From market fixing to market shaping: re-framing growth policy

LEONTIEF PRIZE CEREMONY
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Rethinking the ‘direction’ of growth

• European Union Horizon 2020
  – Smart growth (better innovation)
  – Sustainable growth (more green)
  – Inclusive growth (less inequality)

• United Nations SDGs

• Come back of ‘industrial strategy’
Levelling the playing field?

standard policy tool kit:

Set rules of the game

De-risk, enable, incentivise, ‘facilitate’ private sector

Fix market and system ‘failures’

Lender of last resort
Just fixing failures?

- **Coordination failures**
  - e.g. pro-cyclical investment

- **Public goods**
  - e.g. knowledge, clean air

- **Negative externalities**
  - e.g. pollution

- **Information failures**
  - e.g. SME finance

- **Imperfect competition**
  - e.g. monopolies
the assumption

private sector vs. public sector
But market failure policies did not get us the GPTs

- ‘mass production’ system
- aviation and space technologies
- IT and internet
- nuclear power
- nanotechnology and AI
- green technology
... and won't get us the SDGs

[Image showing the SDG icons and titles]
A radically different view: from fixing markets to *shaping & creating*

“The road to free markets was opened and kept open by an enormous increase in continuous, centrally organized and controlled interventionism… Administrators had to be constantly on the watch to ensure the free working of the system.”

*Karl Polanyi*, 1944

*The Great Transformation*
Investor of first resort
Risk-taking and market making along entire innovation chain

1. research
2. concept/invention
3. early stage technology development
4. product development
5. production/marketing

- NSF, NIH, DARPA
- Corporate research
- Angel investors, corporations, technology labs, SBIR, NASA
- VC, SBIR, InQtel, NIH, ARPA-E, Yozma
- Corporate venture funds, equity, commercial debt

Source frequently funds this technological stage
Source occasionally funds this technological stage

source: adapted from Auerswald/Branscomb, 2003
Private and public (SBIR) venture capital

Source: Block and Keller, 2012
what makes the iPhone so ‘smart’?

Source: Mazzucato (2013), p. 109, Fig. 13
Total NIH spending, 1936-2011 in 2011 dollars=$792 billion

NIH budget for 2012=$30.9 billion

Source: http://officeofbudget.od.nih.gov/approp_hist.html
Green tech: state leads government follows

Figure 4: Risk-capital intensity classification of RE finance

Boundary of the present study: asset finance

- Low Risk
  - High Capital Intensity
    - (project finance/existing firms)

- High Risk
  - High Capital Intensity
    - (Hard to fund)

- Low Risk
  - Low Capital Intensity
    - (existing firms/bank debt)

- High Risk
  - Low Capital Intensity
    - (Venture Capital)

KfW funding for industrial environmental and climate protection projects in Germany
2001-2012

- KfW Renewable Energies Programme
- Other Renewable energy programmes

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<th>Year</th>
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<th>Other Renewable</th>
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“The success of a theory consists … in that suddenly everyone begins to reason according to new categories”

Albert Hirschman, 1973
ROAR

ROUTES & DIRECTIONS. How to use policy to set direction of change and enable bottom up experimentation?

ORGANIZATIONS. How to build explorative public sector organizations that learn-by-doing, and welcome trial and error?

ASSESSMENT. How to evaluate public sector market creating investments (pushing market frontiers beyond ‘crowding in’)?

RISKS AND REWARDS. How to form new deals between public and private sectors, socializing both risks and rewards?

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Rediscovering Public Purpose

MISSIONS

Mission-Oriented Research & Innovation in the European Union

A problem-solving approach to fuel innovation-led growth

by Mariana MAZZUCATO
Figure 1 below illustrates the movement from broad challenges to specific missions.
CLEAN OCEANS

A PLASTIC-FREE OCEAN

Reduction of 90% of plastics entering the marine environment and collection of more than half of plastics present in our oceans, seas and coastal areas by 2025

Grand Challenge

Mission

Areas of interest & cross-sector

R&I Projects

- Autonomous ocean stations to remove plastic pollution
- Re-use of packing items through personalised collection services
- Re-usable and biodegradable plastic substitutes
- Plastic and micro plastic digestion mechanism
- Image recognition and deep learning waste separation system for domestic and marine waste

Chemical Industry

Social Innovation

Biotech

Human Health

Marine Life

AI Technology

Design Sector

Waste Management
CITIZEN HEALTH AND WELLBEING

DECREASING THE BURDEN OF DEMENTIA
Halving the human burden of dementia by 2030

- Medical Sector
- Social Sector
- Pharmaceutical
- Service Sector

- Tech sector
- Consumer goods
- Design Sector
- Behavioural

- Innovative techniques for personalised diagnosis of Alzheimer's
- AI support for physical and intellectual patient independence
- Social standards and caregiving approaches
- Improved understanding of probability of acquiring neurodegenerative diseases
- New personalised treatments for neurodegenerative diseases

