Doing Capitalism on the Dark Side of the Three-Player Game

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Productive versus Unproductive Bubbles

- **Locus of Speculation**
  - Productivity Enhancing
  - Non-Productivity Enhancing

- **Object of Speculation**
  - Banking System
  - Capital Markets

- **Years**
  - 1998-2000
  - 2005-2008
Five successive surges, recurrent parallel periods and major financial crises

Source: C. Perez, Technological Revolutions and Financial Capital

Note: * Observe phase overlaps between successive surges.

Source: Dates of crises are from Kindleberger (1978:1996), Appendix B
Infrastructure Investment/Financial Speculation

The R&D Boom of the Late 1990s
(Brown, Fazzari and Petersen, “Financing Innovation and Growth”)

Figure 2b. High-tech R&D, cash flow, and new share issues (young firms). The sample is all young high-tech firms with coverage in Compustat. A firm is classified as young for the first 15 years following the year it first appears in Compustat with a stock price. The high-tech industries are SICs 283, 357, 366, 367, 382, 384, and 737. The heavy line plots the sum of R&D for all young high-tech firms, the dashed line plots the sum of gross cash flow, and the thin line plots the sum of net new stock issues with negative net issues set equal to zero.
The Three-Player Game: Alternative Configurations

From this dynamic and unstable configuration of political, economic and financial forces ... has emerged a world in which state investment in fundamental research induces financial speculation to fund construction of transformational technological infrastructure, whose exploitation, in turn, raises living standards for everyone dependent on the productivity of the market economy. But the three-player game is also responsible for a world in which bubbles and crashes in the financial system spill over and liquidate both the employed and their employers, generating appeals to the political process for redress and relief. In yet another version, we find ourselves in a world where “malefactors of great wealth” – to invoke Theodore Roosevelt’s epithet – are able to exploit the political process in order to preserve and protect their exploitation of the market economy.
Public Sector Share of National Economy

Government spending (% GDP)
Total government spending, including interest government expenditures, as share of national GDP

Source: IMF Fiscal Affairs Departmental Data, based on Mauro et al. (2015)
The Two (Modern) Globalizations

Courtesy of Brad Delong:
Economics of Trade Globalization-1

Manufacturing Share of Nonfarm Employment
BLS Payroll Concept

The share of manufacturing jobs in all nonfarm employment is little more than a quarter of what it was at the start of the 1950s.

Source: Economagic.com [Get the data]
Germany has shed more than one half of its manufacturing employment share since 1970.
Income Inequality in the Anglophone World

Top 1% national income share in Anglophone countries, 1920–2015

Source: Nocke, Ritsema, & Zucman (2017). See wr2016.wd.world/methodology.html for data series and notes. In 2014, 20% of national income was received by the Top 1% in the US.
Obama’s OSTP-1
Obama’s OSTP-2
Office of Science and Technology Policy

In 1976, Congress established the White House Office of Science and Technology Policy (OSTP) to provide the President and others within the Executive Office of the President with advice on the scientific, engineering, and technological aspects of the economy, national security, homeland security, health, foreign relations, the environment, and the technological recovery and use of resources, among other topics.

OSTP also leads interagency science and technology policy coordination efforts, assists the Office of Management and Budget with an annual review and analysis of Federal research and development in budgets, and serves as a source of scientific and technological analysis and judgment for the President with respect to major policies, plans, and programs of the Federal Government.
Diffusion

The Diffusion of Electrification

“Certainly, the transformation of industrial processes by the new electric power technology was a long-delayed and far from automatic business. It did not acquire real momentum in the United States until after 1914-17, when regional utility rates for electricity were lowered substantially...and central station generating capacity came to predominate over generating capacity in isolated industrial plants.

“'In 1900 contemporary observers well might have remarked that the electric dynamos were to be seen “everywhere but in the productivity statistics.”'

