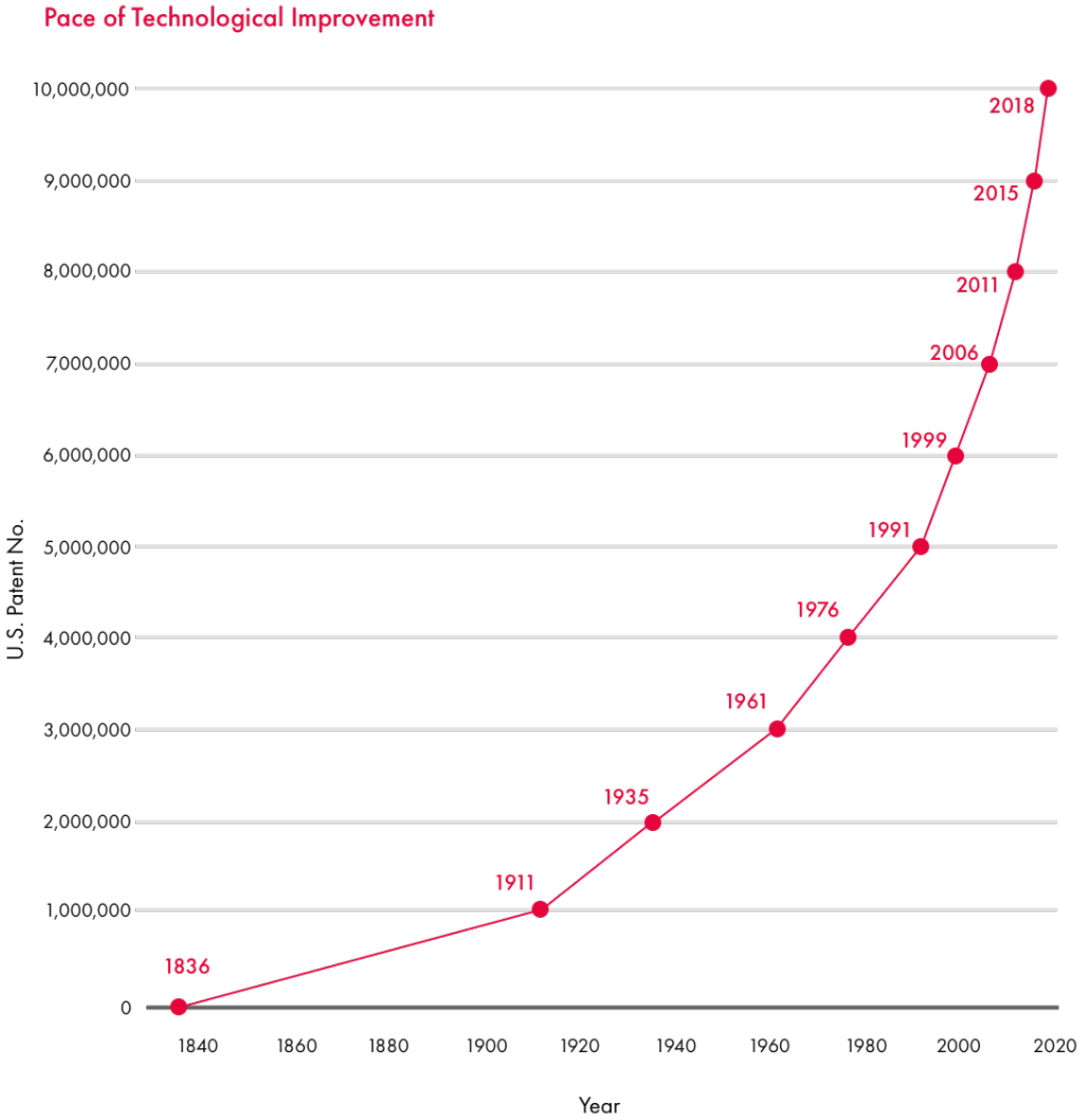
4. The unleashing of new strategic rivalries in geopolitics.

