



The Future of Innovation-Driven Growth: Productivity Stagnation or Revival?

November 10, 2022



1,822	11,841,000
3,680	288,300,000
1,062	85,678,000
485	8,369,000
8,569	149,301,000
6,602	112,698,000
890	24,697,000
6,280	76,002,000
2,436	37,000,000

AIU	HJI	WWE	PLD	EER	QRT	OPY
1,822	20,369	890	6,350	10,985	665	6,800
(-35)	(+580)	(-20)	(-200)	(+580)	(-15)	(-115)
MBC	LJH	MJB	PON	NFR	UGH	OMJ
3,605	9,542	2,609	7,654	6,522	1,632	3,652
(+210)	(-128)	(+35)	(+169)	(+122)	(-54)	(+182)

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Some of the critical questions and issues we will be answering today based on [Global Innovation Index 2022 Report](#)



- What's the significance of labor productivity and innovation in driving growth in living standards?
- Why has productivity growth slowed down over recent years and what are the prospects for a revival?
- What's the role of government and business in driving innovations that fuel productivity growth?

Today's Speakers



Klaas de Vries
(moderator)
Senior Economist
The Conference Board



Carol Corrado
Distinguished Principal
Research Fellow,
Economics
The Conference Board



Sacha Wunsch-Vincent
Head of Section,
Department for Economics
and Data Analytics, **World
Intellectual Property
Organization**



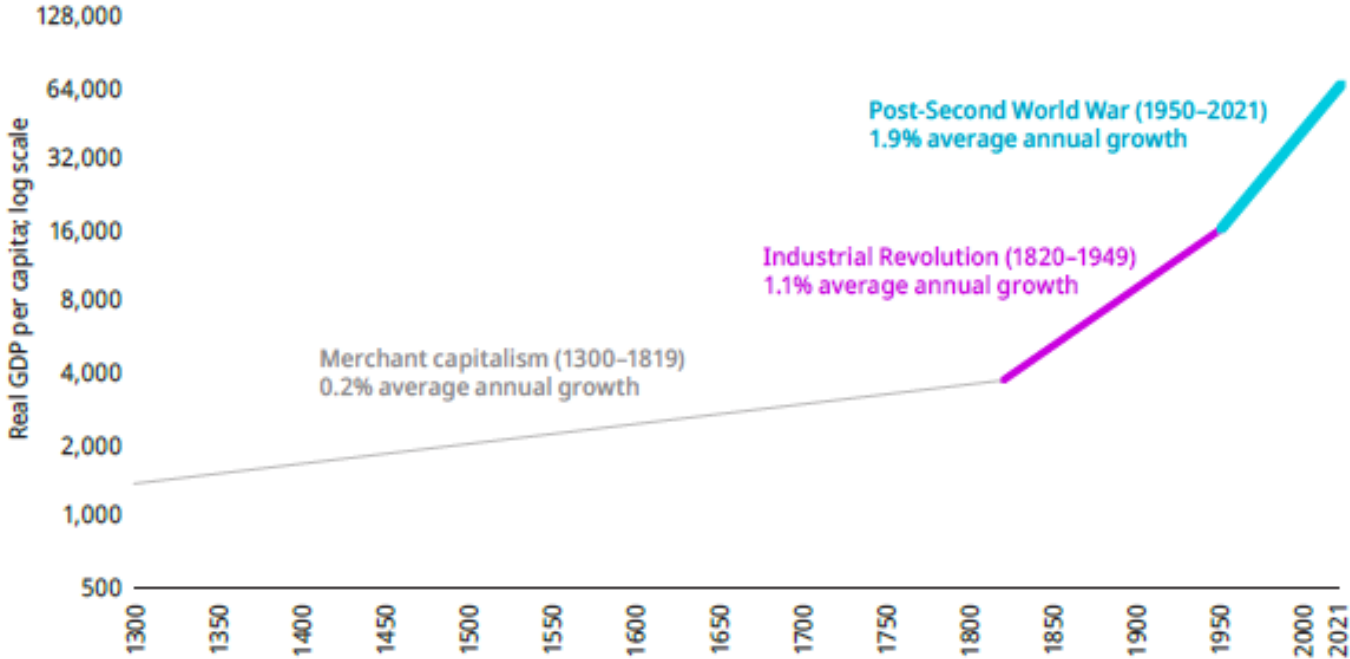
John Metselaar
Economy, Strategy &
Finance Center Leader,
Europe
The Conference Board