Amazon Web Services: Machine Learning

Machine learning and cognitive applications are the next phase of digital transformation. The ability to build and leverage applications that learn on their own is a powerful idea that is only beginning to manifest itself. For AWS customers, machine learning is a new frontier in which you can increase efficiency and productivity of your businesses. Capturing the potential of machine learning applications requires innovation in technologies and business models, as well as investment in new capabilities and talent. You can now look to AWS Marketplace to help find, buy and deploy Machine Learning and AI software solutions from popular software vendors.
Microsoft Azure: AI and Machine Learning

AI + Machine Learning

Machine Learning
- Computer development spanning the cloud and the edge

AzureBot Service
- Intelligent, serverless bot service that scales on demand

Cognitive Services
- Add smart API capabilities to enable contextual interactions

- Bing Search API
  - Get enhanced search details from billions of web documents

- Text Analytics API
  - Easily evaluate sentiment and topics to understand what users want

- Face API
  - Detect, identify, analyze, organize, and tag faces in photos

- Computer Vision API
  - Distill actionable information from images

- Custom Vision Service
  - Easily custom your own state-of-the-art computer vision models for your unique use case

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The Macro Consequences of the Digital “Superstar” Firms

“(i) there has been a rise in sales concentration within four-digit industries across the vast bulk of the U.S. private sector; (ii) industries with larger increases in product market concentration have experienced larger declines in the labor share; (iii) the fall in the labor share is largely due to the reallocation of sales between firms rather than a general fall in the labor share within incumbent firms; (iv) the reallocation-driven fall in the labor share is most pronounced in precisely the industries which had the largest increase in sales concentration; and (v) these patterns are also present in firm- and industry-level datasets from other OECD countries.”

Digital Platforms, Competition and Income Distribution

“Internet-based platforms are web sites serving as intermediaries or facilitators between users, or between service suppliers and consumers (such as Facebook, Google, Uber, Amazon and Apple’s iStore). Platforms have a major influence on market competition. There are concerns regarding market competition between platforms, due to their direct reliance on digital innovation, which favors winner-take-all market structures. Competition authorities around the world have dealt with a few cases involving platforms already, but there is not yet an articulated doctrine on how to deal with them.

“This paper puts forward an understudied mechanism that links digital innovation to changing market structures and, consequently, impacts on the distribution of income. It provides initial evidence pointing to the importance of the mechanism....”

Digital Innovation, Market Structure, Income Distribution

Digital innovation
(Digital non-rivalry)

Innovation dynamics
- Economies of scale
- Lower cost of innovation

Winner-take-all market dynamics
- Market concentration
- New market entrants / Creative destruction

Drivers of change in the distribution of income
- Market power
- Risk
  - ↑ Market rents

Distribution of income and social mobility
  - ↑ Return to top executives, key employees & capital
  - ↓ Return to labor
  - ↑ Social mobility

(Guellec and Paunov, p. 1)
Facebook, Politics and Data Science

“Recent revelations about the abuse of Facebook data and spread of disinformation make clear that social media can have negative ramifications for society. Today the SSRC begins an extraordinary Social Data Initiative at the frontiers of digital culture to examine the problem, explore questions about the responsible use of social network data, and generate insights to inform solutions.

“With the potential to usher in a new paradigm for research collaboration between industry and the academy, Facebook will make data available for the first time to social science researchers via an independent, transparent, peer-review process.

“The SSRC’s role will include helping to form a steering committee of independent scholars to develop a research agenda about social media’s impact on society, beginning with elections, and stewardship of both the independent application and selection processes, as well as the peer-review process. Any proposal submitted through this process must first have been reviewed by a University Institutional Review Board (IRB), federally approved IRB, or international equivalent.”

The Unicorn Bubble

The Global Unicorn Club

Current Private Companies Valued At $1B+
(including whisper valuations)

Total Number of Unicorn Companies: 234
Total Cumulative Valuation: ~ $800B
The State of the Software Industry Today: The Entrepreneurial Risks

“Given that SaaS-driven start-ups need at least five times as much risk equity to reach positive cash flow, the post-Bubble decline in the U.S. IPO market has differentially affected enterprise software ventures....