Patent Cooperation Treaty – Patent Filings



Source: http://www.wipo.int/pct/en/3million/index.html

USPTO – Patent Filings



"Patents are the most concrete and comparable measure of innovative output over countries and time."
The IT Revolution and the Globalization of R&D (http://www.nber.org/papers/w24707)

Economy of Traditional, Tangible Goods		Economy of Ideas, Intangible Goods
Ownership of physical property is a positive right	→	Owning (“generating”) intellectual property is a negative right
Production and sale of physical property to generate revenue	→	Amassing IP and restricting use to collect “rents”
The objective in industrial/services economy is to move inventory	→	The objective in the innovation economy is to acquire IP
Traditional goods can only be owned by one person at one time (“rivalrous”)	→	IP is globally and simultaneously accessible by an unlimited number of people (“non-rivalrous”)
Traditional infrastructure needed to move goods across borders to individual customers	→	IP is impossible to determine where it originates and how it moves across borders
Supply chains feature multiple vendors competing with each other based on cost competitiveness	→	Value chains are based on winner-take-all economics
Competition rules prevent traditional production monopolies	→	IP is a government created temporary monopoly
Trade liberalization increases competition and reduces prices	→	Stronger IP protections decrease competition and increase prices
Traditional trade agreements reduce the value of vested interests	→	“Asset Enhancement Agreements” raise the value of vested IP-based interests

Data Governance: Cross-cutting Issues

Data Property Rights

- Who owns the data and what do these data rights entail?
- Who is allowed to collect what data?
- What are the rules for data aggregation?
- What are the rules for data transfer?

Global Governance

- What should the international rules be governing trade of data?
- How are diverse sovereign choices supported?
- How is the flexibility preserved to allow on-going innovation and proper utilization?
- Is it too soon to encode data provisions in international trade agreements?
- How to establish and enforce new global cyber norms?

Social Good

- What are the mental health issues, especially for youth, from surveillance capitalism?
- How do we protect citizens, but especially vulnerable groups, from this?
- How do we use surveillance for legitimate public safety purposes but not abused to undermine democratic rights & freedoms?
- How do we enhance regulation and monitoring of political messaging and advertising?

