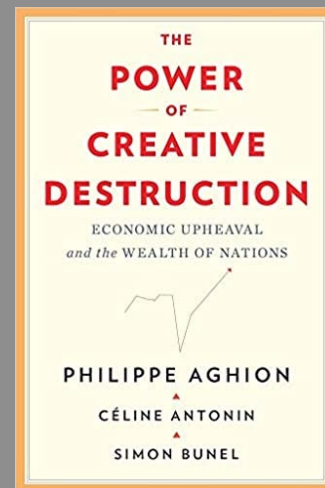




The Power of Creative Destruction

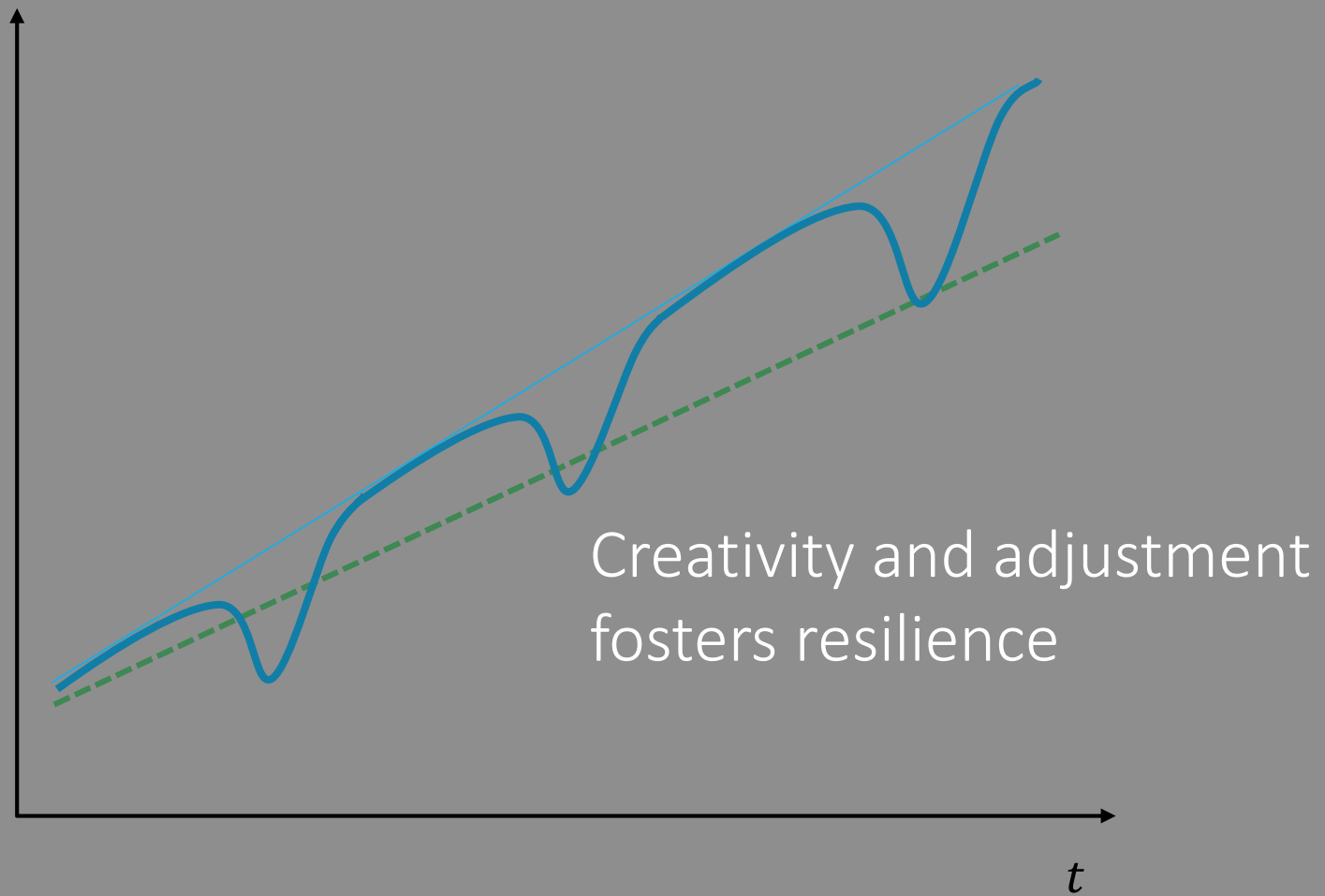
Philippe Aghion
Collège de France and LSE



24. June 2021 Markus Brunnermeier

Resilience and Creative Destruction

- Resilience – bounce back



- How to ensure creative part of destruction?

Disruption vs. Creative Destruction

- Competition across firms
 - at a point in time
 - at time intervals → disruption
- Concentration of Power (Ordoliberalism)
- Rents
 - Reduces social mobility
 - Innovation
 - + to recoup fixed R&D costs
 - to fend off new entrants (“Killer acquisitions”)
 - Overcome canabalization

Institutional framework and Innovation

- Role of limited liability to foster R&D risk taking
- Role of venture capitalism eco system
 - US vs. Europe
 - Global now?
- Start-ups vs. inhouse innovations
 - Partnership
 - Start-up innovate
 - Large companies distribute new products
 - “killer acquisitions” Cunningham, Ederer, and Ma (2021)

Middle Income Trap and Innovation

- Economy in catch up phase can be run very differently from an economy on technological frontier
- How does “creative destruction” work – or not in the Chinese system?
 - What are the prospects for innovation in China?
 - In life sciences with different ethics
 - Will it overtake the US system?

Network/Digital Economy

- Natural monopolies: Rents from IRS of networks
 - Natural monopolies vs. “patent” monopolies
- Systemically important companies
 - Disruption can cause large financial instability
 - Destruction with resilience
- How to design “data economy” to stimulate creative disruptions/destruction?

1. Automation: Does it reduce employment?
 - a. Yes
 - b. No
2. Secular stagnation: is it due to?
 - a. Ideas harder to find
 - b. Measurement
 - c. Superstar firms
3. Innovation and inequality
 - a. Innovation increases inequality
 - b. Inequality increases innovation
 - c. No relationship
4. Must we choose between innovation (US) model and protection (European) model?
 - a. Yes
 - b. No

The Power of Creative Destruction

Markus Brunnermeier

24. June 2021

Princeton

THE POWER OF CREATIVE DESTRUCTION

**PHILIPPE AGHION
CELINE ANTONIN
SIMON BUNEL**

THIS BOOK

- Five years of lectures at College de France
- Allow public access to the research produced collectively over the past 34 years to « operationalize » Schumpeter's notion of creative destruction



CREATIVE DESTRUCTION ...

- Process whereby new innovations displace old technologies
 - Joseph Schumpeter in *Capitalism, Socialism et Democracy* (1942)

BASIC “SCHUMPETERIAN GROWTH” PARADIGM

- Long-run growth driven by cumulative process of innovation
- Innovations result from entrepreneurial activities motivated by prospect of innovation rents
- Creative destruction: new innovations displace old technologies

CREATIVE DESTRUCTION ...

- Contradiction :
 - The innovator is motivated by prospect of monopoly rents
 - But those rents can be used ex post to prevent future innovations and to block new entry
- Schumpeter was deeply pessimistic about the future of capitalism
- This book is about why Schumpeter's pessimistic prophecy did not come true
- It advocates an « optimism of the will »

THIS BOOK USES THE LENS OF CREATIVE DESTRUCTION TO...

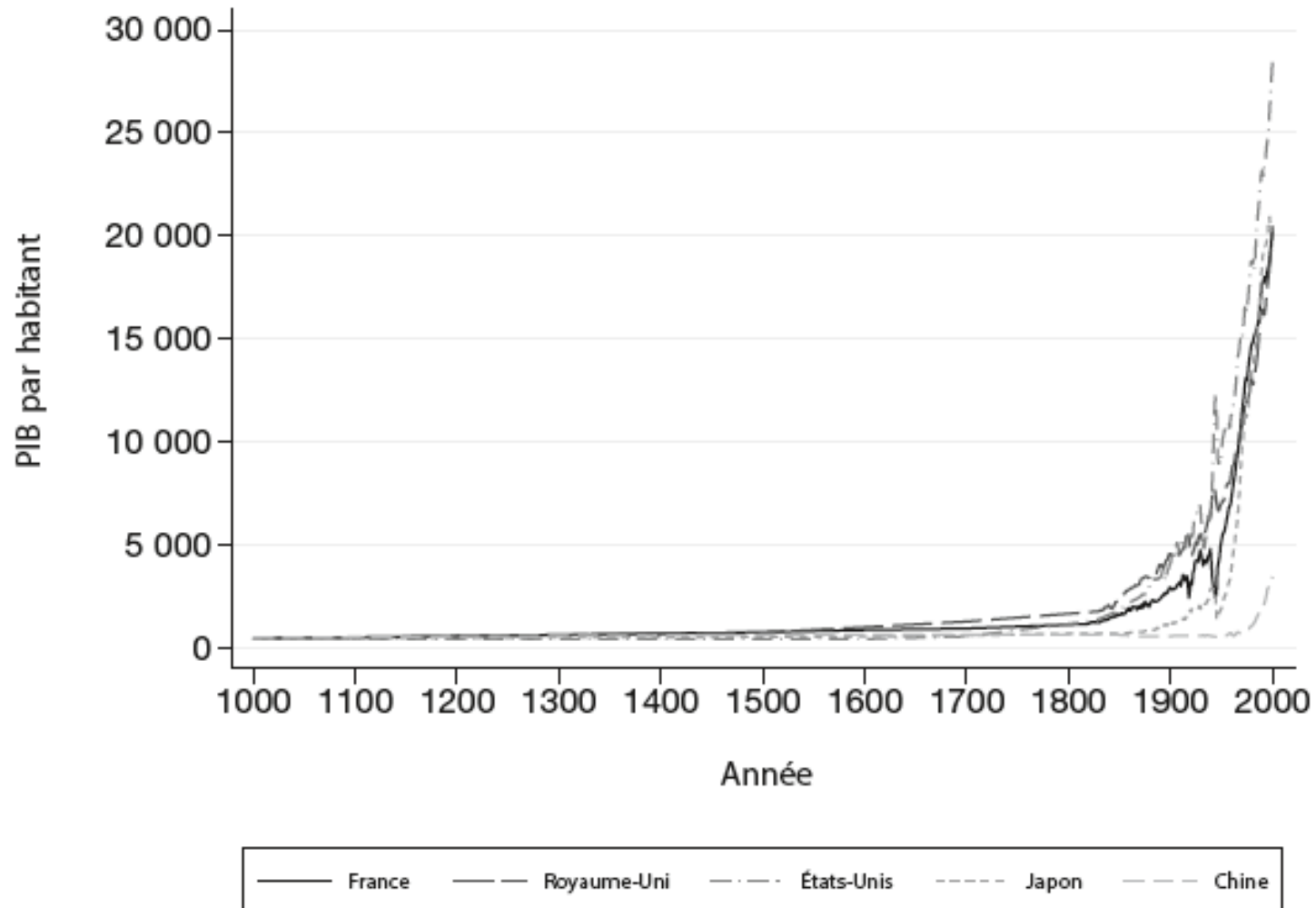
- Revisit some main *enigmas in economic history*
- Question some *common wisdoms*
- Rethink *the future of capitalism*

