



ft.com > comment >

Welcome info@arthurslegal.com [Your account](#) [Site tour](#) [Sign out](#)

# Opinion

Search

[Advanced search](#)

- Home
  - World
  - Companies
  - Markets
  - Global Economy
  - Lex
  - Comment
  - Management
  - Life & Arts
- 
- Columnists ▾
  - Analysis
  - Opinion
  - The A-List
  - Editorial
  - Blogs ▾
  - Letters
  - Corrections
  - Obituaries
  - Tools ▾

August 21, 2013 4:47 pm

- [Share](#)
- [Clip](#)
- [Reprints](#)
- [Print](#)
- [Email](#)

## Why innovation needs the help of an active state

By Mariana Mazzucato

### Productive public spending leads to growth, as illustrated by the US, writes Mariana Mazzucato

The debate about **austerity** – and the relationship between **public deficits**, **national debts and growth** – has missed a crucial point. Unless countries are on the verge of a bond market strike, the amount of debt or the size of the deficit matter less than what activity the taxpayer is actually funding. If spending supports areas that increase growth rates via increases in productivity and innovation – such as education, skills, research and new technologies – then the long-run ratio of debt to economic output could be lower (and the state in better shape) than if its spending is less productive.

Nations that have achieved innovation-led growth have not only created the conditions for innovation – funding education, training and infrastructure – or fixed market failures by funding basic research. They have also actively provided direct support to innovators. This is true even in red-in-tooth-and-claw capitalist America. The IT revolution did not happen with the federal government on the sidelines. The US backed the microchip, as it did the internet and, more recently, nanotechnology and biotechnology. Each was funded through public agencies such as the Defense Advanced Research Projects Agency, the National Science Foundation and National Institutes of Health.



**More**

**ON THIS STORY**

- Stian Westlake [We need madcap schemes](#)
- Martin Wolf [The Entrepreneurial State, by Mariana Mazzucato](#)
- Technology [Vanity or visionary?](#)
- Comment [Last US frontier shows need for government](#)
- [Silicon Valley rooted in US military](#)

**IN OPINION**

- Reihan Salam [The GOP has reached a crossroads](#)
- Ruchir Sharma [Ironies of India's economic crisis](#)

This spending worked because it was “mission oriented”: the state picked an idea and supported it, from putting a man on the moon to tackling climate change. And when government can pursue missions with big enough budgets, it is easier to hire bright minds and to think big – as Darpa did with the internet. It is just as cool to work at Arpa-E, a research agency run by the US Department of Energy, as at Google. It is no surprise that the DoE was recently run by a Nobel Prize-winning physicist.

Given the inherent uncertainty in innovation, attracting expertise does not mean always getting things right. For each success, there are many failures – but successes that lead to general-purpose technologies that can drive decades of growth are worth the wait. Attracting expertise and accepting

**MOST POPULAR IN COMMENT & ANALYSIS**

1. [Steve Jobs' genius isn't movie material](#)
2. [Currency sell-off: Tragedy in three acts](#)
3. [Panama Canal: Out of the narrows](#)
4. [General Sisi: Out to rout the Muslim Brothers](#)
5. [We must stand up to Syrian tyranny](#)

**ANALYSIS**

**PANAMA CANAL**



The waterway's planned \$5.25bn expansion is set to shake up international trade routes

**CURRENCY SELL-OFF**



Emerging markets have lost their lustre as investors ponder life after US quantitative easing

**HIGHLIGHTS**

[FT LEXICON](#)

[MBA RANKINGS](#)

**Trust is vital against terrorism**

Anders Aslund **Brics must wind down role of state**

short-term failure are challenges. China must address both to make good use of the \$1.7tn it is spending on five emerging areas, from new engines to IT and environmentally friendly technology.

Many doubt the ability of governments to “pick” the right direction. It is wisest to leave such decisions to the market, they say, as though the latter by its very DNA will have the long-time horizon, capital and expertise required. Useless bureaucrats, we hear, just get in the way. This scepticism has political appeal: taxpayers are constantly fed the message about a clumsy leviathan. That makes it harder for governments to find the courage to think big. It also encourages them to hide what they do, even when they are backing a grand vision.

Imagine how different the **US healthcare debate** would be if taxpayers knew that the government not only regulates healthcare but also funds the research behind most radical new drugs: the NIH spent \$32bn in 2011 alone on the biotech-pharmaceutical knowledge base.