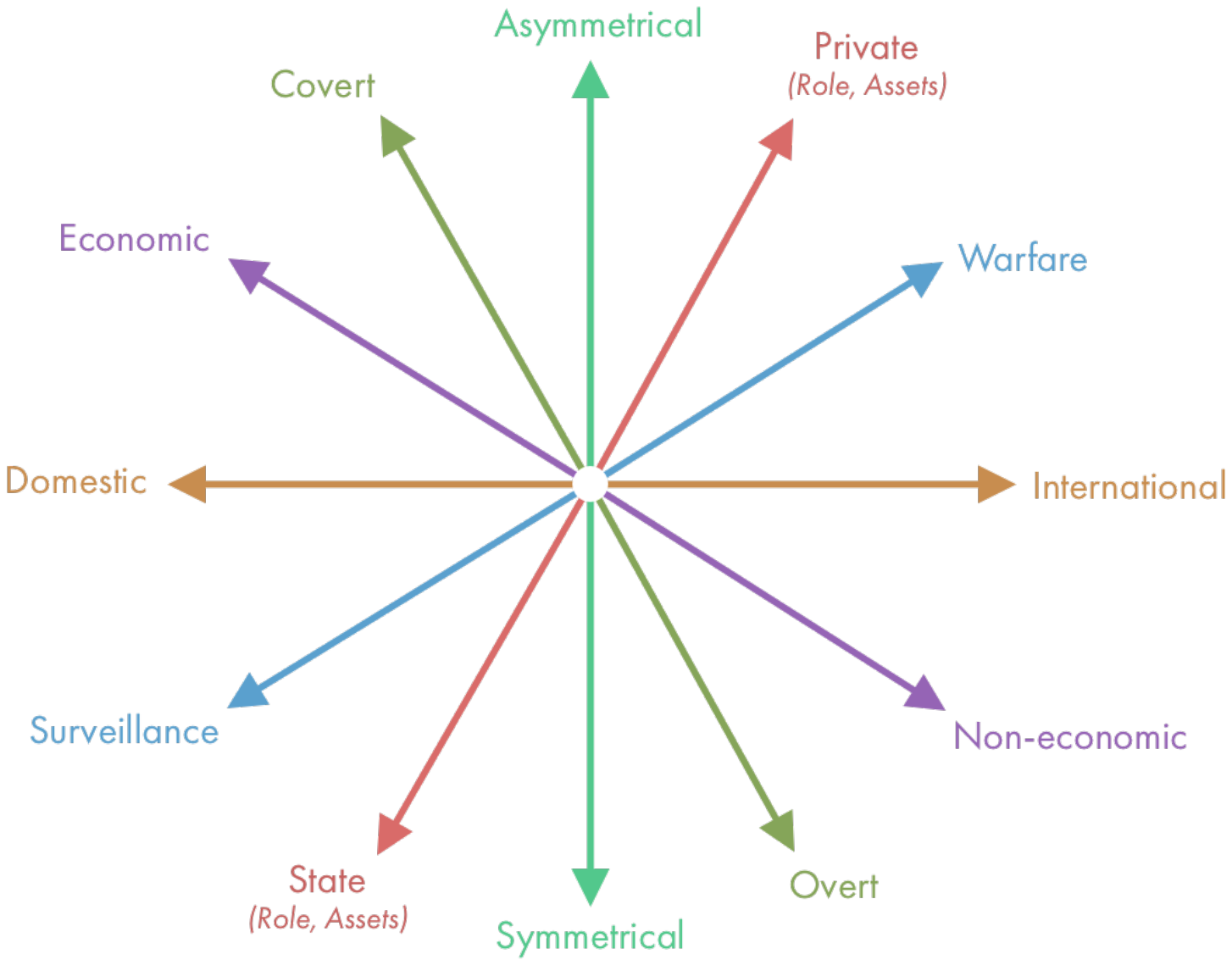
Cyber Security

- Who owns the data and what do these data rights entail?
- Who is allowed to collect what data?
- What are the rules for data aggregation?
- What are the rules for data transfer?