SOME HISTORICAL ENIGMA

SOME HISTORICAL ENIGMA

- **Industrial take off**
- Secular stagnation
- Middle income traps
- Sources and dynamics of inequality

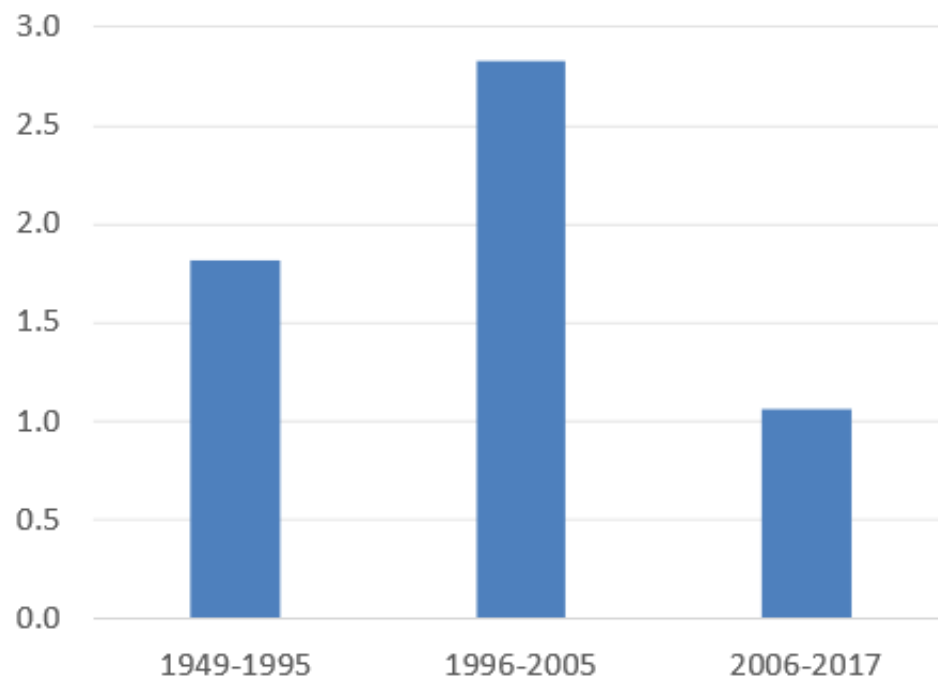
INDUSTRIAL TAKE OFF



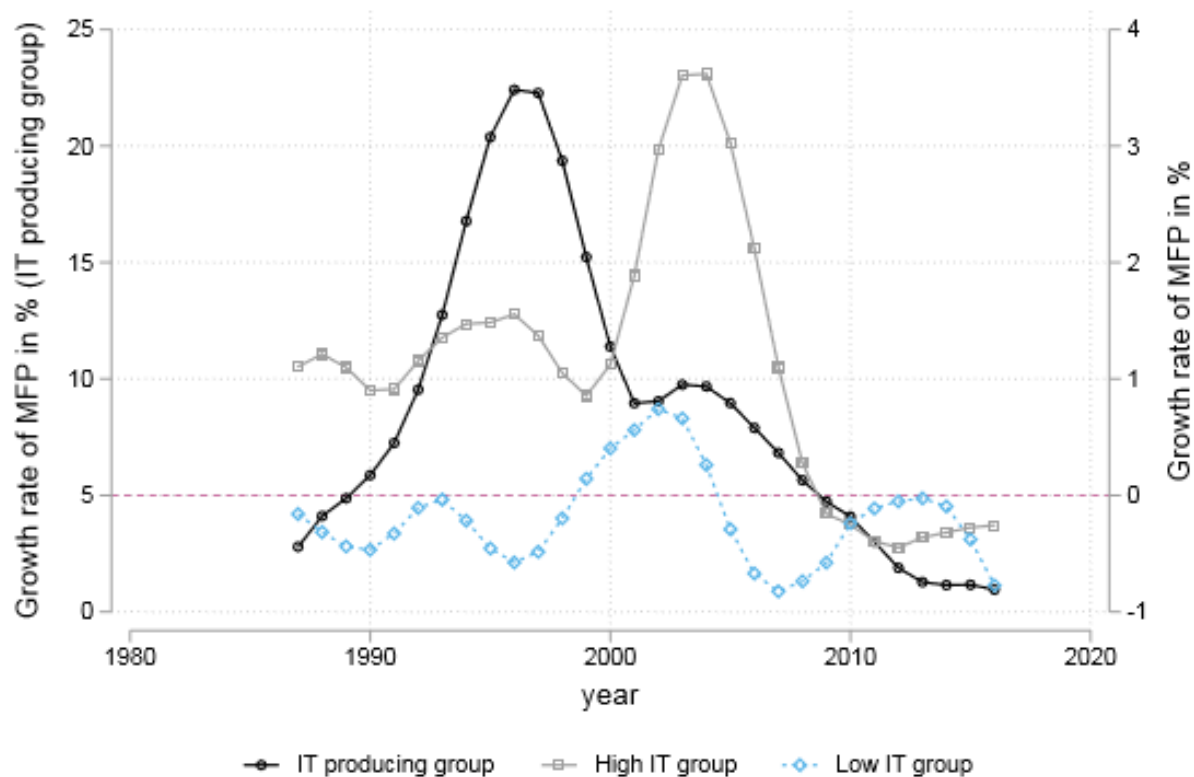
SOME HISTORICAL ENIGMA

- Industrial take off
- **Secular stagnation**
- Middle income traps
- Sources and dynamics of inequality

RISE AND DECLINE IN TFP GROWTH



TFP GROWTH BY IT INTENSITY



SOME HISTORICAL ENIGMA

- Industrial take off
- Secular stagnation
- **Middle income traps**
- Sources and dynamics of inequality

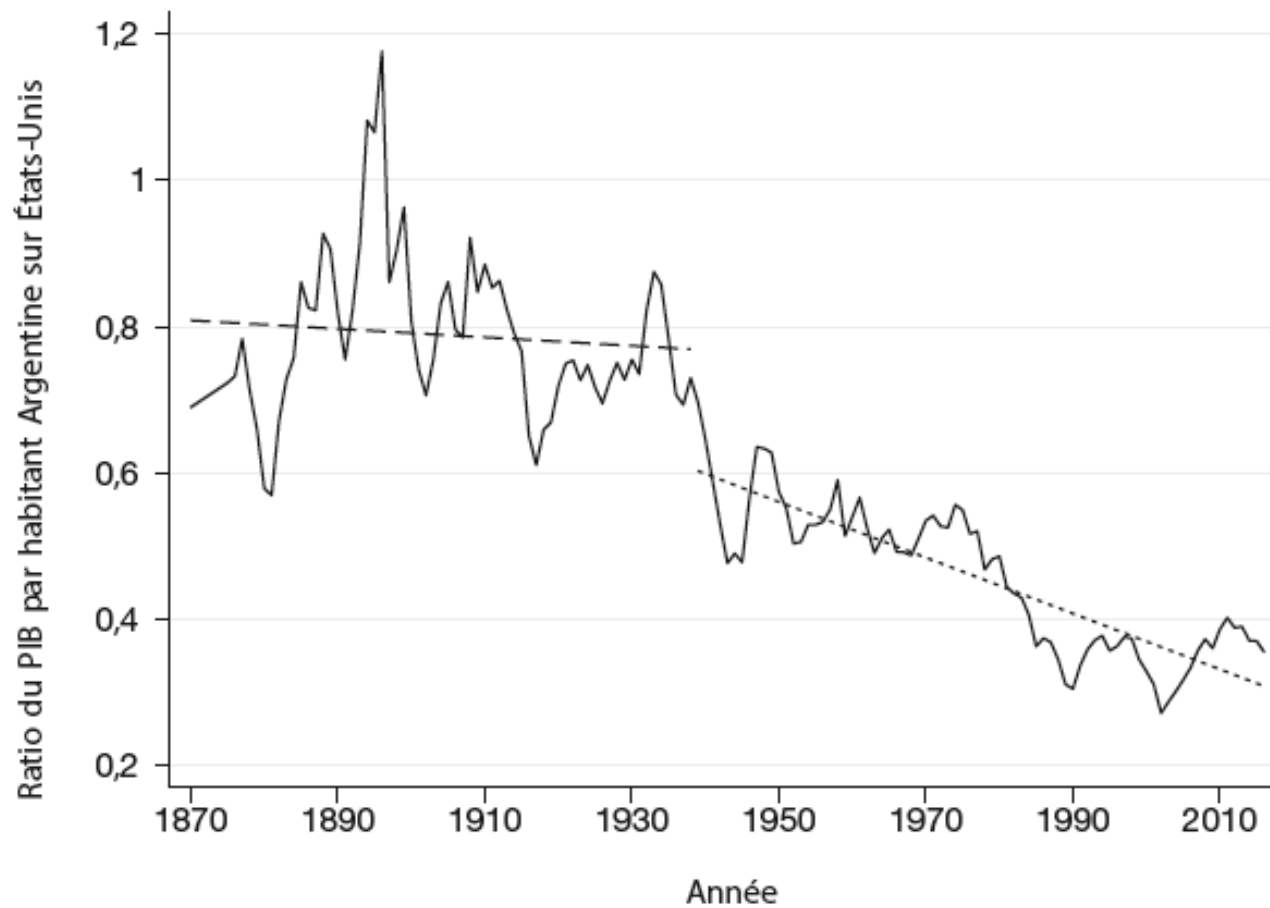
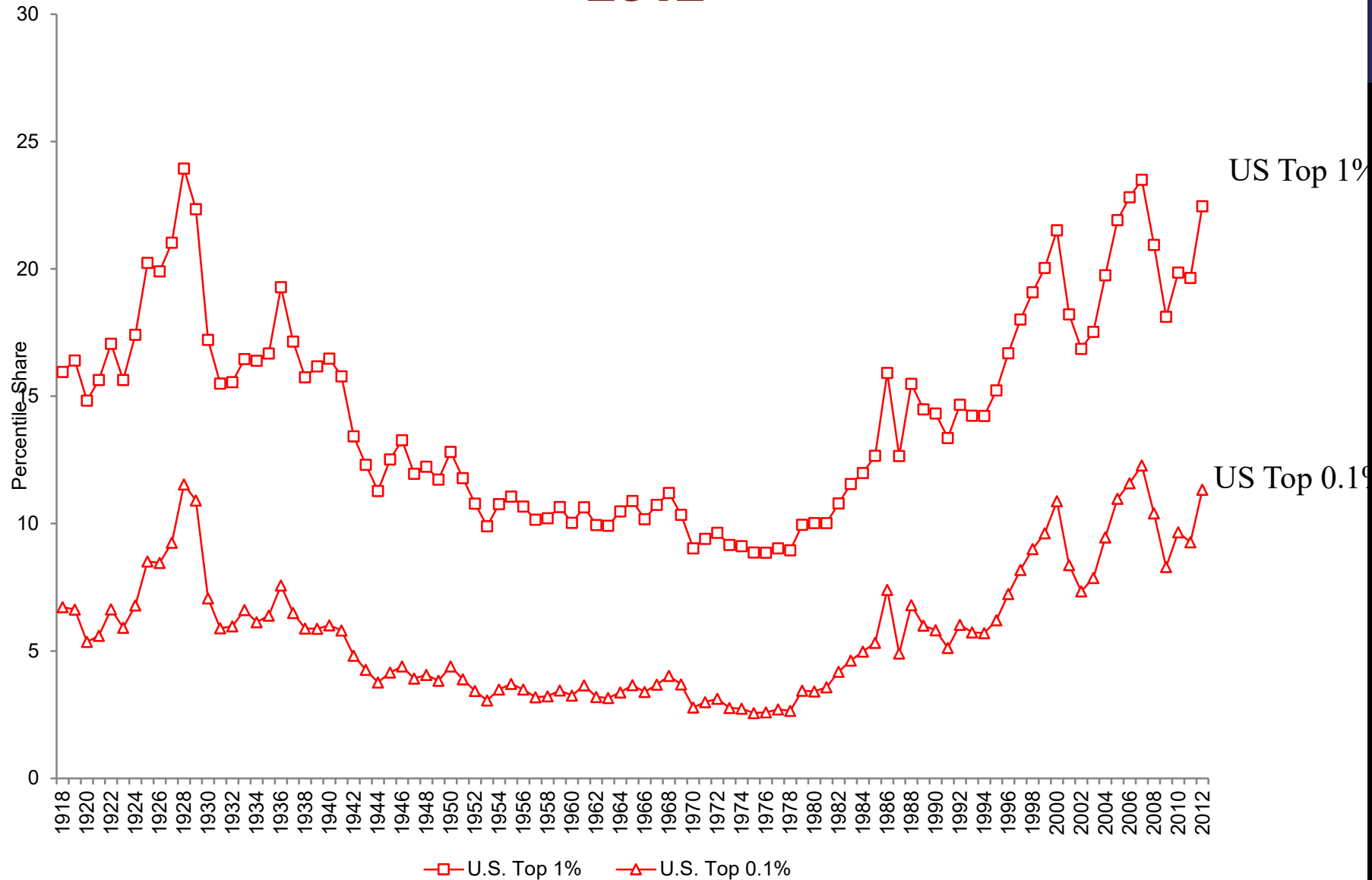


