

Impact of the 4th industrial revolution on the world economic order – Prospects for EU

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The Future Has Arrived — It's
Just Not Evenly Distributed Yet

William Ford Gibson - American-
Canadian speculative fiction writer

World order and world economic order

- **World order** is an international-relations term describing the distribution of power among world powers, based on certain rules and institutions which may be explicit or implicit.
- World order has an historical nature, changing from one period to another.
- In modern times world order is mostly related to state power, manifested primarily as economic and military power.

Factors influencing power and implicitly world order

- **State related factors that influence power:**
 - Quantity and quality of land, resources, population;
 - Capability to transform natural resources into economic and military resources;
 - Knowledge, science and technology;
 - Diplomacy;
 - Capability to generate and disseminate information;
 - Culture and spirituality.
- **Hard power (coercive), soft power (attractive) and smart power (holistic approach).**

A formula for power of nations

- Proposed by Ray S. Cline in “World Power Trends and U.S. Foreign Policy for the 1980s”
- **$P_p = (C + E + M) \times (S + W)$** , where:
 - Pp (perceived power);
 - C (critical mass=population and territory);
 - M (Military capability);
 - E (Economic capability);
 - S (Strategic purpose);
 - W (Will to pursue national strategies).

Tangible elements

Intangible
elements

The 4th industrial revolution (4IR): from concept to reality

- 4IR = a fundamental change in the way we live, work and relate to one another.
- A new chapter in human development, enabled by extraordinary technology advances.
- These advances are merging the physical, digital and biological worlds in ways that create both huge promise and potential peril.
- The speed, breadth and depth of this revolution is forcing us to rethink how countries develop, how organizations create value and even what it means to be human. (World Economic Forum).

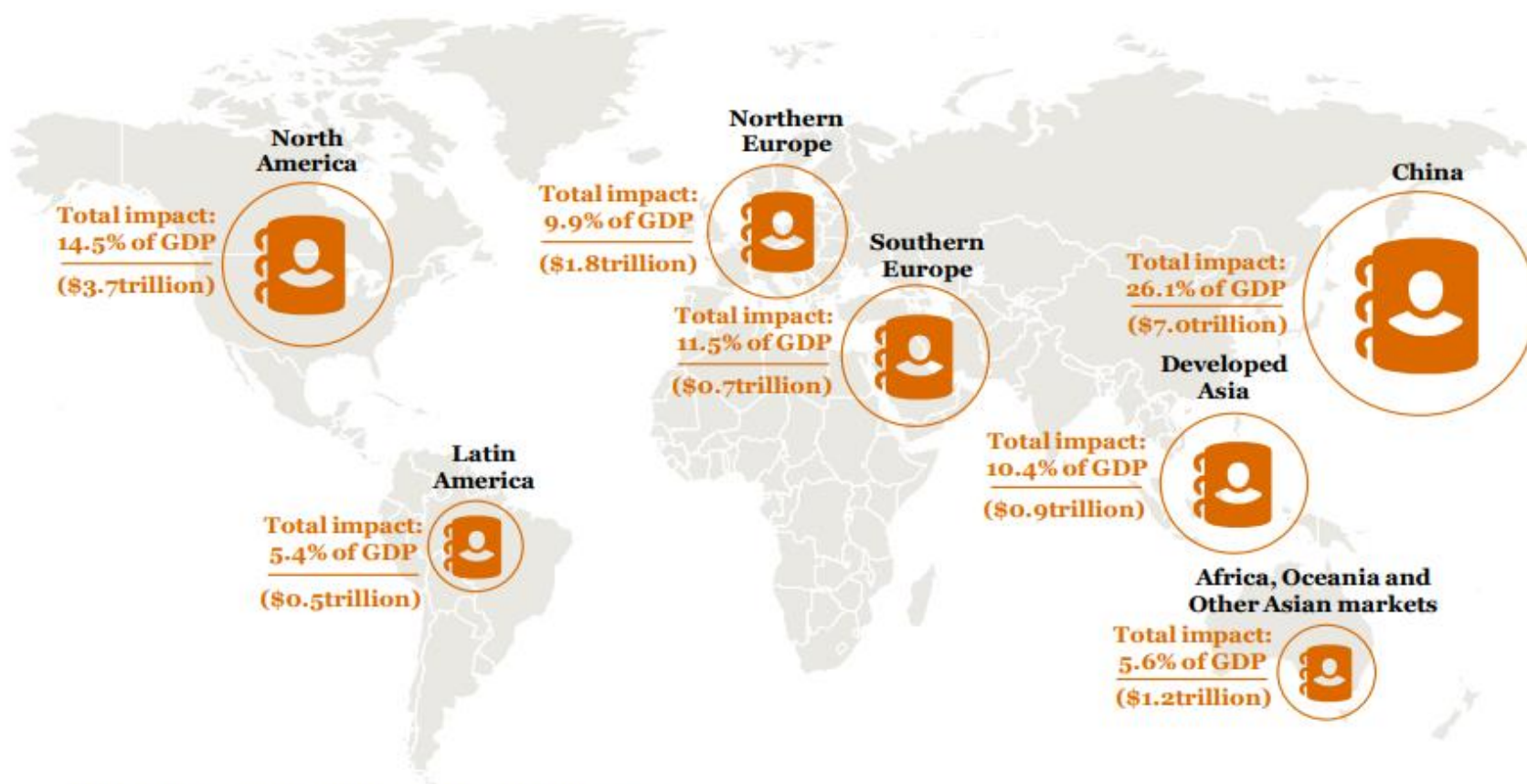
4IR may affect all state related factors that influence power