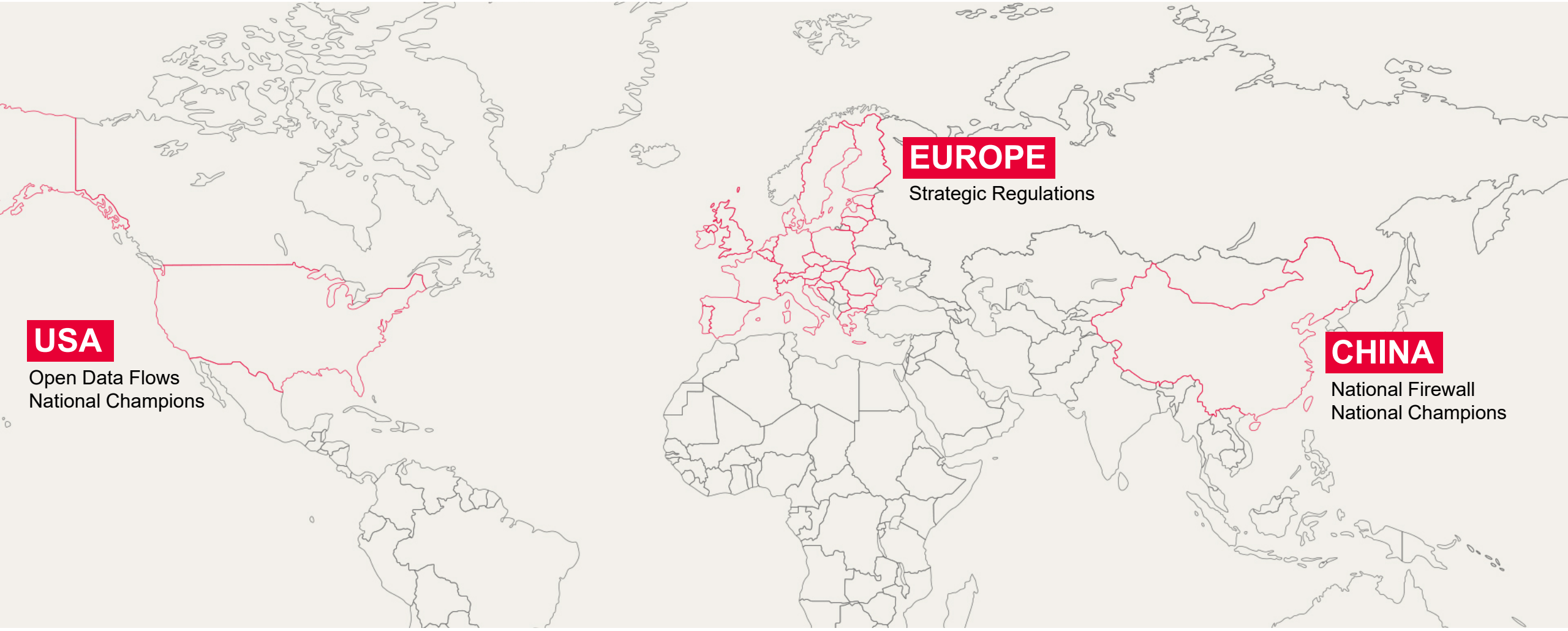
Commercial Potential

- How can data strategies better support innovation outcomes?
- What are the individual firm and collective capacities needed to capitalize on this?
- How to select industries and sectors to support?