Grand Challenge
Mission
Areas of interest & cross-sector
R&I Projects
Criteria

• Bold and addressing societal value
• Concrete targets: you know when you got there!
• Involving research and innovation: technological readiness over limited time frame.
• Cross-sectoral, cross-actor, cross disciplinary
• Multiple competing solutions
Implementation

• Selection (who decides?)
• Impact-driven (targets / milestones)
• Pro-active portfolio management (DARPA style)
• Flexibility and adaptability
• Accountability
• Connecting and engaging citizens
• Public sector capacity building and relationship to industrial strategies of member states
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Creating missions not fixing markets

NASA’s mission is to “Drive advances in science, technology, aeronautics, and space exploration to enhance knowledge, education, innovation, economic vitality, and stewardship of Earth.” NASA 2014 Strategic Plan

“Creating breakthrough technologies for national security is the mission of the Defense Advanced Research Projects Agency (DARPA).”

“The ARPA-E mission is to catalyze the development of transformational, high-impact energy technologies.”

“NIH’s mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.”

“The mission of the KfW Group is to support change and encourage forward-looking ideas – in Germany, Europe and throughout the world.”
We measure success by how many risks we have been willing to take (with inevitable failures) and whether the successes actually matter.

Cheryl Martin, ex-Director ARPA-E, 2014
Organizational Experimentation
“The design of a good policy is, to a considerable extent, the design of an organizational structure capable of learning and of adjusting behavior in response to what is learned”
Dick Nelson and Sydney Winter, 1982

Policy as Process
“shift from total confidence in the existence of a fundamental solution for social and economic problems to a more questioning, pragmatic attitude –from ideological certainty to more open-ended, eclectic, skeptical inquiry”
Albert Hirschman, 1987
Private wealth creators encouraged to:

- invest in capabilities
- take risks & welcome uncertainty
- learn from trial and error
- make strategic choices (MBA)
- be hungry & foolish!
Public servants encouraged to:

- facilitate
- de-risk
- level the playing field
- redistribute value
- fix market failures then get out of the way!

(then criticised as *boring, slow, bureaucratic*)
Public Choice Theory lens
(new public management)

- citizens are customers/clients
- privatisation or ‘load shedding’ is a good thing
- outsourcing and contracting saves money
- private sector management tools bring efficiency
- civil servants easily corrupted
- government failure even worse than market failure!
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Dynamising in
(vs. crowding in/out)
• BBC Charter Review: why not soap operas?
• do public banks crowd out private ones?
• health: why many drugs and so little life-style?
• role of universities in commercialisation?
"Businessmen have a different set of delusions from politicians, and need, therefore, different handling... You cold do anything you liked with them, if you would treat them (even the big ones), not as wolves or tigers, but as domestic animals by nature, even though they have been badly brought up and not trained as you would wish."

Keynes to F.D Roosevelt (1938)
Direct government funding and tax support for business R&D, 2015

As a percentage of GDP

Data on tax incentive support not available for Israel, Poland and Sweden.


Public values are those providing normative consensus about (1) the rights, benefits, and prerogatives to which citizens should (and should not) be entitled; (2) the obligations of citizens to society, the state, and one another; (3) and the principles on which governments and policies should be based” (Barry Bozeman, 2007, 13).

(from new public management’s fear of government failure, to enabling experimentation and learning)
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inclusive growth
Better ‘deal’ between public & private

- reinvesting profits (and limiting share buybacks)
- retaining golden share of IPR
- capping prices (Bayh Dole act allows it)
- negotiating conditions (generics)
- income contingent loans
- retain some equity (Tesla & Solyndra lesson)
- % payback into an ‘innovation fund’
- State investment banks

(discussed in Mazzucato, 2015; 2016)
Financialisation is a ‘bad deal’

Fortune 500 companies have spent $2.3 trillion on buybacks from 2003-2012 (54% of their earnings), with another 37% on dividends.

(Lazonick, HBR 2014)
Where are energy’s Bell Labs?

Renewable energy R&D investments in the U.S.

*in million 2002 dollars*

INCOME INEQUALITY IN THE UNITED STATES, 1910-2010

Source: Piketty, 2013
“I have worked with investors for 60 years and I have yet to see anyone — not even when capital gains rates were 39.9 percent in 1976-77 — shy away from a sensible investment because of the tax rate on the potential gain. People invest to make money, and potential taxes have never scared them off. And to those who argue that higher rates hurt job creation, I would note that a net of nearly 40 million jobs were added between 1980 and 2000. You know what’s happened since then: lower tax rates and far lower job creation.”

And….why did capital gains fall in 1976?
Think Again!

private sector

vs.

public sector
Derisking
Welcoming uncertainty
Fixing markets
Co-creating and shaping
Levelling playing field
Tilting towards a direction

Outsourcing
Capacity building
Picking winners
Picking the willing
Cost benefit
Dynamic spillovers
rethinking how public value is created, nurtured and evaluated
(forthcoming)

Stay tuned!
The Entrepreneurial State: debunking public vs. private sector myths (2013)

The Value of Everything: makers and takers in the global economy (2018)

Financing renewable energy: who is financing what and why it matters (2017), *Technological Forecasting and Social Change*, with G. Semieniuk