Figure 7.1. PIB par habitant en Argentine par rapport au niveau américain.
Source : Aghion (2016).

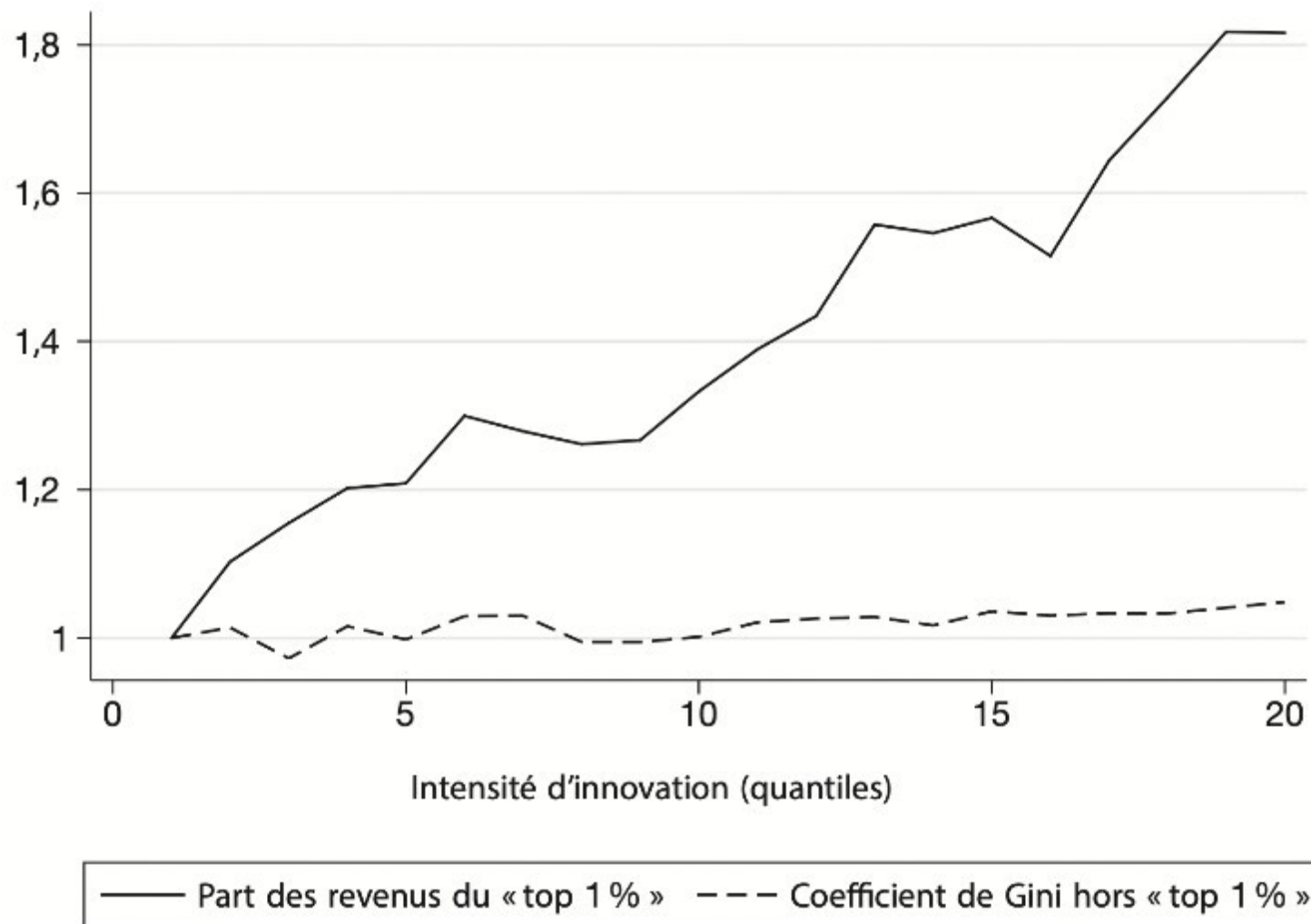
SOME HISTORICAL ENIGMA

- Industrial take off
- Secular stagnation
- Middle income traps
- **Sources and dynamics of inequality**

Income shares at the very top over last 100 years: US top 1% increases from 9% in 1978 to 22% in 2012



Source: Atkinson, Piketty & Saez; High Income Database



Innovation, part des revenus du top 1 % et coefficient de Gini.

Source : Aghion, Akcigit, Bergeaud, Blundell, Hemous (2018)

