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To assist those looking for good beach reading, ITIF presents its annual summer innovation policy reading list. The list identifies 14 recent books that do the best job of informing the innovation and competitiveness policy debates. To also save readers time and money, the list also includes books ITIF does not recommend.

Books We Recommend (*Alphabetical by Author's Last Name*)

Uncharted: Big Data as a Lens on Human Culture by Erez Aiden and Jean-Baptiste Michel

While many of the most important big data applications, such as numerical weather prediction and high-throughput genomic analysis may be esoteric to much of the public, human culture can serve as an immediate and accessible example of big data's power and breadth of applicability. Aiden and Michel's book does just that. Inspired by their research as applied mathematics graduate students at Harvard, they detail the emerging discipline of "culturomics," the attempt to address sociological questions through quantitative analysis. In addition to its insights about the human condition, from the way language evolves to the ebbs and flows of different research disciplines, culturomics has long-term implications for economics, education, and the law. Aiden and Michel situate big data as a crucial tool for studying human culture and attitudes, and in doing so give another example of how big data will touch all aspects of human life.

Innovation Economics: The Race for Global Advantage (Paperback Edition) by Robert Atkinson and Stephen Ezell

Yes, we plead guilty of self-promotion. This book, written by ITIF President Robert Atkinson and Senior Analyst Stephen Ezell, was released in paperback in 2014. McKinsey Director Emeritus Lenny Mendonca describes the book as follows: “As a long-time analyst of the trends shaping the global economy, I am struck by the increasing number of economic and political leaders that do not grasp how serious the structural economic problems facing America are. I hope they read *Innovation Economics*. It ‘speaks truth power’ with candor, reason and wit and offers fresh thinking and a path forward. Rob Atkinson and Stephen Ezell have been making important contributions and better ideas about economic policy for years. Their new book is eye-opening and alarming and arrives at a critical time.”

Average Is Over: Powering America Beyond the Age of the Great Stagnation by Tyler Cowen

Tyler Cowen’s e-book generated a great deal of press regarding America’s future economic health and the distribution of wealth. Cowen believes a large share of income will continue to go to a relatively small elite of educated people as middle class jobs continue to erode due to the loss of industrial competitiveness. Technology will make it easier for anyone to break into this elite, but Cowen is not optimistic about the chances for those regions and individuals that either cannot or do not add value to capital. If this fraction of the population is to enjoy rising living standards, it will have to depend upon explicit public policy rather than the value they are able to create in the private market. While the book does make some far reaching assumptions common to the technopopians, it does provide a needed assessment of the far reaching implications of our continuously stagnant economy.

The Global War for Internet Governance by Laura DeNardis

With the recently proposed transition of U.S. oversight of the IANA function to ICANN, Internet governance is a hot topic these days. For those new to the issue, this book is an accessible (and timely) overview of the major debates on Internet policy. DeNardis takes an inclusive view of how both state and non-state actors contribute to Internet governance. Over the course of the book, she introduces over one hundred technological or institutional control points and discusses how each may be used to govern at least one aspect of the Internet. In general, the book’s tone is fairly neutral, and the author focuses more on laying out the facts than critically examining different arguments.

Big Bang Disruption: Strategy in the Age of Devastating Innovation by Larry Downes and Paul Nunes

Business books about corporate innovation tend to be a dime a dozen, but Downes and Nunes’ offering provides useful, practical, and accessible insights and recommendations for practitioners of corporate innovation. While those looking for a well-developed theory of corporate innovation, à la Clayton Christensen’s *The Innovator’s Dilemma* or *The Innovator’s Solution* may be disappointed, the case studies and analysis presented in the book effectively convey the accelerated pace of innovation in the modern business environment and the urgency and alacrity enterprises must display. While unfortunately

the book is a bit too prone to hyping the techno-exponentialism that ITIF has previously lamented, there is little doubt that emerging technologies—particularly information and communications technologies (ICTs)—have directly accelerated rates of innovation in a range of downstream industries well beyond the ICT sector itself. For example, computer-aided design [CAD] technologies have played a major role in reducing design cycles for everything from vehicles, buildings, medical devices, and semiconductors themselves from years to a matter of months. The authors are also spot-on to argue that this means that all businesses must now innovate at the pace established by the information technology industry.