Cyber Dimensions of Complexity



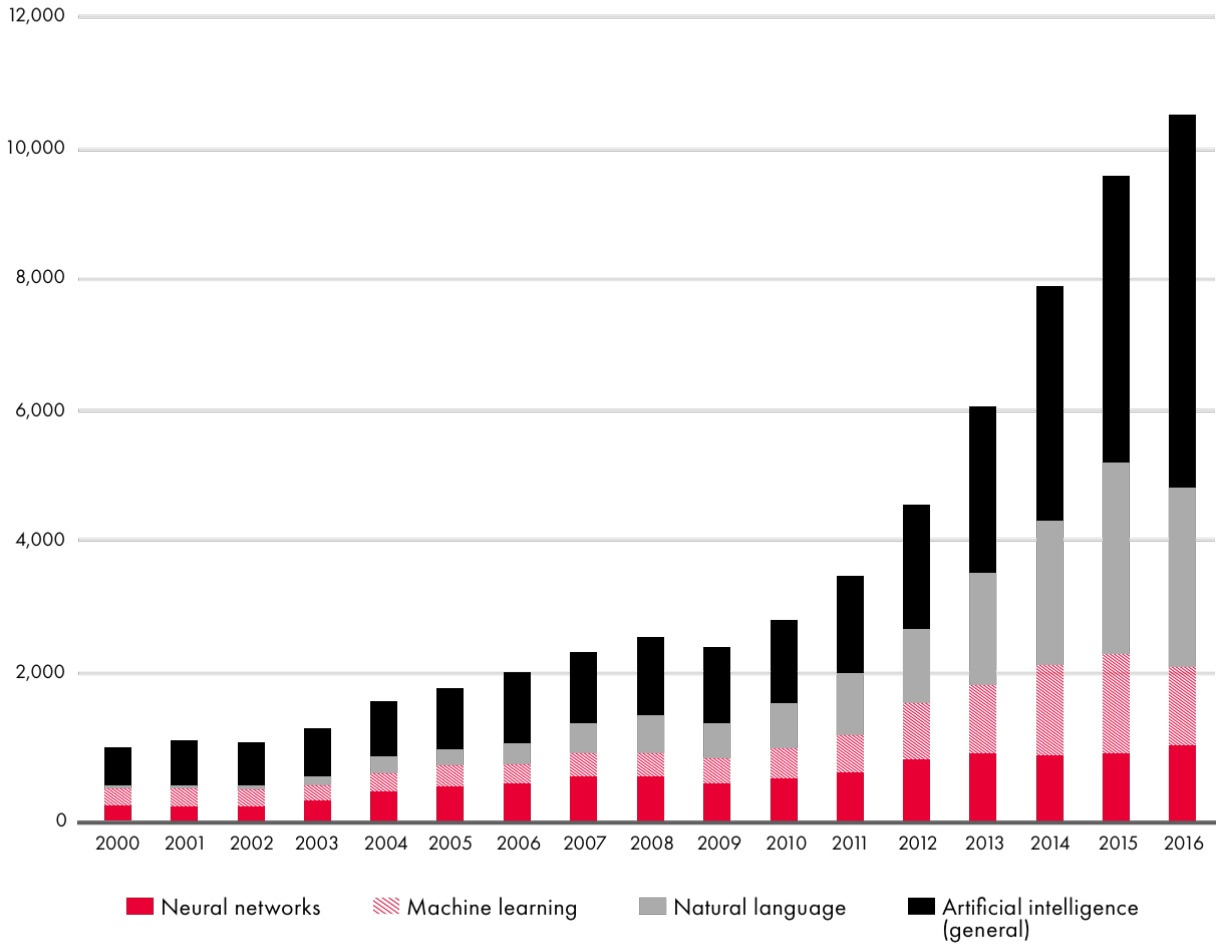
Geopolitics of Data Governance



"The rapid development of artificial intelligence [AI] will profoundly change human society and life and change the world...AI brings new opportunities for social construction…AI is a disruptive technology with widespread influence that may cause: transformation of employment structures; impact on legal and social theories; violations of personal privacy; challenges in international relations and norms; and other problems. It will have far-reaching effects on the management of government, economic security, and social stability, as well as global governance." **China's New Generation Artificial Intelligence Plan released in 2017 (as translated)**

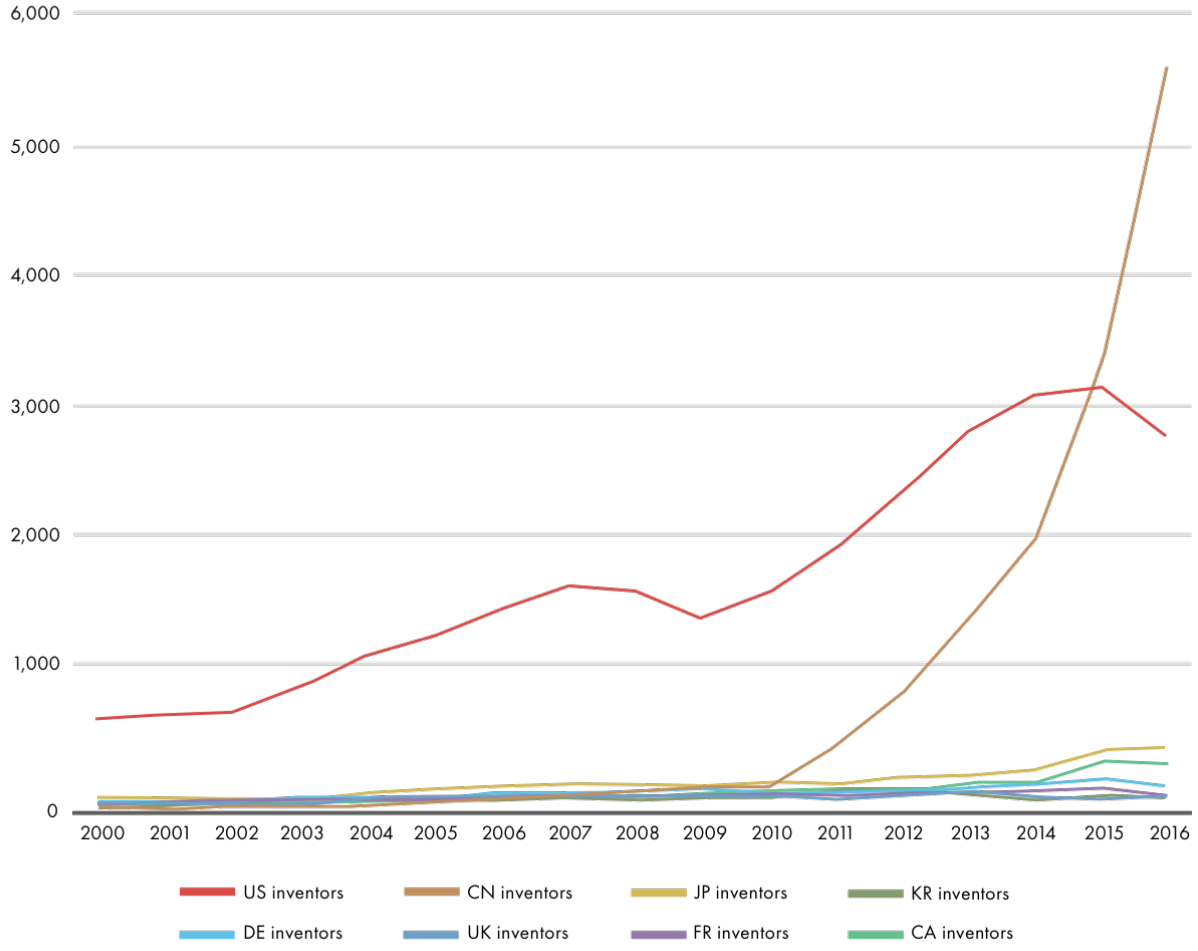
Strategic Technologies and AI Nationalism

