The Entrepreneurial State
from Market Fixing to Market Making

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3 big battles

• **Smart** growth (more innovation)

• **Sustainable** growth (more green)

• **Inclusive** growth (less inequality)
Biggest battle: *what is State’s role?*

Set ‘level’ playing field then *get out of the way*

Solve market ‘failures’

De-risk (and ‘facilitate’) private sector

Something … more interesting?
"Governments have always been lousy at picking winners… As the revolution rages, governments should stick to the basics: better schools for a skilled workforce, clear rules and a level playing field for enterprises of all kinds… Leave the rest to the revolutionaries."

(‘The Third Industrial Revolution’, The Economist, April 21, 2012).
Policy as (just) fixing market failures?

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

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

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

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

- **Imperfect competition**
  - e.g. monopolies
A different view: market 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, *The Great Transformation*, 1944

“The important thing for Government is not to do things which individuals are doing already, and to do them a little better or a little worse; but to do those things which at present are not done at all.”

John M. Keynes, *The End of Laissez Faire*, 1926
the assumption

private sector vs. public sector
New questions for economic policy

◆ DIRECTIONS. Policy as actively setting direction of change. How to foster a more dynamic debate about possible directions (and stop useless worry about ‘picking winners’).

◆ EVALUATION. How to evaluate public sector market creating investments (pushing market frontiers)?

◆ EXPLORATIVE ORGANIZATIONS. How to build explorative public sector organizations that welcome trial and error?

◆ RISKS AND REWARDS. How to socialize both risks and rewards, with revolving fund for future innovation and welfare. (discussed in Mazzucato, 2015)
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Market failure policies don’t explain **General Purpose Technologies**

- ‘mass production’ system
- aviation technologies
- space technologies
- IT
- internet
- nuclear power
- nanotechnology
- green technology
Missions and risk-taking along entire innovation chain

1. research

2. concept/invention

3. early stage technology Development

4. Product development

5. production/marketing

- Angel investors, corporations, technology labs, SBIR, NASA
- VC, public venture capital, NIH, labs, ARPA-E
- Corporate venture funds, equity, commercial debt

Source: Auerswald/Branscomb, 2003
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.”
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
Direct government funding of business R&D and tax incentives for R&D, 2010

As a percentage of GDP

Business R&D spending (BERD)
Businessmen have a different set of delusions from politicians, and need, therefore, different handling. They are, however, much milder than politicians, at the same time allured and terrified by the glare of publicity, easily persuaded to be ‘patriots’, perplexed, bemused, indeed terrified, yet only too anxious to take a cheerful view, vain perhaps but very unsure of themselves, pathetically responsive to a kind word. You could 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….

John M. Keynes’s private letter to Franklin D. Roosevelt
Feb 1, 1938
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Technology risk in clean tech

(venture capital will ride the wave, who will kick/push?)

High

Capital intensity of project

Low

Technology risk

- Wind farms
- Utility-scale solar
- ‘First-gen’ biofuel refineries
- Fabs for solar cells using established technologies

- First commercial plants for unproven solar cell technologies
- Advanced biofuel refineries
- Offshore wind farms
- Carbon sequestration

- Wind and solar components of proven technologies
- Internal combustion engines
- Insulation / building material
- Energy efficiency services

- Energy efficiency software
- Lighting
- Electric drive trains
- Fuel cells / power storage
- Wind and solar components of unproven technologies

Source: Ghosh and Nanda, 2011
Green tech public & private investments (2011)

- Development Finance Institutions: $123.0 bn
- Project developers (including public utilities): $102.0 bn
- Corporate actors: $66.0 bn
- Households: $33.0 bn
- Commercial Financial Institutions: $21.0 bn
- Government (budgets): $12.0 bn
- Private Equity, Venture Capital and Infrastructure funds: $1.0 bn
- Institutional Investors: $0.4 bn

Source: Climate Finance Initiative
KfW funding for industrial environmental and climate protection projects in Germany
2001-2012

- KfW Renewable Energies Programme
- Other Renewable energy programmes

Year
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012

Funding (Billion)
€0.55 bi
€0.48 bi
€0.71 bi
€0.08 bi
€0.89 bi
€0.55 bi
€0.42 bi
€2.82 bi
€9.59 bi
€7.56 bi
€7.94 bi
The German lessons for Greece!

- **Middle sized firms** (small is NOT beautiful)
- **Patient long-term finance** (e.g. KfW)
- Strong well funded **science-industry** links (e.g. Fraunhofer) – & not just pushing on a string.
- **High R&D/GDP**
- ‘**Mission oriented**’ R&D (e.g. Energiewende)
China Development Bank

China’s 2020 goal of producing 20% energy from renewables. 5 year plan includes $1.7 trillion dollars in 5 new (green) sectors.

CDB founded CDB Capital, a ‘public equity’ fund with $US 5.76 bn to finance innovative start-ups from the energy and telecom sectors.

Yingli Green Energy received $1.7 bn from 2008 through 2012 with a $5.3 bn line of credit opened for it. LDK Solar ($9.1 bn); Sinovel Wind ($6.5 bn); Suntech Power ($7.6 bn); and Trina Solar ($4.6 bn),

Patient committed finance has “allowed Chinese companies to further ramp up production and drive down costs” of renewable energy technologies

Source: Sanderson and Forsythe, 2013
A key element to get an energy breakthrough is more basic research. And that requires the government to take the lead. Only when that research is pointing towards a product then we can expect the private sector to kick in.
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“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?
Repurchases, dividends, net income, R&D 1980-2006
(293 corporations in the S&P500 in October 2007 in operation in 1980)

Fortune 500 companies have spent $3 trillion on buybacks over the last decade…

Value creation vs. Value extraction!

Source: Lazonick & Mazzucato, 2013; Lazonick, 2014
Where are energy’s Xerox Parcs & Bell Labs?

Renewable energy R&D investments in the U.S.
in million 2002 dollars

Better ‘deal’ between public & private

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

and more… (but where is the conversation?)

(discussed in Mazzucato, 2013; 2015)
State → 1% → Internet → Inclusive Growth → Wind Turbine
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(discussed in Mazzucato, 2015)
think again!

private sector

vs.

public sector
References


Accounting for productive investment and value creation, Industrial and Corporate Change, with Alan Shipman, 2014