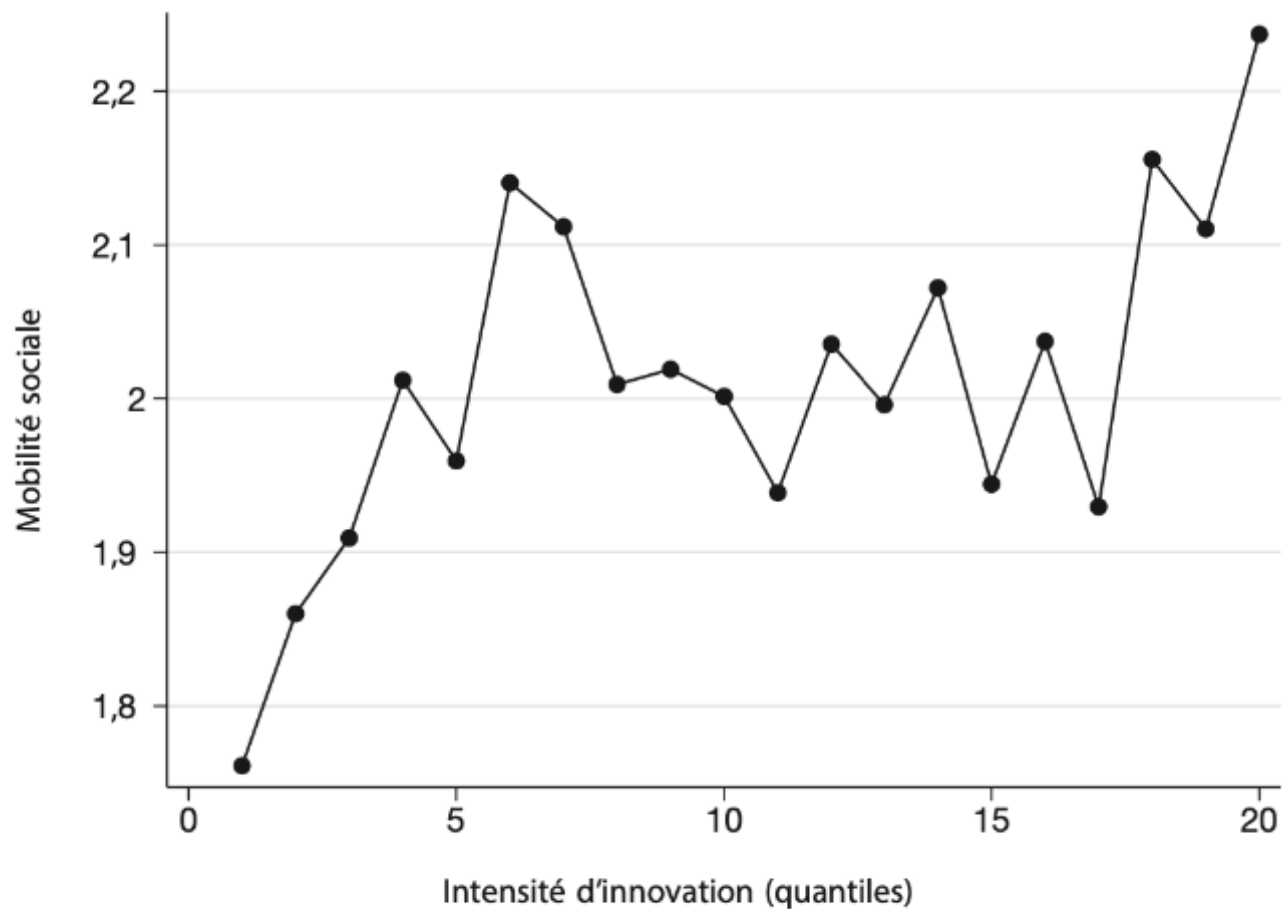


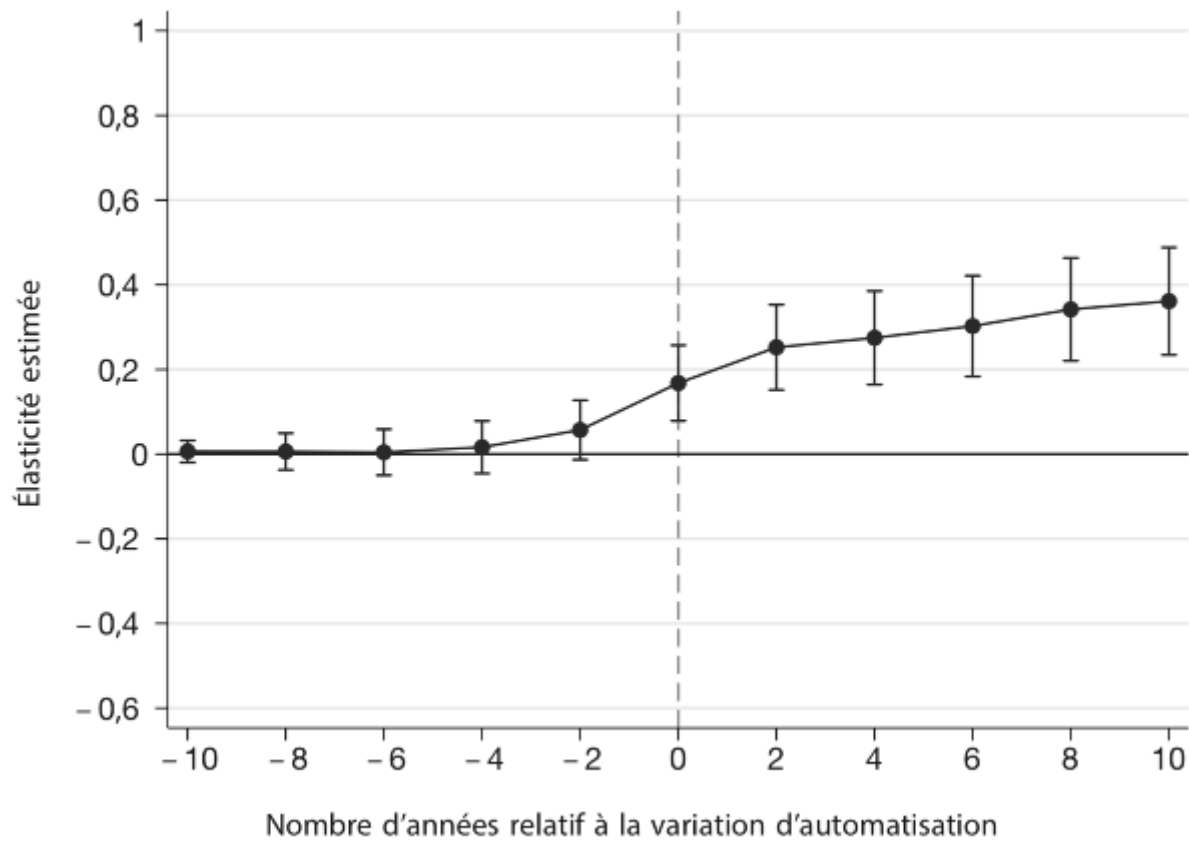
Figure 5.6. Innovation et mobilité sociale.

Source : Aghion, Akcigit, Bergeaud, Blundell et Hémous (2019).

QUESTIONING COMMON WISDOMS

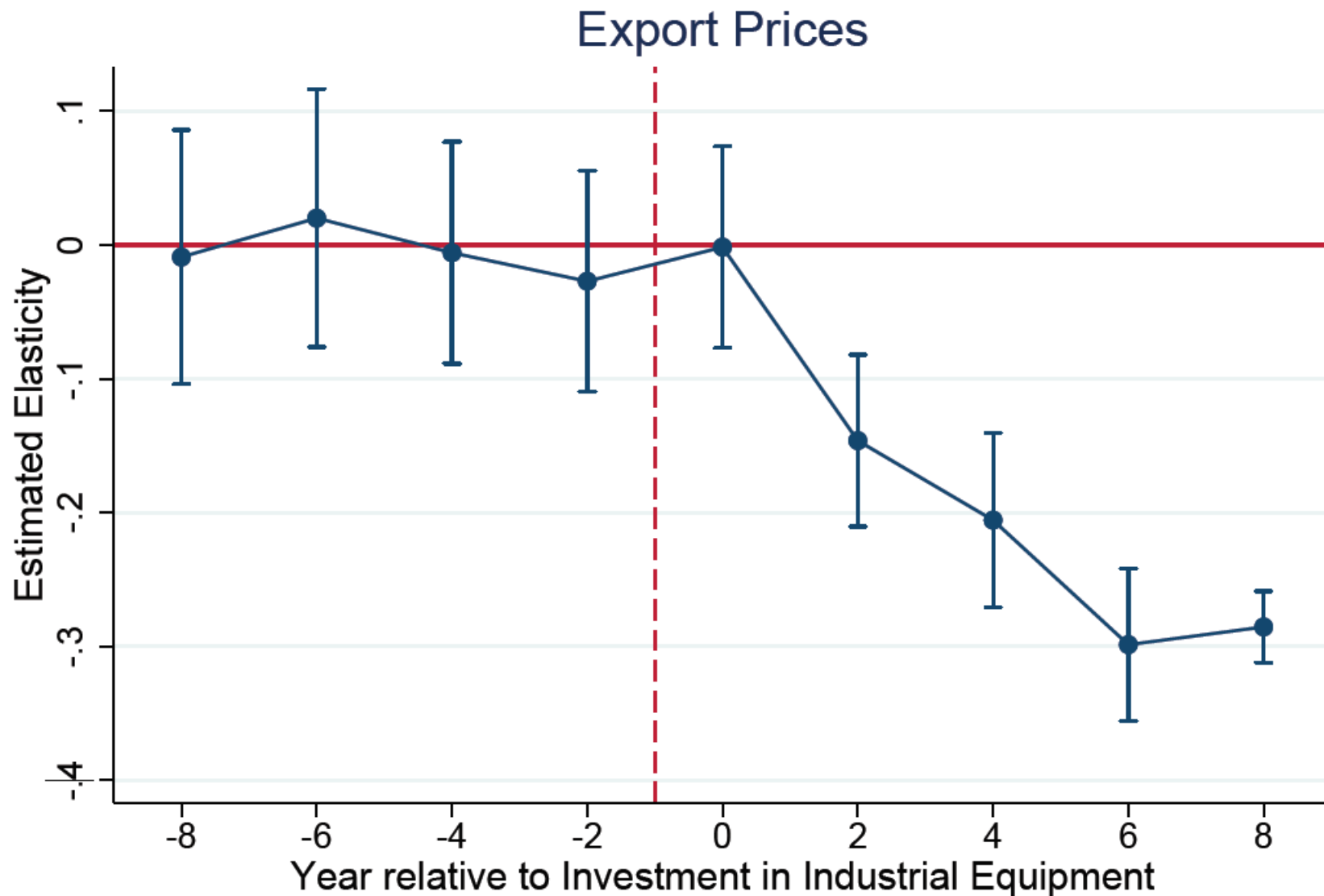
QUESTIONING COMMON WISDOMS

- **Taxing robots protects employment**
- Taxation is the only instrument to make growth more inclusive
- Protectionnism is the way to regain control of value chains
- Zero or negative growth is the best response to the climate challenge



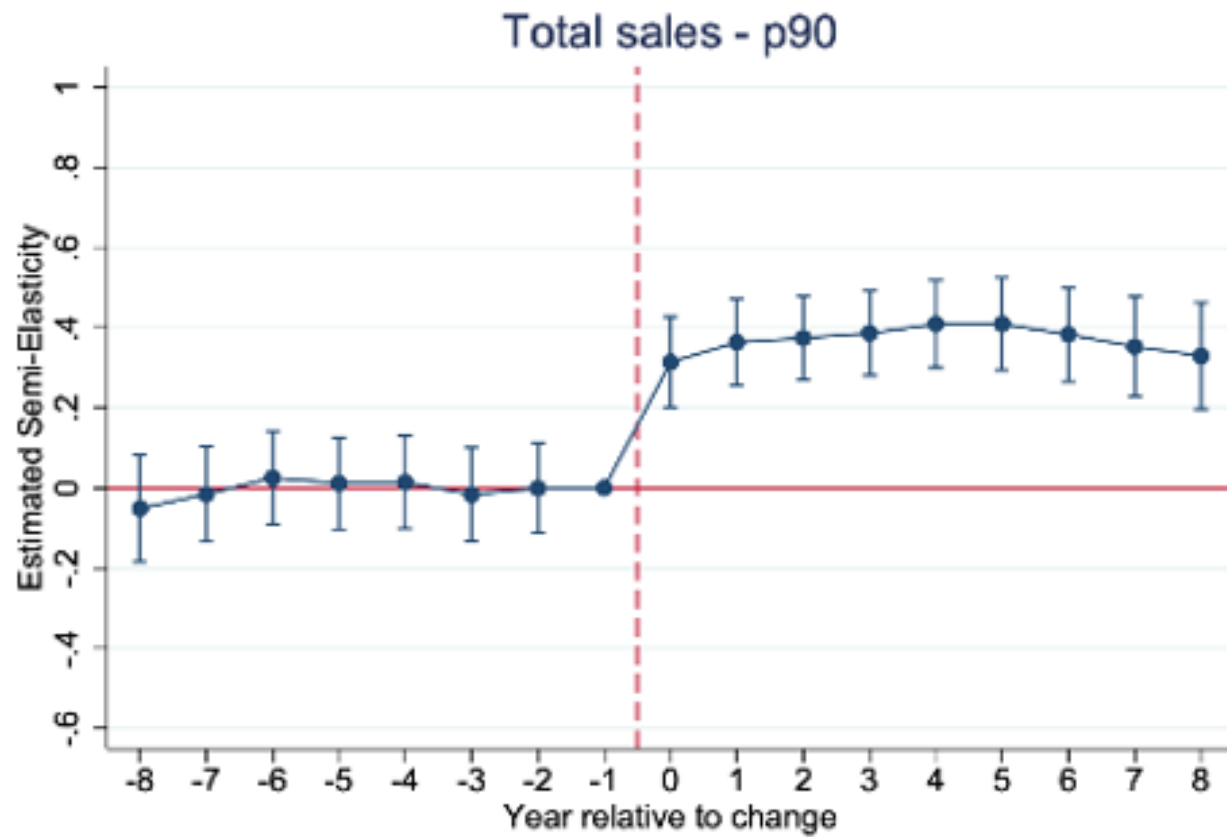
Impact de la variation de l'automatisation sur la variation de l'emploi au niveau de l'usine.