In summary, while *Big Bang Disruption* isn't flawless, it's a fairly quick read that inspires readers to think about the challenges and new approaches needed to bring innovation to their enterprises and industries, effectively conveying the urgent pace of modern corporate competition and the need to innovate rapidly yet deliberately.

Open Data Now: The Secret to Hot Startups, Smart Investing, Savvy Marketing, and Fast Innovation by Joel Gurin

Open data went from a niche topic among a few computer scientists and activists to a subject of national debate and a presidential executive order in a few short years. This is due in no small part to the work of open data evangelists like Gurin, a senior advisor at New York University's GovLab. This book is at once a primer on what open data is and how it can be used, as well as a call to action for government to embrace open data and make these applications more accessible. The book contains innumerable examples of present and future applications for open data, which are sure to prove inspiring for entrepreneurs, scientists, and tech companies alike, but the book's real value will be in convincing policymakers that the demand for government data is massive and not to be ignored.

Subsidies to Chinese Industry: State Capitalism, Business Strategy, and Trade Policy by Usha Haley and George Haley

As ITIF previously noted in a post for *The Breakthrough*, this book is an essential read for American business leaders and trade policymakers. The Haleys argue that a vast system of subsidies to Chinese industries plays a more important role in their mercantilist policy than currency manipulation. This strategy largely results from a particular view of success: that technology acquisition provides a key goal in Chinese business operations, even at the expense of profits. But another possible explanation is China's "shift strategy," where growth is believed to come by shifting from low-productivity industries to high-productivity ones. Why does it matter? Chinese mercantilism has not only cost the United States a significant share of manufacturing job loss, but also has distorted the global location of and nature of production systems. The authors conclude by noting that the only real solution to the problem of Chinese mercantilism and massive industrial subsidies in particular, is for the world trading community to say enough is enough.

The Cure in the Code: How 20th Century Law is Undermining 21st Century Medicine by Peter Huber

Peter Huber is one of the nation's best students of government regulation and technology. *The Cure in the Code* applies this expertise to the growing swell of information about the

interaction of drugs and disease at the molecular level of individual patients. He concludes that the traditional approach to drug licensing is incapable of regulating new drug discoveries. Increasingly, the diseases that plague America depend on an intricate dance between the molecular makeup of an individual's biome and a particular drug. The interactions can differ between patients, change within the same patient over time, and involve more than one molecular interaction. The most useful information will be generated by laboratory experiments to identify relevant biomarkers and an on-going process of trial and error by individual doctors treating individual patients. Luckily, computer science has developed the ability to collect and analyze the unprecedented amounts of data needed to tease out interactions that might previously have gone unnoticed. Unfortunately, FDA's standard practice of double-blind clinical trials is increasingly incapable of keeping up with the science at an acceptable cost either in money or lives lost waiting for a cure. Anyone wanting to understand how medical science is progressing and what government needs to do to advance it should read this book.

The Entrepreneurial State: Debunking Public vs. Private Sector Myths by Mariana Mazzucato

Mariana Mazzucato's *The Entrepreneurial State* is an ambitious book with an important goal: to turn the way we think about the government's role in the economy on its head. Mazzucato argues that the state is an innovative, entrepreneurial actor in ways that the private sector cannot be, because only the state possesses the vision, resources, and long-term commitment necessary to facilitate large-scale innovation. The core of the book presents convincing evidence of this dynamic, the risk/reward tradeoffs faced by governments, taxpayers, and private-sector actors as well as what the implications of this system are for fairness and equality. All in all, this is a must-read book in the field of innovation policy—and indeed for anyone interested in political economy or income inequality.

Mass Flourishing: How Grassroots Innovation Created Jobs, Challenge, and Change by Edmund Phelps

These days, it's usually pretty easy to tell when reading a book on the economy what is the author's political orientation. Conservatives praise markets and promote growth; liberals praise government and promote fairness. It's in this context that Phelps' *Mass Flourishing* is different and confusing, since we couldn't really identify his political orientation. What Phelps attempts to do is explain, in the broader sense, why some societies "flourish" in terms of both material wellbeing and the good life. He rightly points to innovation as the driver and indeed defines a modern economy as one "with a considerable degree of dynamism—that is the will and capacity and aspiration to innovate...and to leave aside current conditions and obstacles." In other words, the willingness to take and embrace risks and organize government to support innovation, but for Phelps, all is not well. He argues that America has turned away from those values, increasingly preferring stasis and comfort, not dynamism and change. Phelps notes that as more and more Americans "became interested in making a quick buck," they gravitated to wealth seeking sectors like finance, and not the innovation sectors that are necessary to promote economic health. Thus, he makes an important point that conservatives need to take to heart: making money and seeking wealth are not synonymous with a society that enjoys mass flourishing.