Part 1: The importance of productivity and innovation and views on the slowdown



Growth in living standards started to rise significantly from the 1820s onward

Real GDP per capita levels at the frontier, 1300–2021



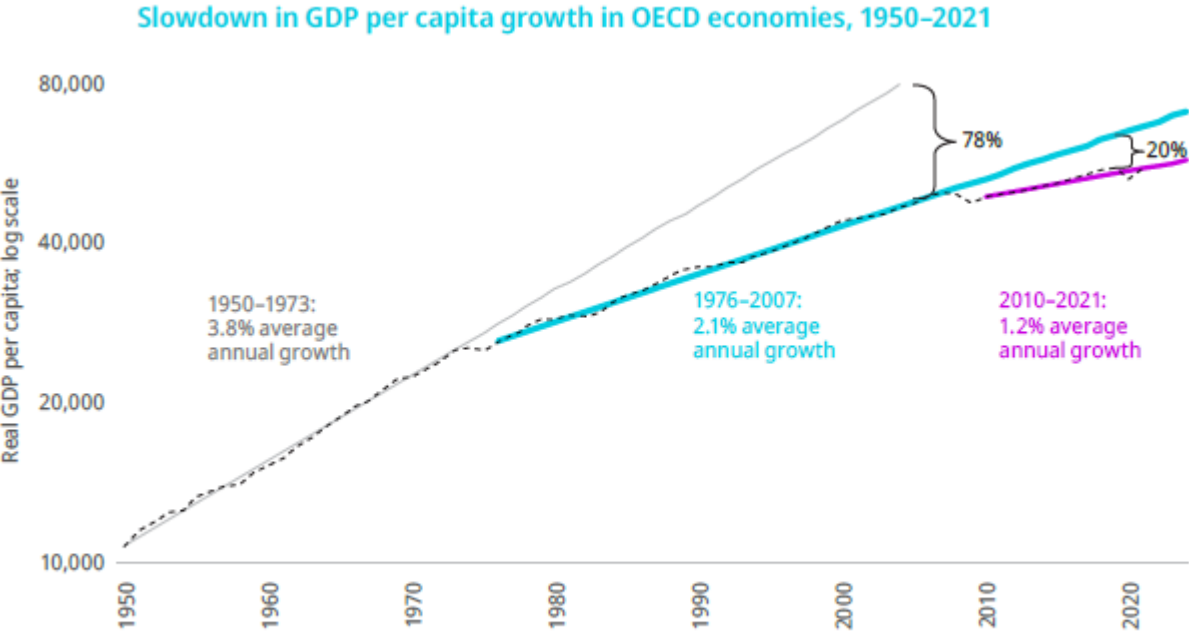
- A major contributor to higher living standards is improved productivity
- Increase in average volume of goods and services produced in an hour worked in the G7 economies between 1870-2021: 24