Price Dynamics

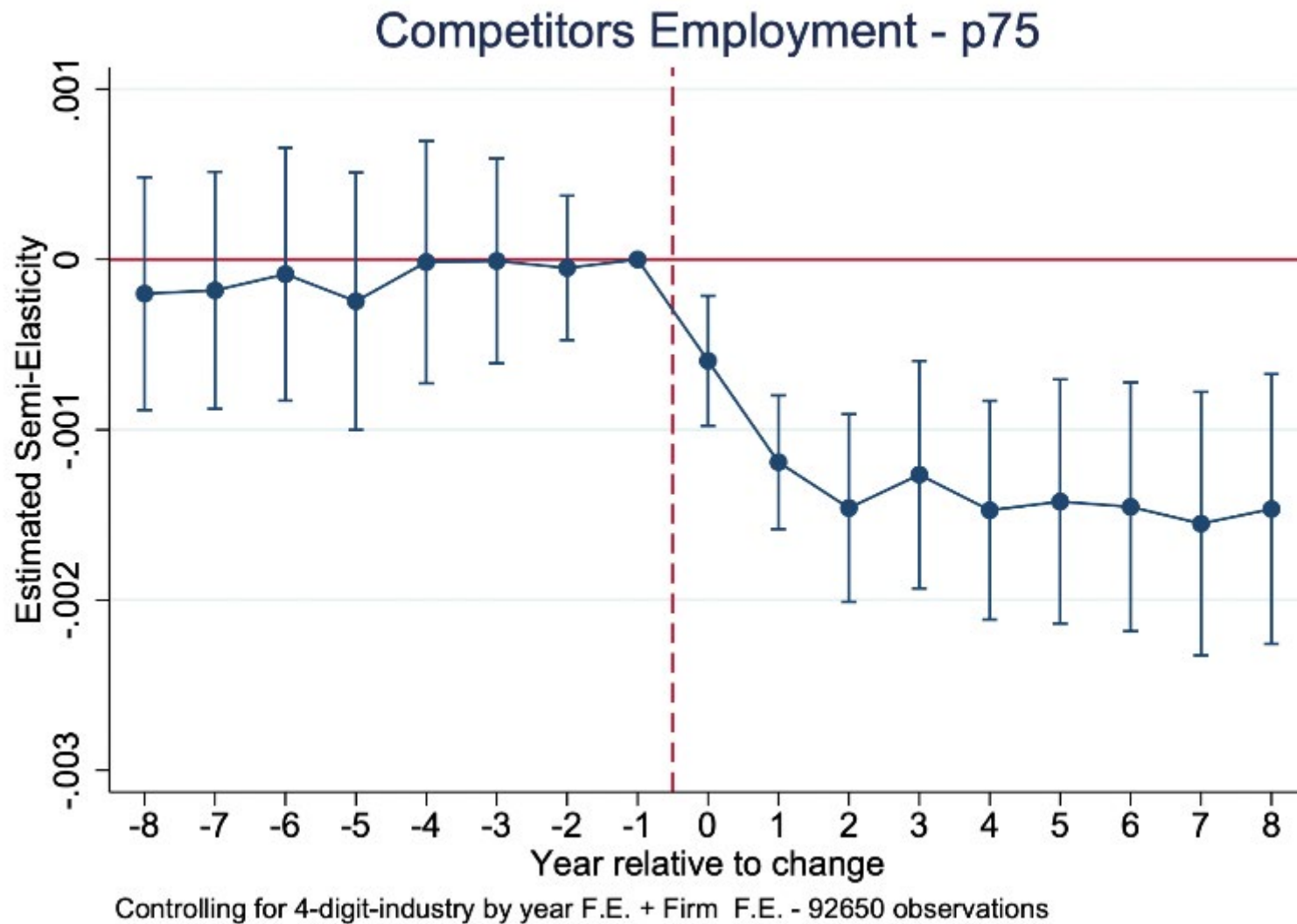


Controlling for 4-digit industry by year F.E. and HS6 product F.E.

SALES



Evidence of business stealing



QUESTIONING COMMON WISDOMS

- Taxing robots protects employment
- **Taxation is the only instrument to make growth more inclusive**
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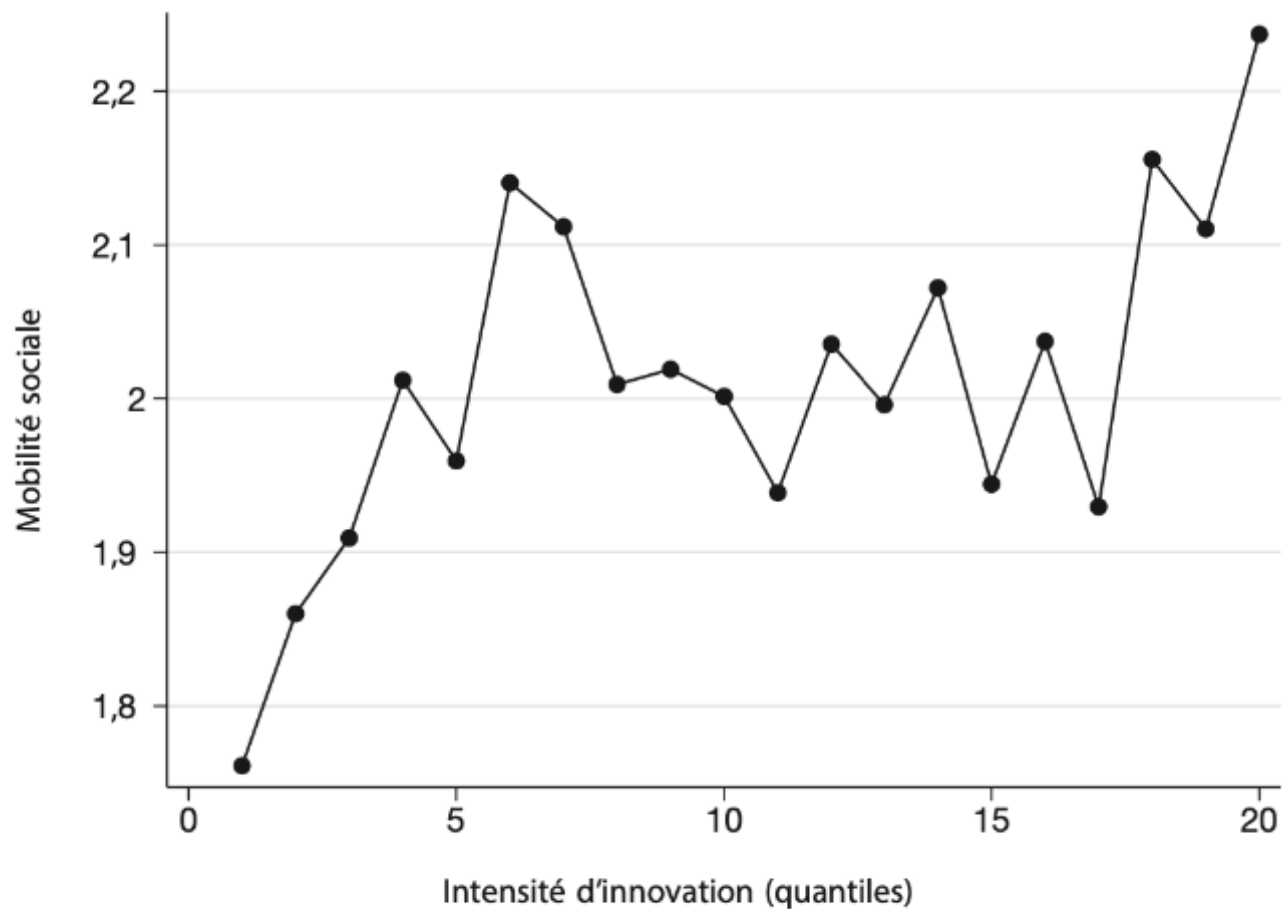


Figure 5.6. Innovation et mobilité sociale.

Source : Aghion, Akcigit, Bergeaud, Blundell et Hémous (2019).

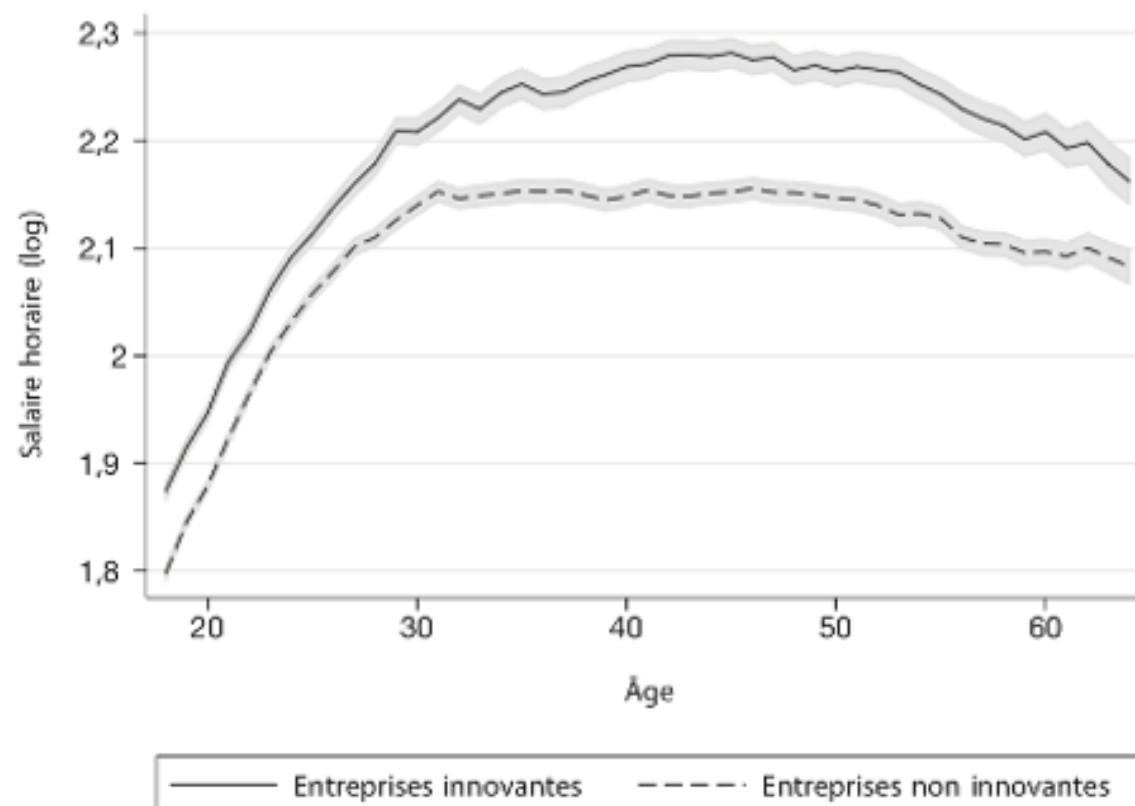
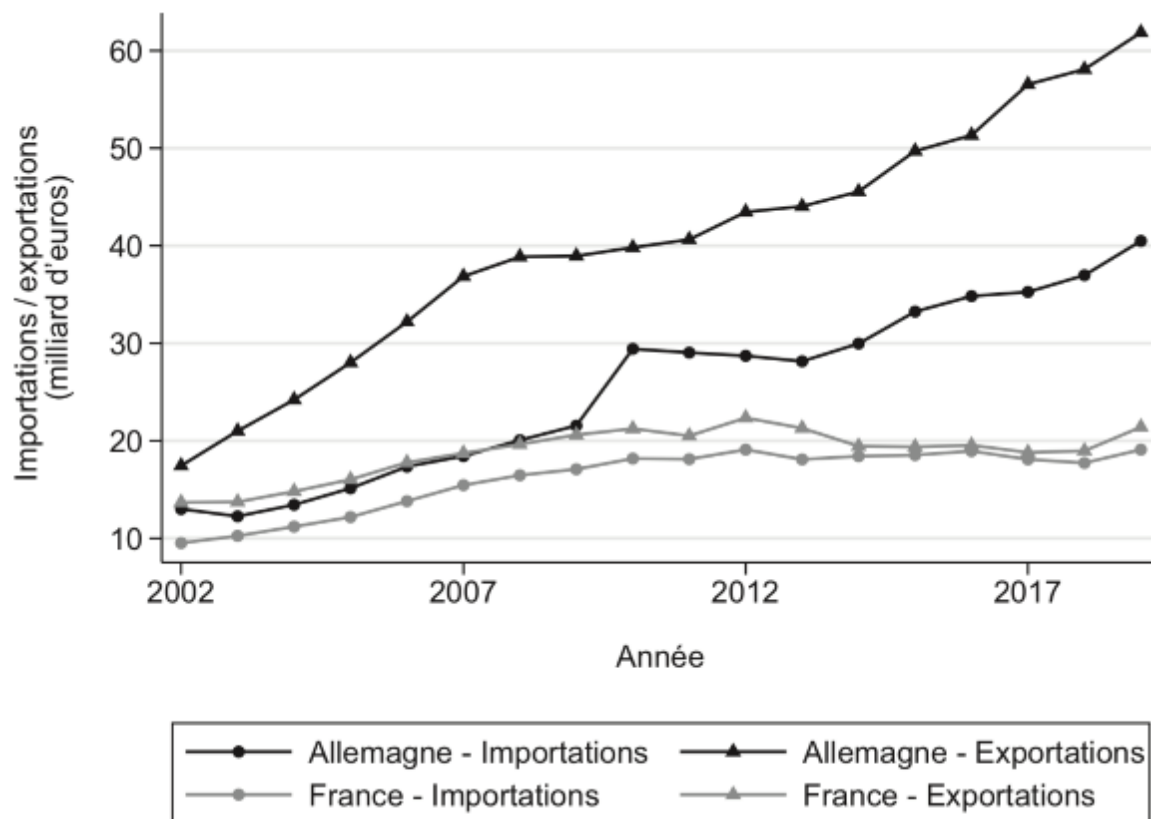