While this book is deeply insightful, we were in strong agreement with some and disagreement with other parts. When Phelps writes that mass flourishing depends on acceptance of risk and willingness to not protect incumbent or past businesses, we are in strong agreement. America seems increasingly less willing to “leave aside current conditions and obstacles.” But when he generalizes that most public efforts to support innovation have not been successful, we disagree. As ITIF has written, the U.S. government has played a key role in supporting the development of many of the most transformative technologies responsible for our mass flourishing. Yet, all in all, this is an important book in helping to understand the path to revitalize American innovation.

Wealth and Power: China's Long March to the Twenty-first Century by Orville Schell and John Delury

Anyone who is interested in understanding the path of innovation and innovation economies in the 21st century will have to pay attention to China. This new book, by two long-time China scholars, is a key resource for gaining a better understanding of the history of China's economic and political development over the last 200 years and what it means for current global policy. One particularly interesting historical point is the discussion of the meeting between Lord Macartney, an emissary from Britain sent by King George III to provide the Chinese with gifts in the form of the latest in technology as a means to help open up trade relations. However, Emperor Qianlong, “dismissively informed him that the Qing Empire had no great need for England's goods or inventions... ‘I have no use for your country's manufacturers.’”

The authors go on to describe how the closure of the Chinese market to British exports (while Britain was running up a huge trade surplus in imported tea and silk) led the British to market opium to the Chinese in an effort to get them to buy something. The book seeks to understand the stop and start efforts of Chinese reform (opening up to the outside world and becoming more “democratic” and less imperial) through the lens of 11 key leaders in China, including Empress Dowager Cixi, Sun Yat-sen, Chiang Kai-shek, Mao, of course, and Deng Xiaoping. Their unifying theme is that reformers all shared a common goal: achieving both wealth and power for China, especially in an effort to restore national greatness after a “century of humiliation.” Clearly, China is still engaged in this task.

Just Say Yes: What I've Learned About Life, Luck, and the Pursuit of Opportunity by Bernard Schwartz

Just Say Yes is a compelling and very enjoyable read about the life and career of Bernard Schwartz, who among other titles was the Chairman and CEO of Loral Corporation, a leading defense and satellite company. The first part of the book details Mr. Schwartz's life, interesting in part because he was born during the Great Depression, so his business career spans the U.S. post-war environment, and through his experiences we get a window into how the U.S. economy evolved. While both the biographical life story and insights into management are fascinating, what is telling about this book is the ethos that Schwartz brought to business, something that he rightly complains is all too lacking in today's short-termist driven business culture. Schwartz tells us how he ended up making a significant number of acquisitions to Loral and how in doing so, the company took great pains to not lay off workers, while also working to build value in the acquired companies, not strip it out in search of a fast buck.

The Next America: Boomers, Millennials, and the Looming Generational Showdown by Paul Taylor and the Pew Research Center

We are surrounded by change, but what does it all mean? For the last decade the Pew Research Center has been doing some of the best public polling in the world. Paul Taylor, who has overseen much of this work, puts the results of this and other research into a coordinated snapshot of how America is evolving. In separate chapters he describes how public life and opinion is changing on important issues such as marriage, the use of technology, immigration, finance and the role of government. Woven throughout this analysis is a discussion of the distinctive view of each generation of Americans, but especially the Baby Boomers and the Millennials. Overall Taylor paints a fairly optimistic view of the future clouded only by the unsustainability of the government's commitment to the Baby Boomers, particularly in the form of unsustainable entitlement spending. The respective generations will eventually have to renegotiate this contract of spending in a way that is fair to all. Readers of this book will come away with a deep understanding of how the country is changing and the challenges before it.