• Technology Risk: “When I plug it in, will it light up?”
• Market Risk: “Who will pay to buy it if it does work?”
• Financing Risk: “Will the capital be there to fund the venture to positive cash flow?”
• Business Risk: “Will the team manage the transition from start-up to sustainable business, especially given the challenge of building an effective channel to the market?”
The Venture Capitalist’s Question

• The Technology does Light up – *Do we sell now?*

• We have three credible customers who will testify that they bought our offering and will buy more – *Do we sell now?*

• We have access to another round of funding but it will be dilutive and Business Risk looms – *Do we sell now?*
“Loss of authority by those charged with directing the state will always undermine the confidence of participants in the markets of financial capitalism. “
Birth and Death of American Firms

Decline in American Economic Mobility

“U.S. companies are buying back their shares at a record pace, providing fresh support during a rocky stretch for the stock market when many investors have rushed for the exits.” WSJ 5-11-2018g
“Killing the Golden Goose? The Decline of Science in Corporate R&D”

“Scientific knowledge is believed to be the wellspring of innovation. Historically, firms have also invested in research to fuel innovation and growth. In this paper, we document a shift away from scientific research by large corporations between 1980 and 2007. We find that publications by company scientists have declined over time in a range of industries. We also find that the value attributable to scientific research has dropped, whereas the value attributable to technical knowledge (as measured by patents) has remained stable. These effects appear to be associated with globalization and narrower firm scope, rather than changes in publication practices or a decline in the usefulness of science as an input into innovation. Large firms appear to value the golden eggs of science (as reflected in patents) but not the golden goose itself (the scientific capabilities)....”

(A. Arora et. al., NBER Working Paper 20902, January 2015, Abstract)
Free Trade is for Winners

“Any power which by means of a protective policy has attained a position of manufacturing and commercial supremacy can (after she has attained it) revert with advantage to a policy of free trade.”

Chinese Commitment to Renewable Energy

“At the start of 2017, China announced that it would invest $360 billion in renewable energy by 2020 and scrap plans to build 85 coal-fired power plants. In March, Chinese authorities reported that the country was already exceeding official targets for energy efficiency, carbon intensity, and the share of clean energy sources. And just last month, China’s energy regulator, the National Energy Administration, rolled out new measures to reduce the country’s dependence on coal.

“These are just the latest indicators that China is at the center of a global energy transformation, which is being driven by technological change and the falling cost of renewables. But China is not just investing in renewables and phasing out coal. It also accounts for a growing share of global energy demand, meaning that its economy’s continuing shift toward service- and consumption-led growth will reshape the resource sector worldwide.”

Since 2008, the United States has experienced the first sustained period of rapid GHG emissions reductions and simultaneous economic growth on record. Specifically, CO$_2$ emissions from the energy sector fell by 9.5% from 2008 to 2015, while the economy grew by more than 10%. In this same period, the amount of energy consumed per dollar of real gross domestic product (GDP) fell by almost 11%, the amount of CO$_2$ emitted per unit of energy consumed declined by 8%, and CO$_2$ emitted per dollar of GDP declined by 18% (2).

“...The Paris Climate Accord is simply the latest example of Washington entering into an agreement that disadvantages the United States to the exclusive benefit of other countries, leaving American workers — who I love — and taxpayers to absorb the cost in terms of lost jobs, lower wages, shuttered factories, and vastly diminished economic production.

“Thus, as of today, the United States will cease all implementation of the non-binding Paris Accord and the draconian financial and economic burdens the agreement imposes on our country. This includes ending the implementation of the nationally determined contribution and, very importantly, the Green Climate Fund which is costing the United States a vast fortune.”
The Race for Renewable Energy Domination
Countries/regions with the most governmental renewable energy R&D spending in 2016

- China: $1.9bn
- Europe: $1.4bn
- U.S.: $1.0bn
- Asia/Oceania*: $0.8bn

* Excluding China and India

Source: Frankfurt School – UNEP Collaborating Centre for Climate & Sustainable Energy Finance

Image: Statista
The Rediscovery of Keynes

“I did not expect to live to see the economics I had absorbed at Cambridge more than forty years ago – the economics of Keynes; of uncertainty at the level of the individual investor, consumer, firm and government; and of consequent instability at the level of the integrated financial economy – again become so relevant and so broadly recognized as such within the discipline.”
The Power of Ideas

“If I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas. Not, indeed, immediately, but after a certain interval … But, soon or late, it is ideas, not vested interests, that are dangerous for good or evil.”

(Keynes, *The General Theory*, p. 343.)