Source: Authors' own representation, updated from WIPO (2015).³

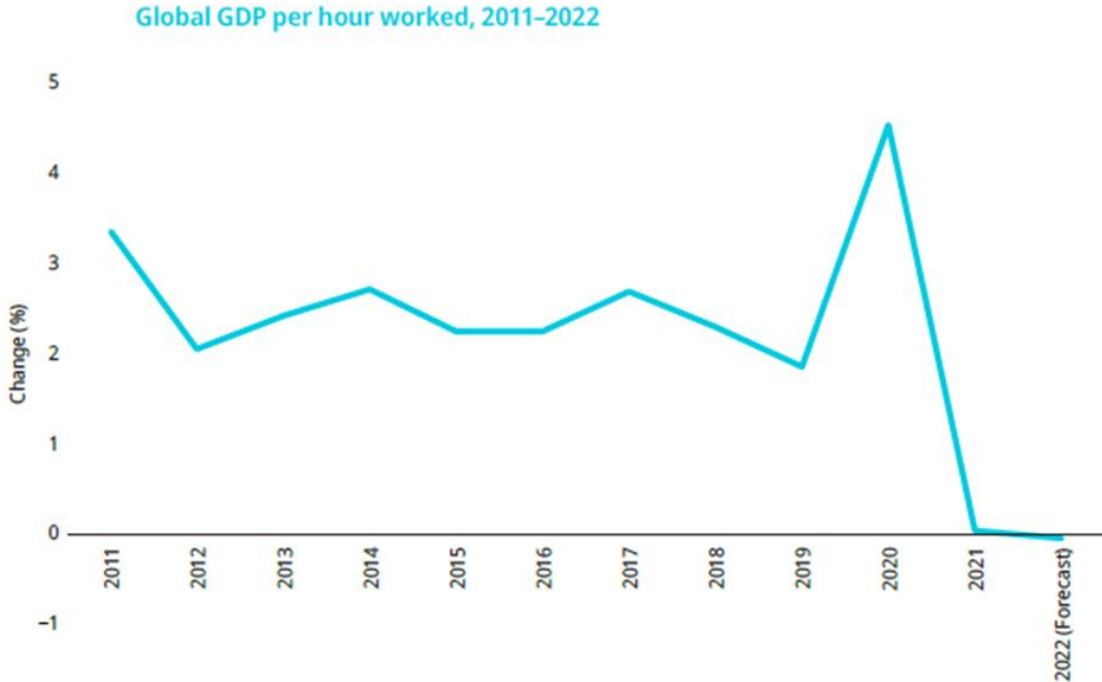
Data for 1300–1950 are from the Maddison Project Database 2020. 1950–2021 data taken from The Conference Board Total Economy Database™ (April 2022). This approach follows Gordon (2012). Real GDP levels are expressed in 2021 international dollars, converted using purchasing power parity (PPP); frontier refers to England, Great Britain and the United Kingdom from 1300–1879 and the United States from 1880 onwards.



Productivity growth slumped since the 1970s – is the link between innovation and productivity broken?



Source: Authors' own representation based on data from The Conference Board Total Economy Database™ (April 2022).
 Note: Real GDP levels are expressed in 2021 International Dollars, converted using purchasing power parity (PPP).¹²



Source: The Conference Board Total Economy Database™, April 2022.
 Notes: Underlying levels of real GDP are expressed in 2021 international dollars, converted using purchasing power parity (PPP).



Productivity growth slumped since the 1970s – is the link between innovation and productivity broken?



Transformative ideas are getting harder to find
Innovation systems are no longer so productive
Other factors are making it harder for innovation to make a difference ('headwinds')

Historically speaking, we are doing fine;
non-stop exponential productivity growth
is the wrong benchmark
It takes time for innovation to be absorbed
and create impact
Productivity might be under-measured or
completely the wrong metric



Poll question

- In the optimist vs. pessimist discussion, to which position do you lean?
 - ✓ Optimist
 - ✓ Neutral, both sides have good arguments
 - ✓ Pessimist