Figure 5.7. Salaire moyen des travailleurs peu qualifiés.

Source : Aghion, Bergeaud, Blundell et Griffith (2019).

QUESTIONING COMMON WISDOMS

- Taxing robots protects employment
- Taxation is the only instrument to make growth more inclusive
- **Protectionnism is the way to regain control of value chains**
- Zero or negative growth is the best response to the climate challenge



Evolution des importations et exportations de produits destinés à la lutte contre le Covid-19

Technologies Médicales et Pharmaceutiques



Note: Distance de la France au leader en terme de brevets triadiques par habitant.

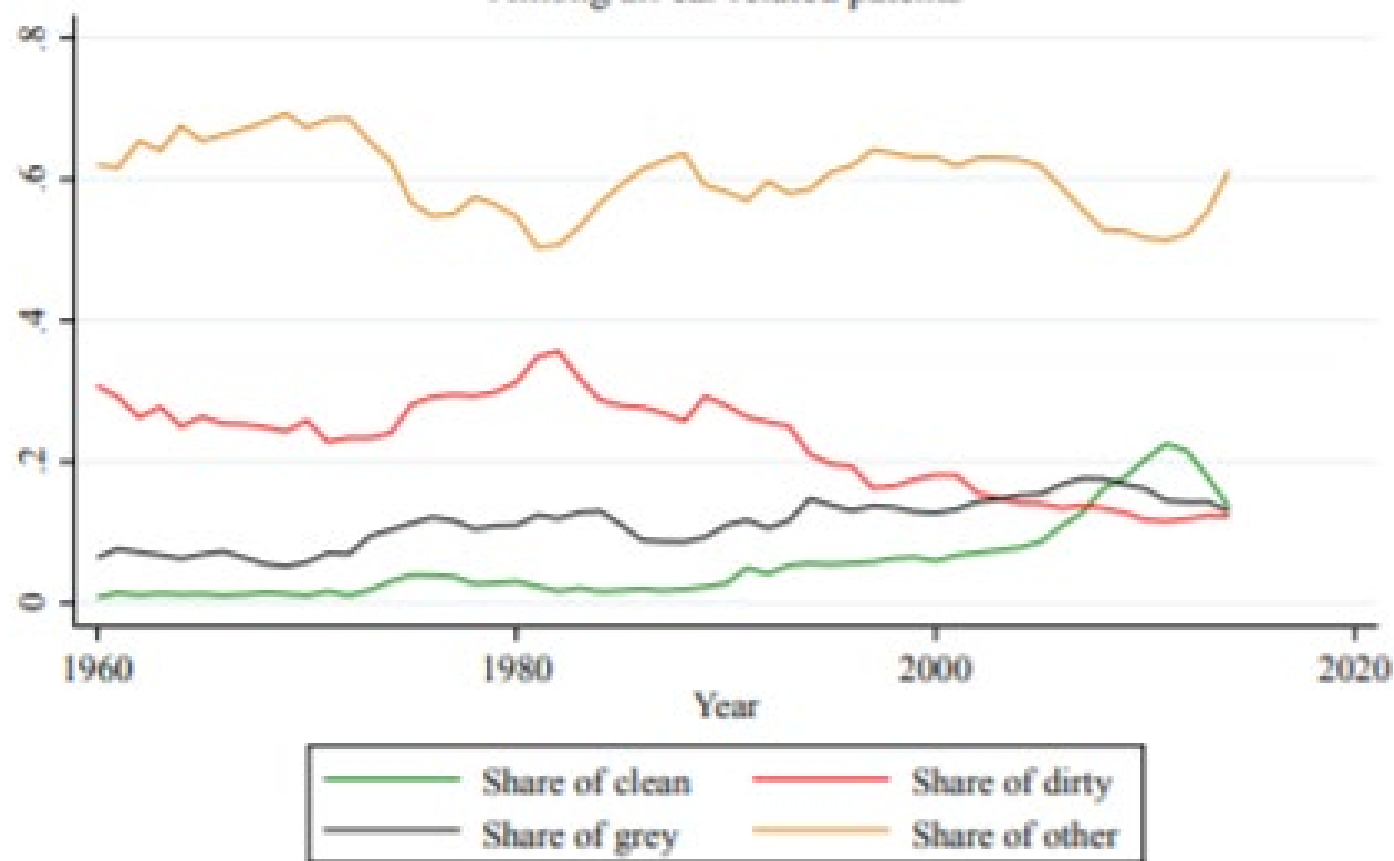
Diagnosis/Surgery (A61B), Drugs for medical/dental purposes (A61C), sterilization (A61L)

Medical Devices (A61M) Radiation Therapy and others (A61N), Chemical Therapy (A61P)

QUESTIONING COMMON WISDOMS

- Taxing robots protects employment
- Taxation is the only instrument to make growth more inclusive
- Protectionnism is the way to regain control of value chains
- **Zero or negative growth is the best response to the climate challenge**

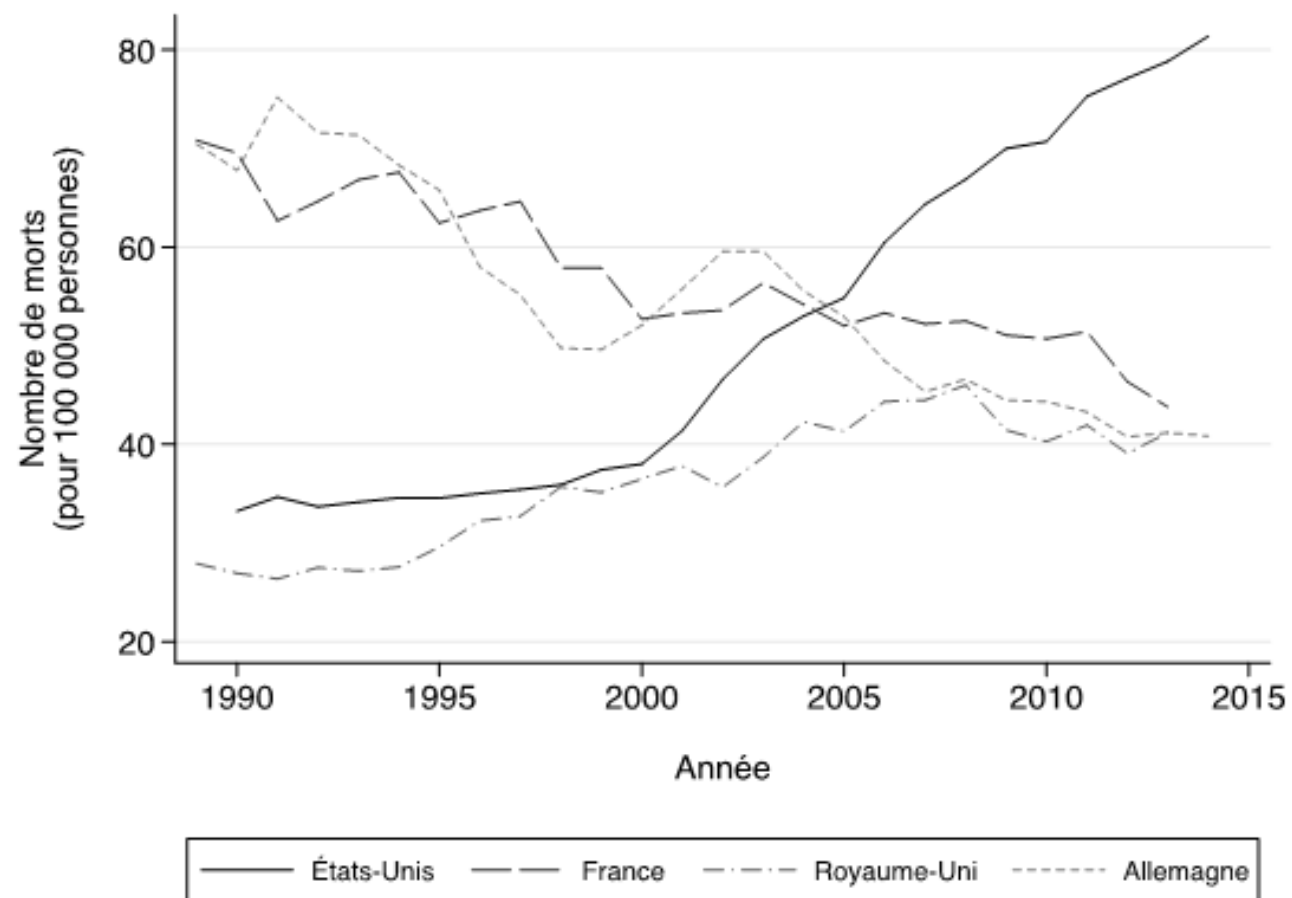
Share of clean, dirty, grey and other patents
Among all car related patents



