

BOOK REVIEW

The Entrepreneurial State: Debunking Public vs. Private Sector Myths

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This volume describes the role of the state in the research and development of new technologies. Different industries in the United States, Europe and other regions are analysed: the IT and telecommunications sector behind the iPhone, the pharmaceutical sector and the green and energy sectors. The central idea of the book is that the state has, in several cases, taken major risks in the development of new technologies, but has received little recognition for doing so.

The author is a Professor of Economics at the University of Sussex and holds a Chair in Science and Technology Policy. The book draws from a report prepared by the author for Demos, a British think-tank, and comprises of an introduction and 10 chapters. The style of the author is assertive: she develops a thesis throughout the book and shows different arguments that support her ideas.

The introduction of the book provides a summary of the topics that the reader will encounter in the forthcoming chapters. Furthermore, the structure of the book is explained. From the outset, the reader gains the impression that the volume has the goal of dismantling commonly accepted false notions about the role of the state in the development of innovative products.

Chapter 1 sets the context concerning a discussion on the most adequate tasks that should be assumed by the private and public sectors. The author criticizes the expanded view of the

state as an enemy of enterprise and that the state should have very limited tasks. According to the author, the new industrial policy that should be defined in these times of economic crisis needs to rethink public and private sector interactions. A situation where risks are socialized and rewards are privatized should not be continued.

Chapter 2 describes the relationship between technology innovation and growth. The author criticizes several aspects of the innovation agenda of different countries, particularly that of the United States and several member states of the European Union. Several myths about innovation policy are highlighted, for example, innovation policy is only about research and development (R&D); small firms should be promoted; venture capital is risk-loving; the role of patents in innovation and economic growth; a serious disadvantage of innovation is the lack of proper commercialization or transfer of knowledge; and, the effectiveness of R&D tax credits.

The subject of the risks assumed by the public and private sectors when investing in fundamental research is addressed in Chapter 3. The author argues that the state does much more than fixing market failures, that is, it acts as an entrepreneur by taking risks accompanied by courage and vision. For example, it is shown that in 2008, the Federal government of the United States and the private sector contributed 57% and 18% respectively to the total funds used in basic research. It is also shown that the pharmaceutical industry has focused much more on making variations of existing drugs than on investing in the development of new ones.

In Chapter 4 different examples are provided to explain the entrepreneurial risk-taking activities of the United States government. The Defence Advance Research Project Agency (DARPA) contributed to the development of networks and personal computers. The Small Business Innovation Research (SBIR) programme provided research funding for small, independent, for-profit firms. The 1983 Orphan Drug Act enabled small and dedicated biotech firms to enter the drug market. The intention of the government behind the development of the National Nanotechnology Initiative (NNI) was to create the 'next new thing' that could be as successful as the Internet.

The technologies behind the iPhone, developed as part of state-funded research projects, are described in Chapter 5. According to the author, the public tends to attribute the aesthetic and skinny design of Apple products to the genius of Steve Jobs while forgetting the research efforts and funding support of the government that contributed to such achievements. The following aspects linked to the design of the iPhone are mentioned: giant magnetoresistance (GMR) employed in hard disk drives; solid-state chemistry and silicon-based semiconductor devices; multi-touch screens; the Internet; global positioning systems (GPS); the artificial intelligence application SIRI; and, battery and displays.

Chapter 6 analyses the green industrial revolution, which is an attempt to transform the energy infrastructure into one that is environmentally sustainable. The chapter focuses more on the supply-side than on the demand-side of public policies and describes the measures taken in the United States, United Kingdom and China. After describing the pros and cons of the different programmes implemented in these countries, the primary conclusion is that a 'nudge', that is, a timid support for the green industry is not enough and that a strong 'push' is needed.

The public policies employed by the government to support the wind and solar power industries are discussed in Chapter 7. The author explains that the state is making a decisive contribution to the following aspects of wind and solar power businesses: the creation of the needed technology, its development, the manufacturing process and the deployment of the aforementioned products. The author praises the risks taken by the state when developing clean technologies such as wind turbines and solar photovoltaic (PV) panels. The cases of Denmark, the United States and China as it concerns the development of the wind power sector are discussed. The challenges of solar power companies in the United States and China are explained.

Chapter 8 addresses the following question: given the risks taken by the state in the development of new technologies, what rewards has it received? According to the author, big corporations demand low taxes. On the other hand, citizens are not aware of the fact that many technological companies generate profits from innovation funded by the state. The job-creation myth of Apple and Apple's tax strategies are criticized. Nowadays big

corporations are not as keen to have research centres such as Bell Labs that in the past were dedicated to fundamental research.

Chapter 9 continues with the topic raised in the previous chapter. The following aspect is addressed: is there anything that can be done in the field of investment in new technologies to avoid the socialization of risks and the privatization of rewards? The direct and indirect returns that the state can obtain from its investment in research are discussed. Returns from royalties obtained by the government can be used to support a national innovation fund. Loans provided by the state can be defined so that if a company generates a profit after a certain threshold, it should be required to pay back a portion. The author asks whether Google should pay back a small percentage of the company's billions in profit by considering that a public agency funded the development of its algorithm. The state could retain equity in the companies it supports. Moreover, state development banks can be employed to promote new technologies. The cases of the successful use of such banks in Germany, Brazil and China are mentioned.

Chapter 10 presents the conclusions to the book and explains that rather than understanding the innovation 'ecosystem' – a term that according to the author is trendy and widely employed for describing the innovation process – it is much more important to understand the role and commitment that each actor brings to the system.

The book will assist the reader to understand several aspects of industrial policy related to the development of new technologies. The ideas provided in the book are clear: according to the author, the state plays a major role in innovation because it takes on the majority of risks when investing in basic technology. However, it receives little reward for doing so. Some readers will find a few of the arguments provided in the volume controversial, but these ideas will help to stimulate the debate about the proper way for promoting an effective national innovation agenda.

Policymakers, investors, businessmen and researchers will find this volume to be a valuable source of information concerning the role of the public and private sectors in the promotion of research. Furthermore, the book is timely, taking into account the current economic

difficulties, where several countries are still trying to define the direction they should take over the next years to promote innovation, development and economic growth.

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