Patent filings by taxonomy

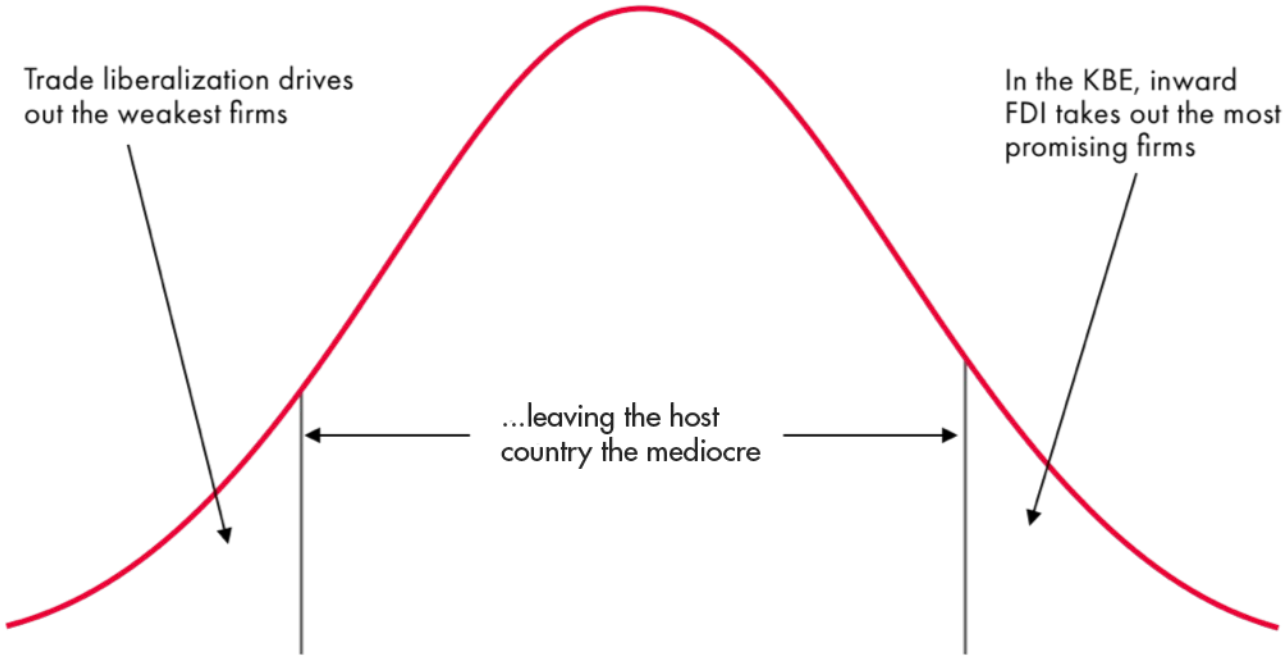


Source: Northworks IP

AI-related patent volume by inventor nationality



Trade Liberalization vs. Inward FDI Impact on the Population of Firms



"In the knowledge-based and data-driven economy, FDI of the M&A type tends to target the most innovative, fastest growing firms with the potential to become 'gazelles'. Such FDI expatriates the key assets, including IP and often key personnel, and thus reduces the host country's stock of rent-generating knowledge capital and its innovative potential. Where trade liberalization takes out the least productive firms, FDI into the innovation economy takes out the most promising, leaving the host country with the 'mediocre middle'."