When the International Monetary Fund makes recommendations about public spending, it should consider models of economic growth. After all, the problem in many indebted countries is not that the state spent too much, but that it spent too little productively: Italy ran a modest deficit before the crisis, but its two decades of zero growth in productivity (and gross domestic product) caused its debt-to-output ratio to rise to unsustainable levels. How will the 40 per cent cuts in Spain’s research budget since 2009 help the country become an “innovation nation” able to compete with Germany, where research spending has risen 15 per cent?

There is plenty of waste in these countries, but if “structural reforms” are not accompanied by increases in productive investment in strategic areas, growth will not ensue.

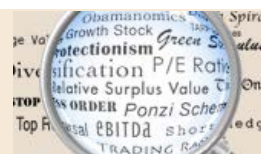
One cannot be naive: it is not enough to ask the state to do more. In countries such as the US, which have benefited from an active (although hidden) industrial strategy, there is a dysfunctional relationship between the public and private sector, with risk being socialised and rewards privatised.

While most of the radical technologies that make the iPhone so “smart” were funded by government, **Apple** pays relatively little to the public purse in taxes. Where are today’s Xerox Parcs and Bell Labs, co-investing alongside the state in the big opportunities of the future?

A coherent economic model of growth must distinguish between symbiotic and parasitic relationships between the state and the private sector. This is not about the state sparing the private sector from risk, but taking risks together and enjoying the rewards as one.

*The writer is a professor at the Science and Technology Policy Research unit at the University of Sussex and author of ‘The Entrepreneurial State: Debunking Public vs Private Sector Myths’*

-----  
**Letter in response to this article:**



Need a definition? Look it up here

Interactive MBA tables, charts and directories



**LATEST HEADLINES FROM CNN**

- Malala's voice stronger, not silenced
- What happened to Malala's friend?
- Things I wish I'd known at 15
- Impact Your World: How to help
- Girls flee bombs, start over in U.S.

**FINANCIAL TIMES JOBS**

Search

- Americas Tax Manager Finance
- Chief Executive Officer Bank of Maldives PLC
- Global Education Technology Manager Cambridge University Press

Register for free to receive the latest executive jobs by email

**TOOLS & SERVICES**

- |                      |                                |
|----------------------|--------------------------------|
| Multimedia           | Quick links                    |
| Video                | FT Live                        |
| Blogs                | Mergermarket                   |
| Podcasts             | How to spend it                |
| Interactive graphics | Social Media hub               |
| Audio slideshows     | The Banker                     |
| Picture slideshows   | The Banker Database            |
| Tools                | fDi Intelligence               |
| Portfolio            | fDi Markets                    |
| Topics               | Professional Wealth Management |
| FT Lexicon           | This is Africa                 |

## Innovation needs 'shotgun' approach / From Mr William Thayer

Copyright The Financial Times Limited 2013. You may share using our article tools. Please don't cut articles from FT.com and redistribute by email or post to the web.

Share Clip Reprints Print Email

### You may be interested in



Tech executives facing up to hard realities of the cloud

UK trade: One-way traffic

Hit puberty? Time to get LinkedIn

Doubts over UK's runaway train line

Do not blindly trust official guardians of our security

'Sea turtles' who swim out again

The markets should not have expected much from Carney

China arrests Briton in corruption probe

Missionary founders may turn mercenary

The new Fed chair should not be one of the usual suspects

US military tested using Twitter to profile civilians in anti-terror scheme

With Mubarak's release Egypt's military caps counter-revolution

Samsung takes big bite out of Apple in China tablet market

Prepare now for tricky times ahead

Italian business: No way back

Eat, drink, man, woman, meatballs

Why we need more Hyperloops to shape our destiny

A much-maligned engine of innovation

Quantitative easing and the curious case of the leaky bucket

### Post your own comment

User3609518

[Update your profile](#)

By submitting this comment I confirm that I have read and agreed to the [FT terms and conditions](#). Please also see our [commenting guidelines](#).

Submit Comment

### Comments



Sorted by newest first | [Sort by oldest first](#)

**Norman Strauss** | August 26 12:04am | [Permalink](#)

[Report](#)

The critical difference between the variety of innovation attainable results from the exact meaning and execution of the phrases:

directing state,

enabling state,

catyzing state and

system triggering state.