- **Which factors are influenced and how:**
 - How states use resources (land, labor, capital, knowledge) and what resources are used (natural vs created resources);
 - Capability to transform natural resources into economic and military resources;
 - Knowledge, science and technology;
 - Diplomacy, foreign relations, spheres of influence;
 - Capability to generate and disseminate information;
 - Culture and spirituality.

4IR/AI and GDP

- According to PwC, in 2030 global GDP could be up to 14% higher as a result of AI (that is about \$15.7 trillion).
- Technologies like artificial intelligence (AI), nanotechnology, quantum computing, synthetic biology and robotics will all drastically supersede any digital progress made in the past 60 years and create realities that we previously thought to be unthinkable (Forbes, 2018).

Economic impact of AI by geographical region



All GDP figures are reported in market exchange rate terms

All GDP figures are reported in real 2016 prices, GDP baseline based on market exchange rate basis



All regions of the global economy will experience benefits from artificial intelligence.



Source: PwC Analysis

4IR may influence 4 major areas

- **Technological area:** how companies will implement the new technologies?
- **Economic area:** how the entrepreneurs will use the 4 factors of production (land, labor, capital and knowledge) in the new context?
- **Social:** how people will adapt to new jobs and a more flexible approach to work?
- **Education and training:** how they will correlate the new requirements from the economy with the new characteristics of the labor force ?

Geopolitics and 4IR/AI

- Challenges to the present world order (World Economic Forum, 2019) – some areas with big impact:
 - AI and degradation of truth: economic, social, political, military implications ;
 - AI and precision surveillance;
 - Battlefield AI (cyber race, cyber colonization).
- 4IR/AI adoption could widen gaps between countries, companies, and workers.

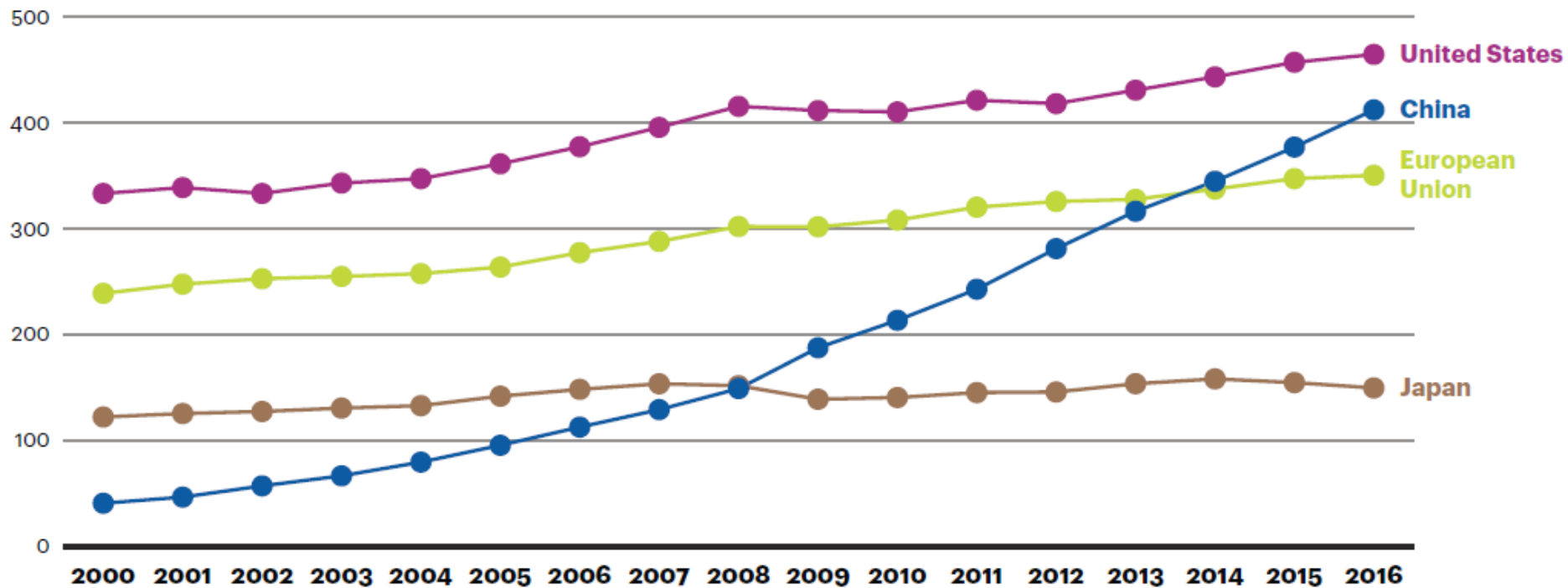
Some trends until 2030 in the 4IR – geopolitics arena

- Battle for technological supremacy will intensify and the winner/winners will dominate well into the second half of this century;
- Rise of the Indo-Pacific as the center of global economy and geopolitical competition (from 37% in 2000 to 52% in 2018 of world GDP);
- Risk of cyberwars, cyber-colonization and disruptive fake news;
- A redefined higher education.