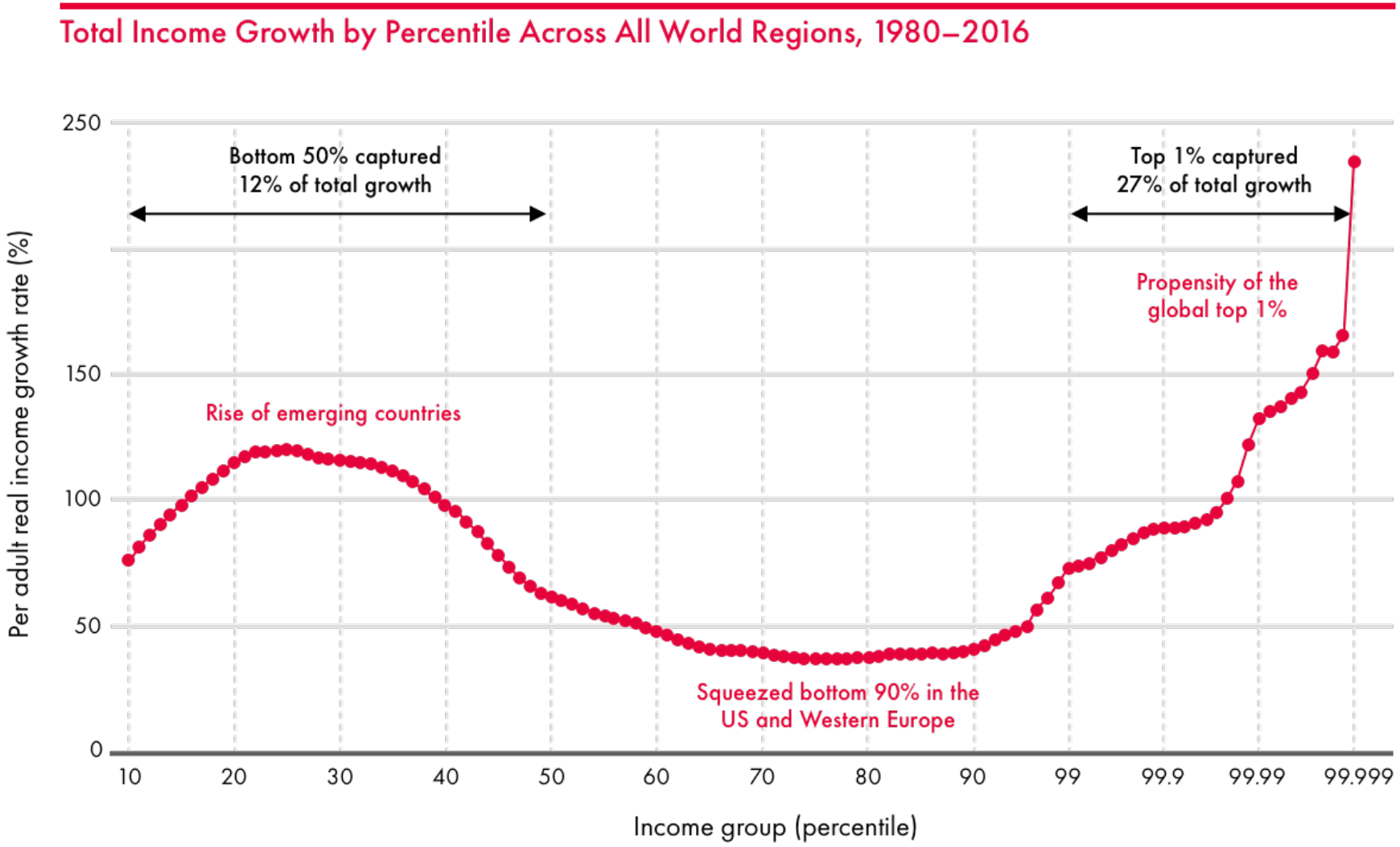
Dan Ciuriak

A New Name for Modern Trade Deals: Asset Value Protection Agreements by Dan Ciuriak – (2017) CIGI "New Thinking On Innovation"

Future of Work Implications for Social Policy

- Greater provision of publicly provided services (education, transport)
- More lifelong learning with corresponding shift in its financing
- Reform savings and pension systems
- Underpinned by a universal basic income?
- All financed by shift in taxation on economic rents