RETHINK CAPITALISM

RETHINK CAPITALISM : COVID AS A REVELATOR

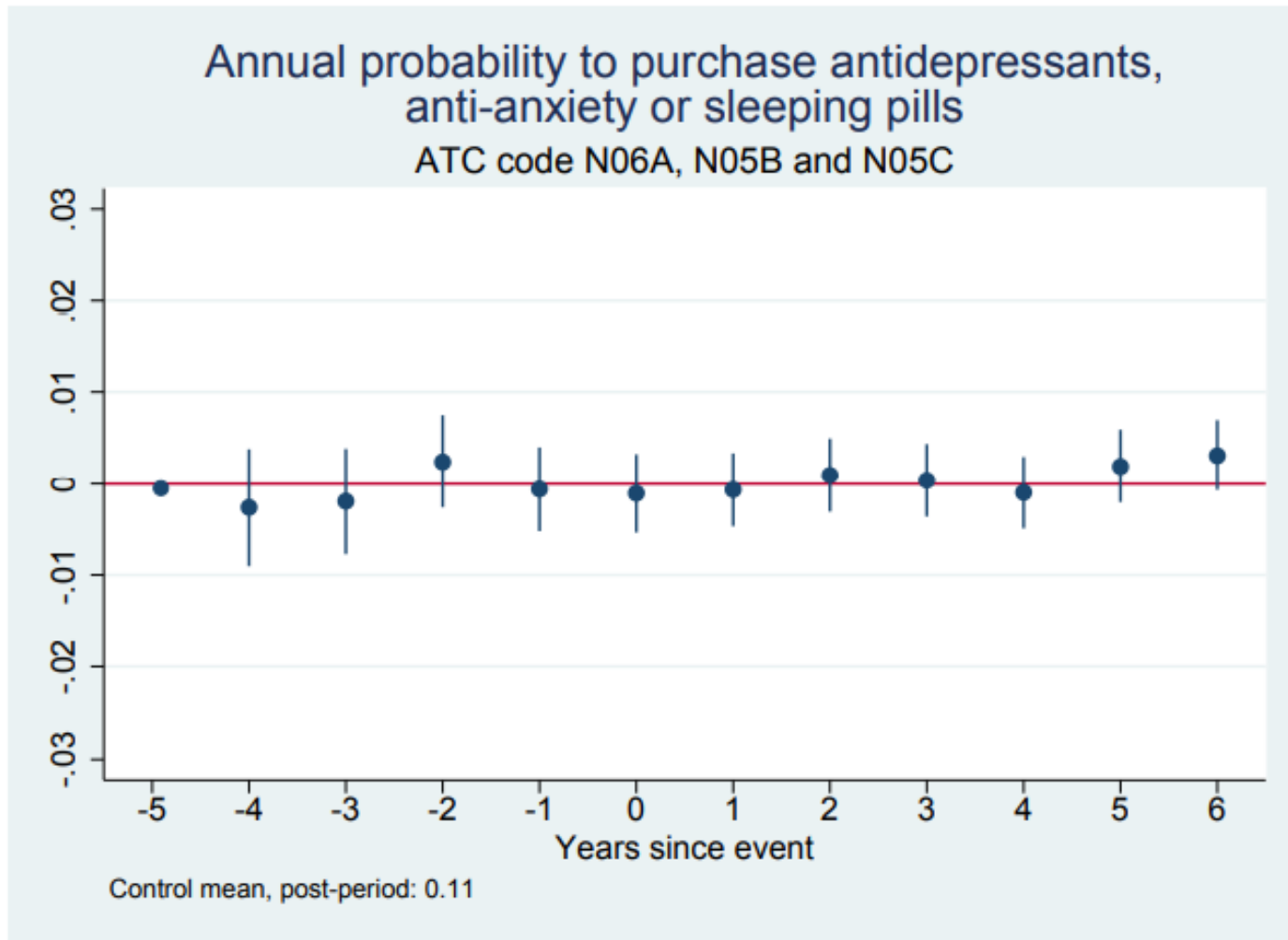
- Broken social model in the US
- European ecosystem does not favor innovation



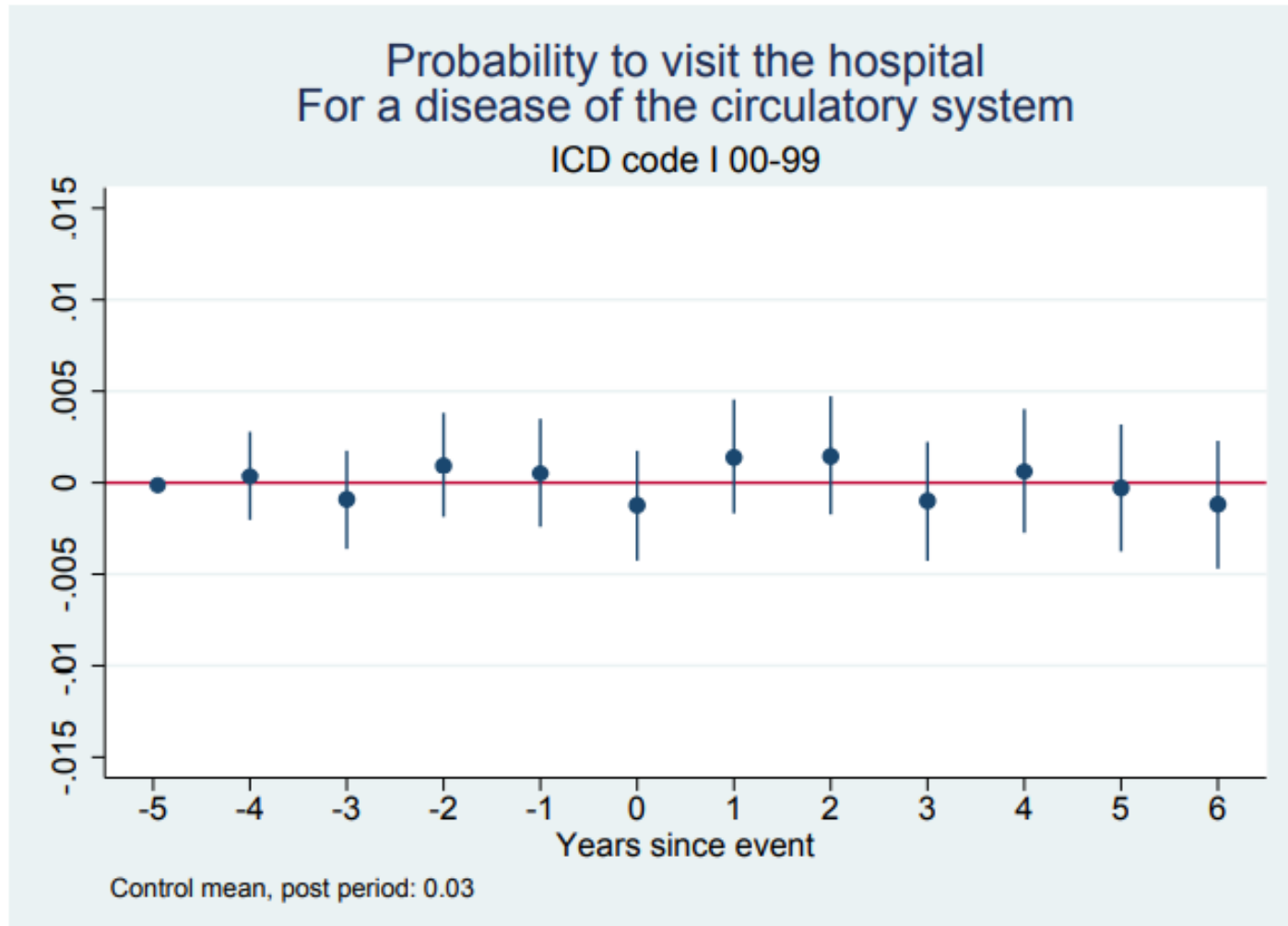
Source : D'après Case et Deaton (2017).

ALEXANDRA ROULET ON DENMARK

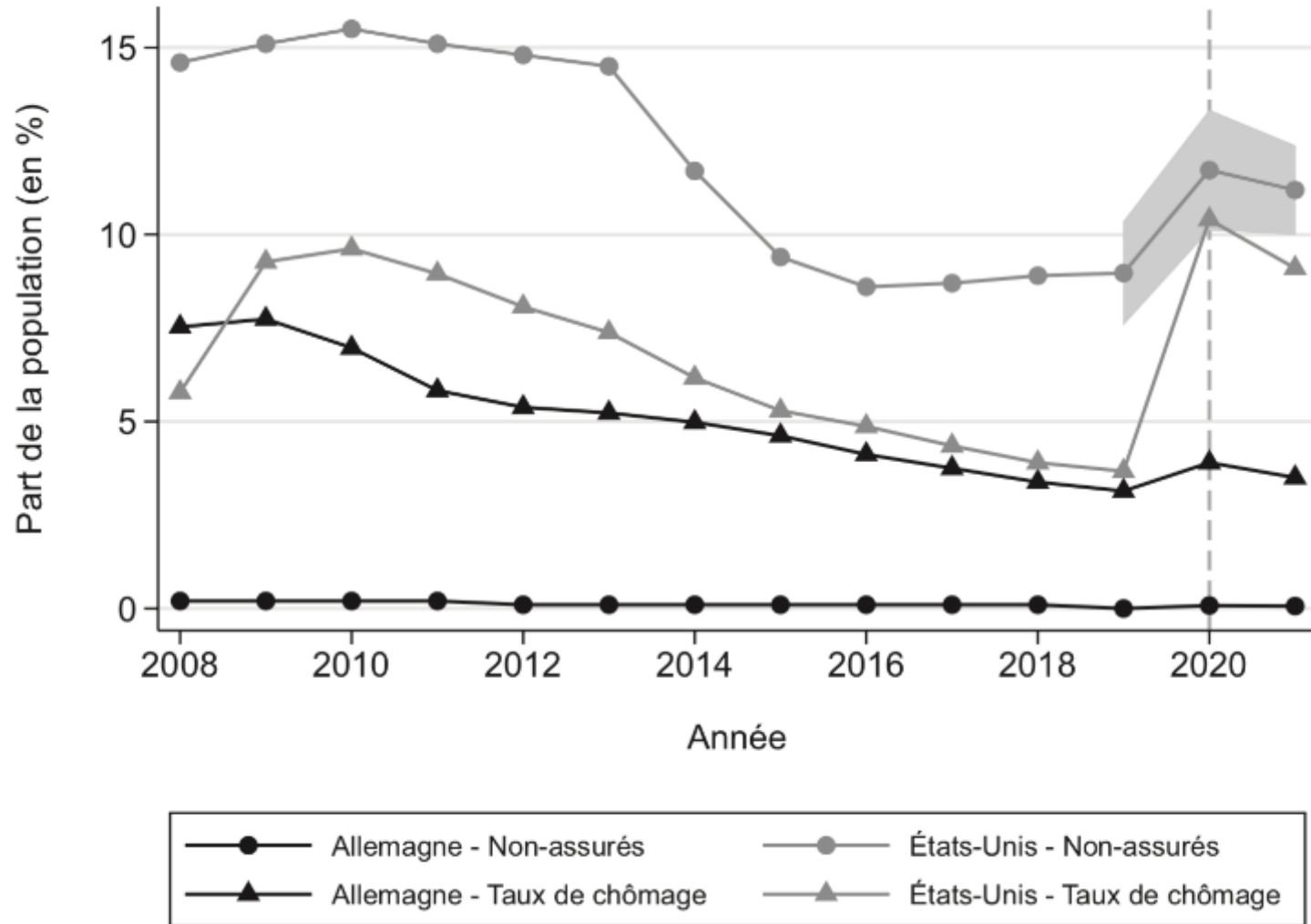
Moving to health: Antidepressants and related drugs