China is on track to lead the world in research investments

R&D spending

\$ million



Sources: Organisation for Economic Co-operation and Development; A.T. Kearney analysis

Towards a new world order – 4 groups of countries

- **China and the US** are best positioned, they are currently responsible for the vast majority of AI-related activities.
- **Developed economies** (Germany, Japan, Canada) and smaller globally economies (Sweden, Singapore, Finland) are well positioned to capture the benefits of AI, as well as highly motivated to do so due to their slow productivity growth.

Towards a new world order – 4 groups of countries

- **Economies with moderate foundations** (India, Italy, Malaysia) may lag the leaders, but they have strengths in specific areas around which they may be able to build their AI capabilities.
- **Developing countries**, which have relatively underdeveloped foundations in investment capacity, digital infrastructure and talent risk falling further behind.

The new global context until 2030, EU and the new Commission

- **6 priorities for 2019 – 2024:**

- 1) European Green Deal
- 2) An Economy that works for people
- 3) A Europe fit for the digital age
- 4) Promoting our European way of life
- 5) A stronger Europe in the world
- 6) A new push for European democracy

Margrethe Vestager – executive vice president for objective 3 & European Commissioner for Competition.

New EU Commission approach to AI

- The effort to put forward legislation on artificial intelligence will be at the top of the list for Executive Vice President Margrethe Vestager.
- The EU is on a mission to inject ethics into AI and keep it human-centric.
- With little to no chance to directly compete with American and Chinese counterparts, the EU has decided to take on what it sees as the outer ethical bounds of AI, like killer robots and algorithmic bias.

New EU Commission approach to AI

- Von der Leyen has personally promised AI legislation within 100 days, which she and Vestager have said is necessary to insure the new technologies are used ethically.
- But there is intense industry lobbying from Brussels to Berlin, with many advocates warning against a “rush to regulation.” Some leaders, including German Chancellor Angela Merkel, see regulating AI as part of the EU’s continuing effort to be a pace-setter in protecting citizens from technological upheaval, as the bloc did with its General Data Protection Regulation.

New EU Commission approach to AI

- Vestager could find herself in conflict with Thierry Breton, the commissioner responsible for the single market.
- Breton, who was CEO of the tech firm Atos, has signaled his own personal reluctance at moving too quickly to regulate.

New EU Commission approach to AI

- Similar tensions are expected as the Commission makes a push for so-called technological sovereignty and debates how much governments should support local tech industries, particularly legacy companies struggling for relevance in the digital era and facing stiff competition from rivals in the U.S. and China.

In comparison - the US approach to AI

- The Pentagon is doing AI innovation right by letting companies bring ideas with 'wires hanging out' to the table.
- The US Department of Defense is giving its industry partners room to make mistakes, explore, and innovate in the field of artificial intelligence through the use of **non-traditional contracts** (Other Transactions Authority (OTA) contracts).

In comparison - the US approach to AI

- Between 2016 and 2018, OTA prototyping jumped from \$1.4 billion to \$3.7 billion, a Government Accountability Office (GAO) report revealed.
- The number of OTA prototyping contracts increased nearly 150 percent from 248 to 618.
- The GAO revealed that 88 percent of the OTA contracts awarded since 2016 went to companies with which the Pentagon has not traditionally done business with, including many small businesses.

Conclusions

- The benefits of AI are distributed **unequally** and therefore inequality could deepen, fueling conflict within societies.
- The new circumstances require a **new social contract and a new multilateral system** to ensure that technological innovation (especially AI) is deployed safely and aligned with the ethical needs of a globalized world.

Conclusions

- Politically, legally and ethically countries/societies are not prepared for the deployment of 4IR/AI.
- United Nations Organization, for instance, established in 1945 (74 years ago) is in many ways poorly placed to develop the kind of **responsible governance** that will channel AI's potential away from these risks, and towards our collective safety and well-being.

Conclusions

- The resurgence of nationalist agendas across the world may point to a diminishing capacity of the multilateral system to play a meaningful role in the global governance of AI.
- **Major corporations and powerful member states may see little value in multilateral approaches on what they consider lucrative and proprietary technologies.**

Conclusions

- Each of the industrial revolutions has been inter-related with the geopolitical realities of their age.
- The question is not whether we are facing a post-Cold War multi-polar world, but how many poles there are and how to define those poles.

Conclusions

- All industrial revolutions have had an impact on world order/world economic order **challenging or consolidating that order.**
- In essence 4IR/AI will have a powerful impact on:
 - global economy;
 - international security;
 - democratic ethics.