Elephant Curve of Global Inequality

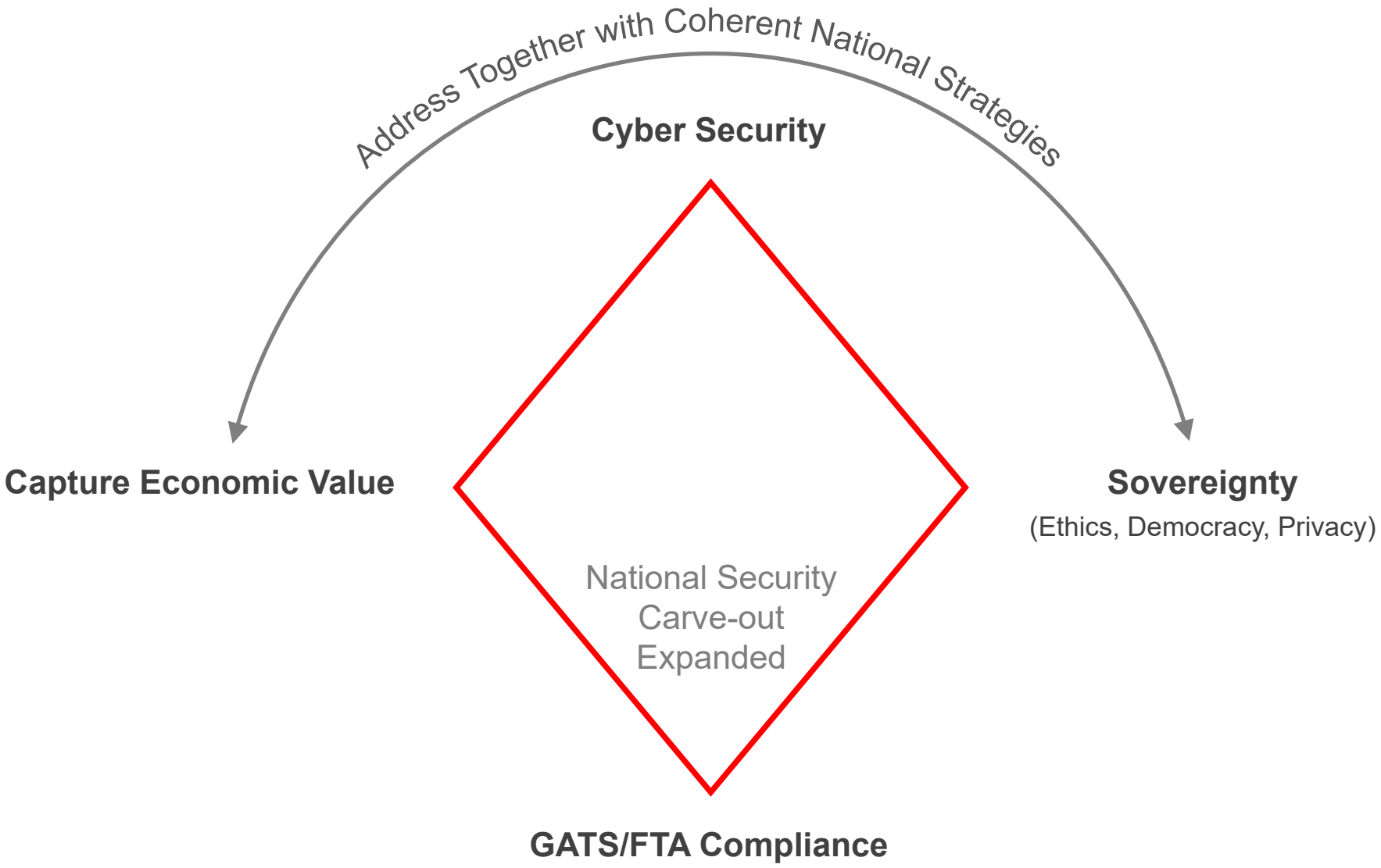


The vertical axis shows the total real income growth between 1980 and 2016 for each percentile of the global distribution of income per adult. The bottom 10 percentiles are excluded as their income levels are close to zero. The top 1% is divided into smaller groups (up to the top .001%) so as to better account for its share in total global growth captured.

Source: WID.world

Source: Alvaredo et al. 2017. “The elephant curve of global inequality and growth”. WID.world Working Papers 2017/20.

Policy Framework for the Knowledge-based, Data-driven Era



Thank You.

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