The Power of Creative Destruction

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24. June 2021 Markus Brunnermeier
Resilience and Creative Destruction

- Resilience – bounce back

Creativity and adjustment fosters resilience

- 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
Princeton

24. June 2021
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

PIB par habitant

Année

France
Royaume-Uni
États-Unis
Japon
Chine
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

![Graph showing TFP growth by IT intensity from 1980 to 2020. The x-axis represents years from 1980 to 2020, and the y-axis represents the growth rate of MFP in % (IT producing group). There are three lines: IT producing group, High IT group, and Low IT group, each with distinct markers and line styles.]
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
• Protectionism 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

Export Prices

Estimated Elasticity

Year relative to Investment in Industrial Equipment

Controlling for 4-digit industry by year F.E. and HS6 product F.E.
SALES
Evidence of business stealing

Competitors Employment - p75

Controlling for 4-digit-industry by year F.E. + Firm F.E. - 92650 observations
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
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
• Protectionism 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 (A61K), 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
• Protectionism 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

Year
1960 1980 2000 2020

Share of clean
Share of dirty
Share of grey
Share of other
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

Annual probability to purchase antidepressants, anti-anxiety or sleeping pills
ATC code N06A, N05B and N05C

Control mean, post-period: 0.11
Heart attacks

Probability to visit the hospital
For a disease of the circulatory system
ICD code I 00-99

Years since event

Control mean, post period: 0.03
COVID AS REVELATOR
COVID AS REVELATOR

Brevets en biotechnologies (pour 1 million d’habitants)

<table>
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<tbody>
<tr>
<td>US</td>
<td>10.37</td>
<td>10.56</td>
<td>10.84</td>
<td>12.25</td>
<td>11.74</td>
<td>12.71</td>
<td>12.77</td>
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<tr>
<td>EU27</td>
<td>5.12</td>
<td>5.19</td>
<td>5.02</td>
<td>4.87</td>
<td>5.13</td>
<td>5.02</td>
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<td>OECD - Total</td>
<td>6.69</td>
<td>6.75</td>
<td>6.69</td>
<td>7.11</td>
<td>7.17</td>
<td>7.47</td>
<td>7.48</td>
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<tr>
<td>China</td>
<td>0.23</td>
<td>0.25</td>
<td>0.25</td>
<td>0.31</td>
<td>0.34</td>
<td>0.42</td>
<td>0.49</td>
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*Source:* Authors’ calculations using OECD data.

*Notes:* Reference country: Inventor’s country of residence. Reference date: priority date.
Mesures de la BARDA pour lutter contre le COVID-19

<table>
<thead>
<tr>
<th>Type of Product</th>
<th>Total Award Amount ($)</th>
<th>Total number of funded companies</th>
<th>Total number of funded products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaccines</td>
<td>10,799,025,489</td>
<td>7</td>
<td>7</td>
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<tr>
<td>Diagnostic</td>
<td>44,996,752</td>
<td>22</td>
<td>28</td>
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<tr>
<td>Therapeutics</td>
<td>991,702,154</td>
<td>9</td>
<td>9</td>
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<tr>
<td>Rapidly Deployable Capabilities</td>
<td>10,432,068</td>
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<td>9</td>
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<tr>
<td>Other</td>
<td>37,333,253</td>
<td>4</td>
<td>4</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>11,883,489,716</strong></td>
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</table>
COVID AS REVELATOR

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

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