**NewbieDirector** | August 23 11:12am | [Permalink](#)

[Report](#)

If the UK state wants more senior scientists to leave academia and set up SME then it has to provide better support to individuals/groups making that transition. If the state pays 100% salary to researchers in university posts but only 50% salary (e.g. via Technology Strategy Board) to do essentially the same work as part of setting up an SME, then you are not going to get many new high tech SME. Furthermore, anyone bright enough to set up a high tech SME is going to see that the terms and conditions offered by UK banks and VCs to new SME are a con. The UK govt needs to make better use of EU de minimis state aid regulations and

[FT clippings](#)

[Currency converter](#)

[MBA rankings](#)

[Newslines](#)

[Today's newspaper](#)

[FT press cuttings](#)

[FT ebooks](#)

[FT ePaper](#)

[Economic calendar](#)

#### Updates

[Alerts Hub](#)

[Daily briefings](#)

[FT on Facebook](#)

[FT on Twitter](#)

[FT on your mobile](#)

[Share prices on your phone](#)

[RSS feeds](#)

[Investors Chronicle](#)

[MandateWire](#)

[FTChinese.com](#)

[Pensions Week](#)

#### Services

[Subscriptions](#)

[Corporate subscriptions](#)

[Education subscriptions](#)

[Syndication](#)

[FT Fine Wine Plan](#)

[Conferences](#)

[Annual reports](#)

[Executive job search](#)

[Non-Executive Directors' Club](#)

[Businesses for sale](#)

[Contracts & tenders](#)

[Analyst research](#)

[Commercial Property listings](#)

[Company announcements](#)

instigate better routes for obtaining 'matched funding' for development grants if it wants to transfer ideas from academia into the real economy and use high tech SME to drive recovery.

---

**ChrisVC** | August 22 3:05pm | [Permalink](#)

[Report](#)

This is a very dangerous column. I can agree with a lot. But wholeheartedly disagree with other lots.

1) Does anyone remember Japans 10 year supercomputing program more than a decade ago. Where is Japan in computing today? A nobody. Or take Galileo the EUs global positioning system. A number four after the US, Russia and China if it ever will go live before the end of this decade. There are numerous examples of grand RnD schemes that wasted a lot of funds and that are in danger of being qualified as hidden subsidies to uncompetitive sectors.

2) Yes there is a strong case for RnD support by the state. The state can mitigate risks and even benefit from failures that are unavailable for the private sector. But how far shall the state go? VEnture Capital is a highly concentrated industry regionally and by industries. And it is already highly nationalised with probably the majority of funds coming from public sources. (EIF, regional development funds etc.) Still European VC is one of the worst performing asset classes in Private Equity.

3) The US is not a good model for Europe and other places. They do not have this enormous defence budget. Do not have this large sized geography and this homogeneous market. Europe has a different innovation ecosystem and it is hopeless to try to copy silicon valley anywhere else. Lessons from innovation spending in the US cannot be transferred to other places. The US is a leader in software products and the internet and the aerospace sector. But it makes little sense to apply the rules of software to e.g. Health care and automotive. And the US is no role model in many other sectors.

4) The state is not a good entrepreneur and not good in coaching them. Instead of spending trillions into wasted RnD programs the state better returns more funds to taxpayers and let them spend more on new risky ventures and supports investors by various tax breaks and investment incentives.

---

**ohneigenschaften** | August 22 2:57pm | [Permalink](#)

[Report](#)

Hats off, Mariana, for breaking a lance for the central importance of state support for R&D, human capital formation and infrastructure.

However, many of the most radical innovations to come out of state R&D were not "mission oriented" at all but curiosity driven and almost serendipitous: the World Wide Web and html (Tim Berners-Lee pattering about in his spare time at the international physics lab CERN in Geneva); MOSAIC, the first graphical browser that led to Netscape (University of Illinois Supercomputer Lab); Packet switching, the foundation of the Internet (government-financed research at RAND Corp), etc.

It's the luxury of really bright people being able to pursue radical new ideas in a pure science environment, which is usually not possible in industry except in such exceptional places as Bell Labs, Xerox Parc, or IBM labs, that mostly opens up new fields. And it was not "mission-oriented" research about miniaturization that led to the transistor (Bell Labs) or the microprocessor (Intel) even in private companies.

---

**Ben J Simpson** | August 22 1:29pm | [Permalink](#)

[Report](#)

Wonderful column. I wish we had more of this realistic talk in the US. The Paulbots heads would explode.