Panel discussion

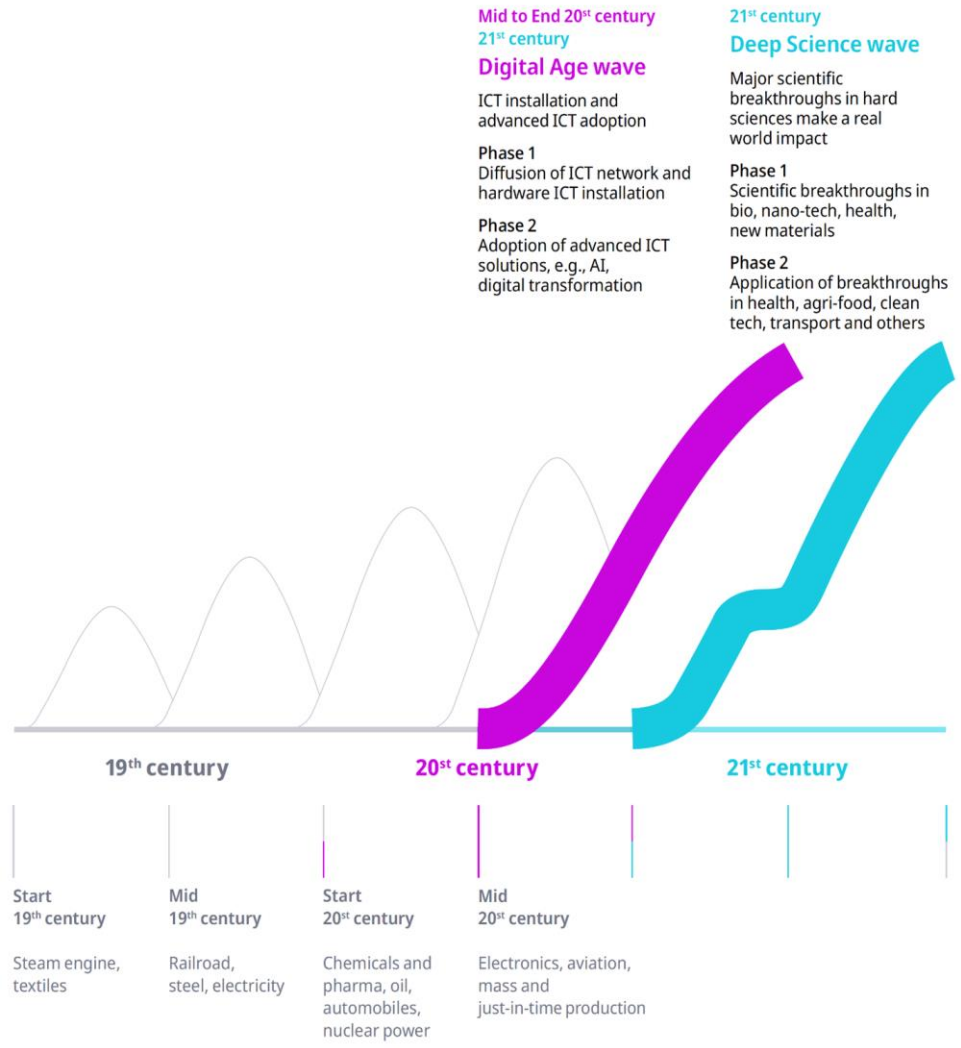
- Is the hypothesis of productivity as key driver in living standards growth still modern and meaningful?
- Is there similar pessimism in business circles regarding the state of productivity and innovation?
- Is the slowdown real (or are measurement issues largely to blame?) and what are the consequences?



Part 2: Will there be a productivity revival?



Past and future innovation waves from 19th through the 21st century



Life sciences and health

New scientific breakthroughs, treatments, and cures

- Genetics and stem cell research
- Nanotechnology
- Biologics
- Brain research
- New generation of vaccines and immunotherapy
- Pain management
- Mental health treatments
- New medical technologies (precision and regenerative medicine)

New health innovation systems

- Novel approaches in health care research (e.g., AI)
- New ways of delivering health care (e.g., telemedicine)

Energy and clean technology

New scientific breakthroughs

- Cheaper and efficient renewable energies
- Battery technologies
- Fusion technology
- Geothermal
- Green hydrogen
- Sustainable alternative fuels
- Carbon dioxide catcher

New energy delivery and storage systems

- Digitalization of energy system
- Smart grid
- Ultra-high voltage lines
- Utility-scale storage of renewable energy
- Small-scale renewable systems to provide electricity to people living far from the grid

Agri-food

New scientific breakthroughs

- New-generation sequencing
- Bioreactor-based synthetic food production
- Lab-grown real meat and other future foods with higher yields and better nutrient content
- Self-fertilizing crops
- Precision farming
- Smart fertilizers
- Advanced packaging
- Total recycling

New food production systems

- Digital agriculture enabled by remote sensing, and geographic information systems
- Bio-controlled and artificial agro-ecosystems
- Vertical farming
- Innovation along the agri-food value chain, from seeds to farming and harvesting
- Digitalization of retail and logistics

Mobility

New scientific breakthroughs

- Electric batteries and other elements of energy and clean tech
- Autonomous vehicles
- Tunneling for high-speed transport
- Supersonic and electric aviation

New transport systems

- Charging infrastructure
- Urban air mobility companies
- Drone delivery
- Ultra-highspeed train networks
- Novel traffic management systems



Poll question

- Will there be an innovation-driven productivity revival?
 - ✓ Yes
 - ✓ No
 - ✓ I don't know, it's impossible to predict



