

The state is the real engine of innovation

Book review

A brilliant exploration of new ideas in business argues that government is behind the boldest risks and biggest breakthroughs, writes **Martin Wolf**

Growth of output per head determines living standards. Innovation determines the growth of output per head. But what determines innovation?

Conventional economics offers abstract models; conventional wisdom insists the answer lies with private entrepreneurship. In this brilliant book, Mariana Mazzucato, a Sussex university professor of economics who specialises in science and technology, argues that the former is useless and the latter incomplete. Yes, innovation depends on bold entrepreneurship. But the entity that takes the boldest risks and achieves the biggest breakthroughs is not the private sector; it is the much-maligned state.

Mazzucato notes that "75 per cent of the new molecular entities [approved by the Food and Drug Administration between 1993 and 2004] trace their research... to publicly funded National Institutes of Health (NIH) labs in the US". The UK's Medical Research Council discovered mono-

clonal antibodies, which are the foundation of biotechnology. Such discoveries are then handed cheaply to private companies that reap huge profits.

A perhaps even more potent example is the information and communications revolution. The US National Science Foundation funded the algorithm that drove Google's search engine. Early funding for Apple came from the US government's Small Business Innovation Research Program. Moreover, "All the technologies which make the iPhone 'smart' are also state-funded... the internet, wireless networks, the global positioning system, microelectronics, touchscreen displays and the latest voice-activated SIRI personal assistant." Apple put this together, brilliantly. But it was gathering the fruit of seven decades of state-supported innovation.

Why is the state's role so important? The answer lies in the huge uncertainties, time spans and costs associated with fundamental, science-based innovation. Private companies cannot and will not bear these costs, partly because they cannot be sure to reap the fruits and partly because these fruits lie so far in the future.

Indeed, the more competitive and finance-driven the economy, the less the private sector will be willing to bear such risks. Buying back shares is apparently a far more attractive way of using surplus cash than spending on fundamental innovation. The days of AT&T's path-breaking Bell Labs are long gone. In any case, the private

sector could not have created the internet or GPS. Only the US military had the resources to do so.

Arguably, the most important engines of innovation in the past five decades have been the US Defense Advanced Research Projects Agency and the NIH. Today, if the world is to make fundamental breakthroughs in energy technologies, states will play a big role. Indeed, the US government even helped drive the development of the hydraulic fracturing of shale rock.

Mazzucato insists this involves more than state support of research and development, vital though that is (in the US, the government funds a

Germany's failure to remain at the forefront of today's new technologies, in contrast to before the second world war, may be down to the limited role now accorded its state.

Mazzucato loves puncturing myths about risk-loving venture capital and risk-avoiding bureaucrats. Does it matter that the role of the state has been written out of the story? She argues that it does.

First, policy makers increasingly believe the myth that the state is only an obstacle, thereby depriving innovation of support and humanity of its best prospects for prosperity. Indeed, the scorn heaped on government also deprives it of the will and capacity to take entrepreneurial risks.

Second, government has also increasingly accepted that it funds the risks, while the private sector reaps the rewards. What is emerging, then, is not a truly symbiotic ecosystem of innovation, but a parasitic one, in which the most loss-making elements are socialised, while the profit-making ones are largely privatised. Do ordinary taxpayers understand that their taxes fund the fundamental innovations that drive their economy?

This book has a controversial thesis. But it is basically right. The failure to recognise the role of the government in driving innovation may well be the greatest threat to rising prosperity.

The writer is the chief economics commentator of the Financial Times

The Entrepreneurial State

Debunking Public vs Private Sector Myths

By Mariana Mazzucato
(Anthem Press, £14.99, \$18.95)

quarter of R&D and nearly 60 per cent of basic research). But the state is also an active entrepreneur, taking risks and, of course, accepting the inevitable failures. America has been a developmental state since the days of Alexander Hamilton. Indeed, the nation's recent role as the premier promoter of fundamental innovations owes as much to its state as to the get-up-and-go of its entrepreneurs.