---

**Gaurav Misra** | August 22 9:49am | [Permalink](#)

[Report](#)

the gov't is funding R&D to stimulate innovation and focus on the right things (for eg. in UK), but perhaps the gov't needs to up its standards on efficient allocation of those funds. i mean they may be funding the right type of activity, but not necessarily the right type of projects within the category. worth a check?

---

**Evad1ne** | August 22 2:15am | [Permalink](#)

[Report](#)

The private sector seeks profit ; in the absence of a profit motive, government can support R&D without it.

The problem arises when ideology tries to supplant either the private sector or government at the expense of the other.

Responding to the profit incentive, the private sector will typically produce something economically viable.

Government R&D funding, as the author notes, can produce ARPA, the progenitor of the Internet.

In that instance, and most other government funded R&D efforts, the private sector typically determines how the government funded R&D can be utilized to derive a profit.

Also, typically, the government fails in trying to pick economic winners.

What does either government or a private sector businessman do when profit becomes a dirty word ?

---

**moderation** | August 21 10:40pm | [Permalink](#)

[Report](#)

Her book is the most important publication of recent decades. It proves that the hostility to an active state is built on myths.

---

**AK+** | August 21 9:48pm | [Permalink](#)

[Report](#)

I disagree (almost) completely. Government works best here via institutionalized stimulus and not via direct involvement.

For example, if I remember right, the cost of RnD has to be expensed and not capitalized. It kills most long-term innovation projects.

---

**WendellMurray** | August 21 8:45pm | [Permalink](#)

[Report](#)

Pavlvs not only has an unpronounceable moniker, but the person behind the persona apparently also has no working brain.

Ms. Mazzucato is correct here and is correct in the book that she wrote that is reviewed by the resident Financial Times genius, Martin Wolf.

The only criticism that I can direct toward Ms. Mazzucato is that she should have insisted on speaking Italian with her parents while growing up, so that she would be perfectly bilingual. But, too late now. She must be making her parents proud now in any case.

---

**Skeptical Analyst** | August 21 8:32pm | [Permalink](#)

[Report](#)

I cannot agree more with Mrs Mazzucato. One example of what a Government must NOT do we have in Spain, where señor Rajoy and his henchmen are killing the few innovation structures of the country as part of the public expenditure cuts... But the number of "advisors" and the size of the public car fleet remains the same. No surprise that over 300,000 young university graduates have left the country so far and the best brains among them see no possible return in the near future. In the meantime playing the populist-nationalist games with Gibraltar... Revolting

---

**Pavlvs** | August 21 6:16pm | [Permalink](#)

[Report](#)

Ah the ever statist FT. It takes some imaginative reasoning to make an argument in favor of "state sponsored innovation" with the US as an example. It has been said that freedom breeds innovation. It is therefore no coincidence that the US, arguably the freest country in the world, is also the most innovative. Although the US government has spearheaded a number of key innovations, the private sector has in fact done the bulk of the innovating, throughout US history. The distinction and dichotomy between the public and private sectors is not a "myth." In Europe the distinction is often blurred and the consequence as the article observes is often a dysfunctional political and economic system. In the US, even traditionally state funded and led initiatives are

shifting towards the private sector. Space exploration is a prime example. SpaceX is manufacturing rockets that are cheaper, more efficient, and more advanced than NASA's. SpaceX is a private sector initiative and is entirely privately funded. American universities are considered to be the most innovative in the world and are mostly private. The world is emulating this American-led model.

As the private sector takes the lead in space exploration, other traditionally state run areas, such as infrastructure, will also become privatized. In the meantime the government ought to correctly focus on reducing spending across the board. The author overestimates the stability of the bond market. The Treasuries market is on a shoestring with the Fed buying most of the bonds through fiat money creation. The BoE and ECB are doing the same. If this policy is not normalized and government spending quickly reduced not only will there not be public funding for "research" but the private sector will not be able to play its key role in the innovation process (which relies on, and spurs, wealth creation) as it will be impeded from doing so by another government sparked financial crisis. On the above basis alone the author's thesis is undermined.

Entrepreneurship involves the creation of a lean and efficient organization. An entrepreneurial state would be small, limited, and focused on its core competences which are essentially defense, maintenance of the rule of law, and, concomitantly, the enforcement of contracts.

---

[Help](#) • [Contact us](#) • [About us](#) • [Advertise with the FT](#) • [Terms & conditions](#) • [Privacy policy](#) • [Copyright](#) • [Cookie policy](#)

© THE FINANCIAL TIMES LTD 2013 FT and 'Financial Times' are trademarks of The Financial Times Ltd.