Panel discussion

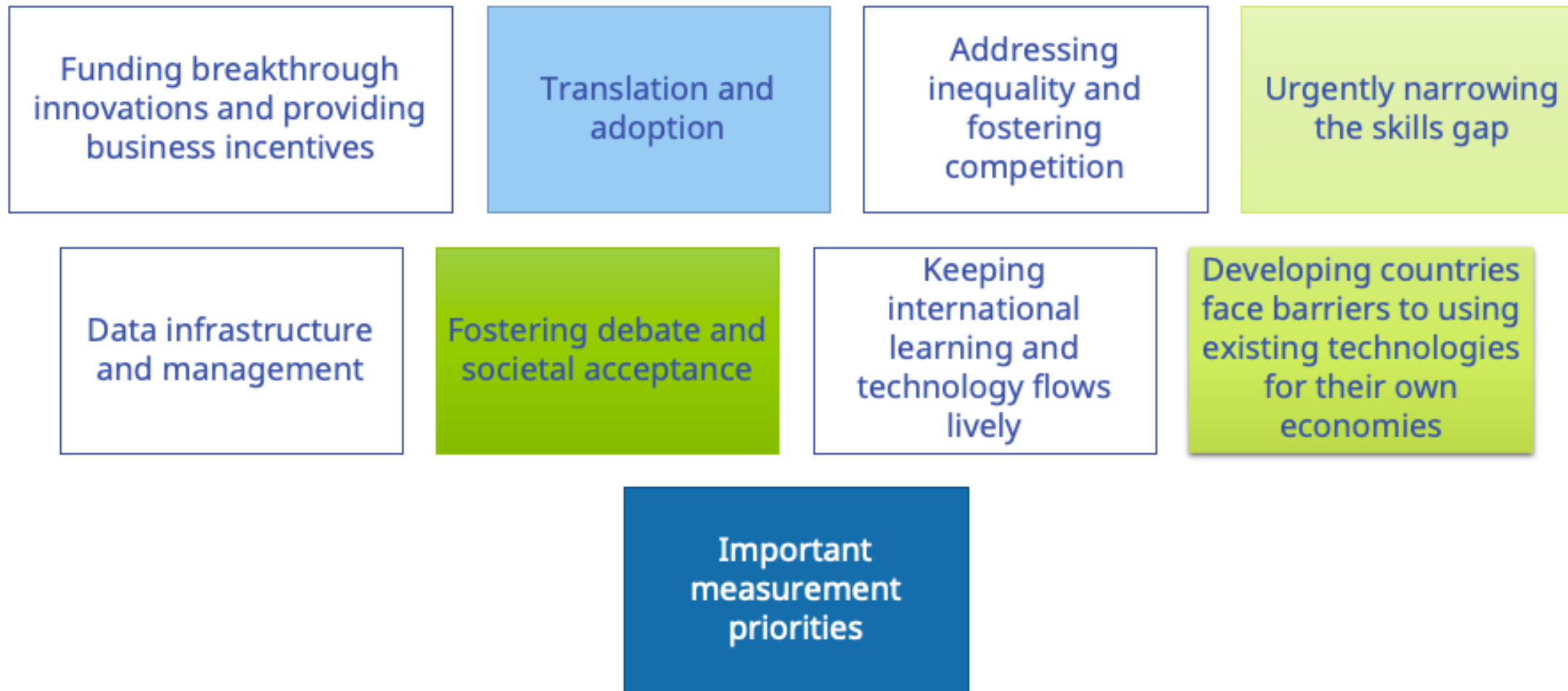
- What are the opportunities and challenges as regards the two novel innovation - Digital Age and Deep Science? And what are related timelines and the size of impacts?
- Are barriers to innovation and productivity growth getting larger or smaller?
- What is the role of intangibles (e.g., software) in unlocking future productivity and innovation potential?



Part 3: Policy and business solutions



Business and policy practices to release the next wave of productivity growth



Poll question

- Productivity growth should be mostly the responsibility of...
 - ✓ The government
 - ✓ The private sector
 - ✓ A combination of both



Panel discussion

- Do you agree with these policy priorities?
- What's the role for intangibles and how to encourage investment in it?
- Are firms taking the opportunities from intangible investment seriously enough? If not, what is holding them back?
- How important is it to improve measurement and recognition of productivity, both within firm and at macro economy level?





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