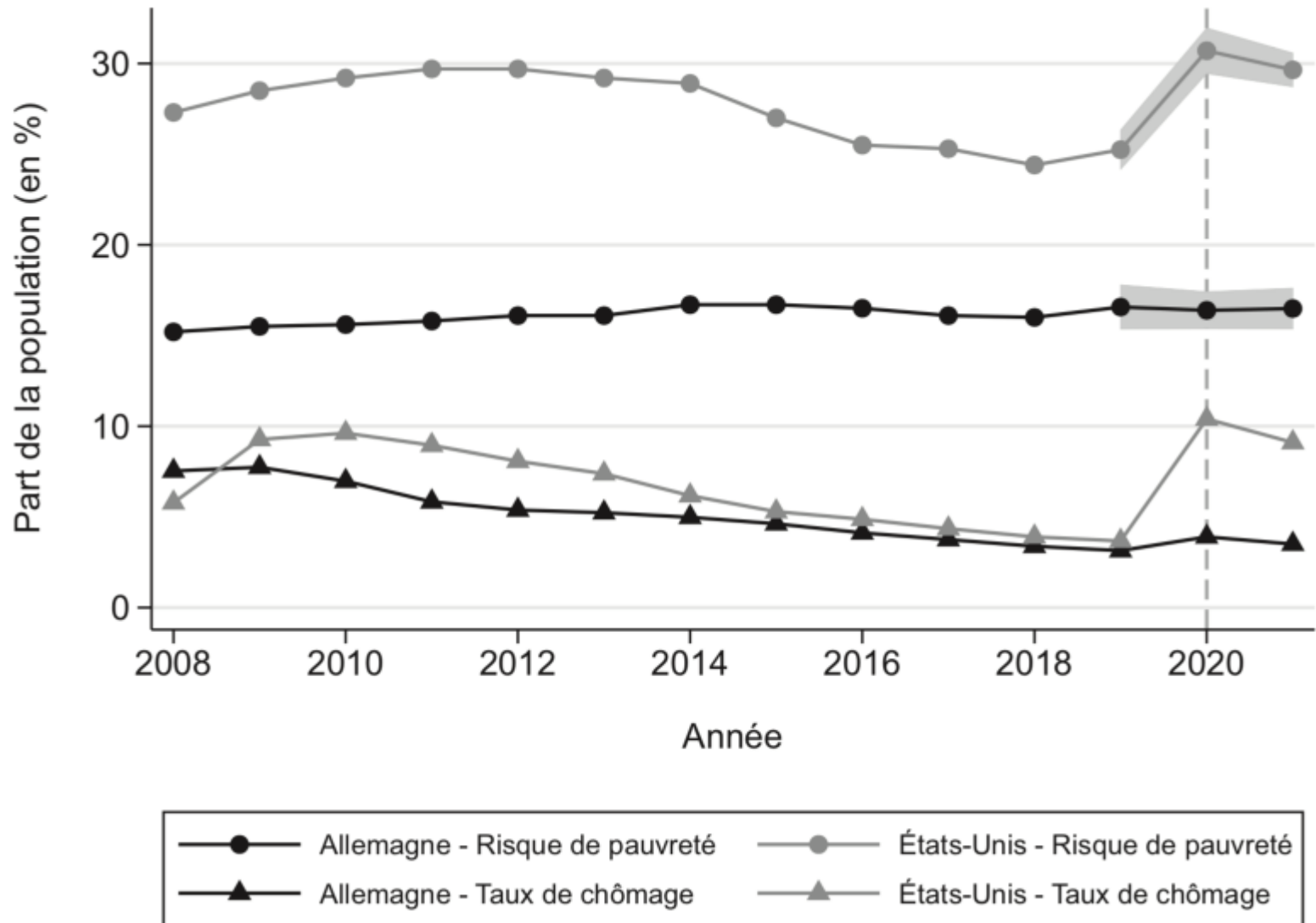
Heart attacks



COVID AS REVELATOR



COVID AS REVELATOR



COVID AS REVELATOR

Brevets en biotechnologies (pour 1 million d'habitants)

	2010	2011	2012	2013	2014	2015	2016
US	10.37	10.56	10.84	12.25	11.74	12.71	12.77
EU27	5.12	5.19	5.02	4.87	5.13	5.02	4.67
OECD - Total	6.69	6.75	6.69	7.11	7.17	7.47	7.48
China	0.23	0.25	0.25	0.31	0.34	0.42	0.49

Source: Authors' calculations using OECD data.

Notes: Reference country: Inventor's country of residence. Reference date: priority date.

COVID AS REVELATOR

Mesures de la BARDA pour lutter contre le COVID-19

Type of Product	Total Award Amount (\$)	Total number of funded companies	Total number of funded products
Vaccines	10,799,025,489	7	7
Diagnostic	44,996,752	22	28
Therapeutics	991,702,154	9	9
Rapidly Deployable Capabilities	10,432,068	9	9
Other	37,333,253	4	4
Total	11,883,489,716		

COVID AS REVELATOR

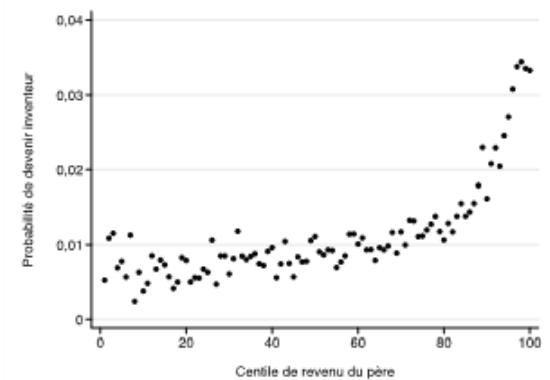
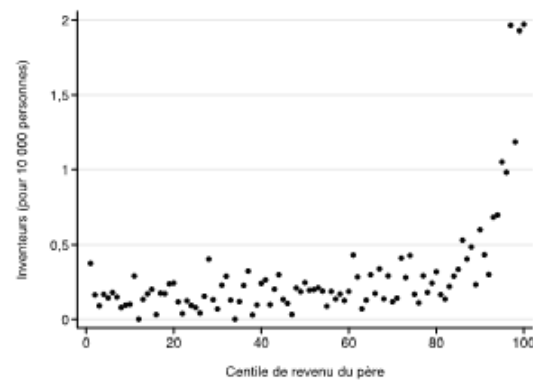
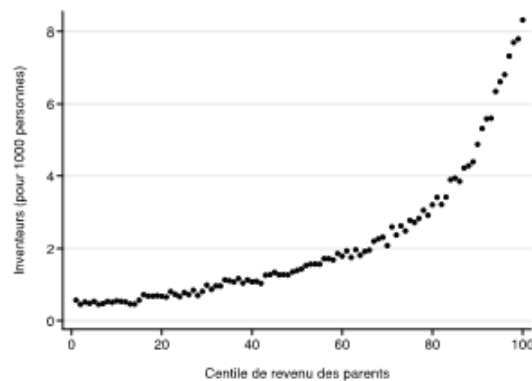
Financement de la Commission européenne et de la Banque européenne d'investissement

Funding Purpose	Amount (USD)
European Commission	
R&D	1,081,600,000
Preparedness and emergency response	217,107,249
Unallocated	436,667,248
Vaccine development	109,166,812
Total EC	1,844,541,309
European Investment Bank	
Manufacturing and delivery of therapeutics	63,316,751
Manufacturing and delivery of vaccines	91,700,122
Preparedness and emergency response	2,025,044,367
Total EIC	2,180,061,240

Source: Authors' calculations using data from the COVID-19 Health Funding Tracker, from The Economist.

RETHINK CAPITALISM

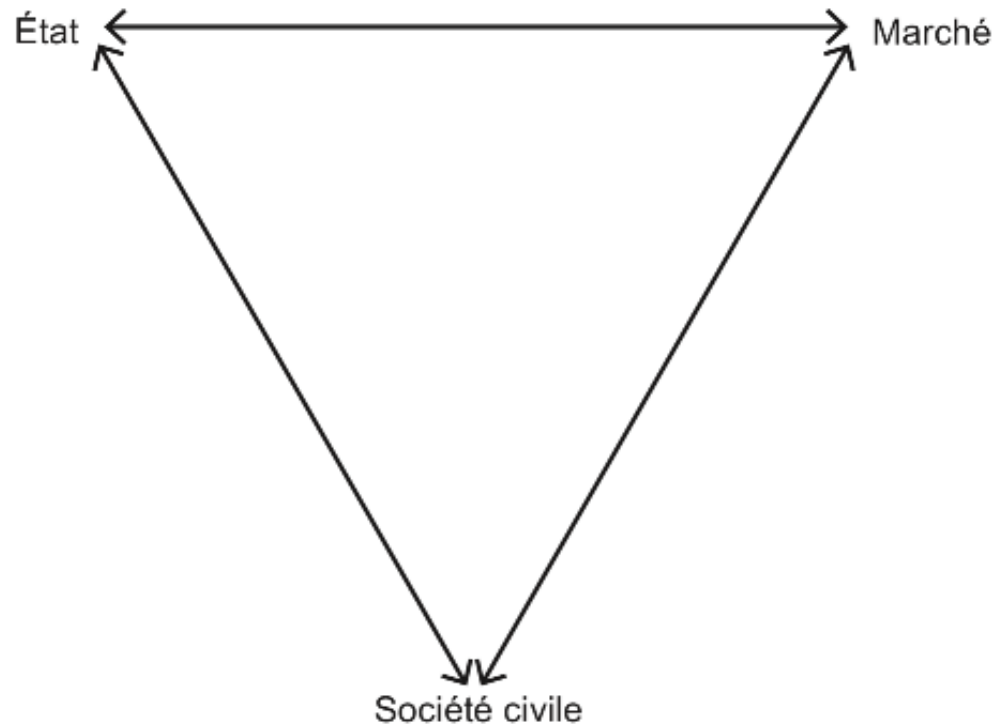
- Combine good side of American model (innovation) with good side of European model (protection)
- No trade off, rather, complementarity!!
 - Flexsecurity
 - Education and lost Einsteins



Sources : Bell, Chetty, Jaravel, Petkova et Van Reenen (2019) ; Akcigit, Grigsby et Nicholas (2017) ; Aghion, Akcigit, Hyytinen et Toivanen (2017).

RETHINK CAPITALISM

- Magic triangle: Firms/Market – State – Civil Society (Bowles and Carlin):



RETHINK CAPITALISM

- Constitutions are incomplete contracts (Aghion-Bolton, 2003; Aghion-Alesina-Trebbi, 2004)
- Civil society plays a crucial role as a means of ensuring the effective implementation of constitutional contracts

RETHINK CAPITALISM

- Two examples
 - The Fight for Civil Rights in the US
 - May 1968 and the Ability to Seize the Constitutional Council in France

OUTLINE

1. Paradigm
 2. Take off
 3. Technological waves
 4. Competition
 5. Inequality
 6. Secular stagnation
 7. Middle income trap
 8. Structural change
 9. Green innovation
 10. Behind the scene
 11. Creative destruction, health and happiness
 12. Financing creative destruction
 13. Globalization
 14. Emergence of Investor-State and Insurer-State
 15. The magic triangle between firms, the state, and civil society
- Conclusion: the future of capitalism

Thank you !