Permissionless Innovation: The Continuing Case for Comprehensive Technological Freedom by Adam Thierer

Mercatus scholar Adam Thierer provides a succinct treatise on the merits of “permissionless innovation,” or the idea that policymakers should leave innovators free to create without first seeking their approval. This model of technological innovation serves as a stark contrast to the countervailing “precautionary principle”—the belief that innovators should be restrained until they can prove that they have sufficiently addressed risk—which underpins the thinking of many policymakers, particular in Europe. Thierer's book is a compelling read, and one that is supremely relevant to a host of technology policy debates from drones to 3D printing to crypto currencies. Thierer does not dismiss risk associated with new technology, but rather shows how bottom-up solutions, such as self-regulation and social pressure, can be more useful than top-down tools, such as regulatory directives, at addressing the many facets of complex social problems. Overall, many will find this quick read a useful framework for thinking about many emerging policy issues.

Books We Do Not Recommend (*Alphabetical by Author's Last Name*)

With a topic as complex as innovation and technology policy it is important to present a reasoned and realistic picture of the issues we face and the potential policy reforms to address our challenges. However, all too often pundits misrepresent the issues or drastically oversimplify the solutions. Below are some examples of a few recent publications that are better left on the shelf.

The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies by Erik Brynjolfsson and Andrew McAfee

This publication, which builds on an e-book we reviewed last year, is yet another example of the “innovation optimist” approach arguing that we are entering a “second machine age,” (following the Industrial Revolution) which is “doing for mental power...what the steam engine and its descendants did for muscle power. They're allowing us to blow past previous limitations and taking us into new territory.” However, as we chronicled in a

review for *Issues in Science and Technology*, the evidence does not warrant such utopianism. In fact, to reach the global income levels the authors predict, the world would need to maintain productivity growth of 25 percent per year for the next 25 years, a tough prospect given that the average over the last quarter century is 3.5 percent. Moreover, the authors' continued fanning of the flames of neo-Luddite fears of wide-scale job loss from innovation are not borne out by history or analysis and encourage the public and policymakers to want to slow, rather than accelerate innovation. This is particularly troubling given the fact that the United States is in a race for global innovation advantage and significantly more high technology development, not less, is required to remain internationally competitive. ITIF further examined the issue of technology and job loss in a debate featuring *Race Against the Machine* co-author Andrew McAfee and ITIF President Rob Atkinson last year.

The Pirate Organization: Lessons from the Fringes of Capitalism by Rodolphe Durand and Jean-Philippe Vergne

There's no way that a book with the title *The Pirate Organization* cannot make it on ITIF's "do not read" list. Authored by two professors of business, this tome, surprisingly published by Harvard Business School Press, provides one more data point for the assertion that too many academics have left behind any semblance of scholarly objectivity. The authors argue that "piracy could very well be the driver of capitalism's growth and evolution," because pirates play a key role in challenging monopoly. Indeed, "today, cyber pirates are opposing the normalization of data sharing and the monopolistic control of digital space." But how do they define monopoly? Do they mean the fact that Harvard Business Press is the only authorized producer of their book? Should anyone be able to get a free pirate version?

In the authors' view, digital pirates are populists fighting monopolies and oppressive states (like the U.S. government). "These pirate organizations stand up against the state and its accompanying legitimate corporations." This is because "from the point of view of pirates code is a language that belongs to everyone." For example, a music record on vinyl is private property since it is analogue and not digital code, but once it is put into 1's and 0's, it becomes a free good, like air or water. At that point, pirate organizations represent "legitimate expropriation on behalf of a public cause." Wow. We guess the millionaire Kim DotCom was going to donate his ill-gotten gains to pro-piracy groups like the Electronic Freedom Foundation. Reading this kind of anarchist nonsense really made us wish we had stolen a digital copy of the book.

The Myth of America's Decline: Politics, Economics, and a Half Century of False Prophecies by Josef Joffe

One of the most important economic policy debates the United States should have is whether the U.S. economy is losing out in international competition. There are arguments to be made on both sides, with ITIF clearly arguing that we are losing ground. However, Joffe's book is a disappointing contribution to this debate, for he relies on broad scale analysis which does not really answer this question. First, Joffe dismisses any present concerns about U.S. economic decline (what he dismissively calls Decline 5.0) by saying that there have been concerns in the past. True there have been, but what he fails to understand is that after many of these clarion calls of decline or potential decline, including after Sputnik (decline 1.0 and after the Japanese challenge (decline 4.0), the

United States responded and took actions (increasing federal support for science, reforming the tax code, changing anti-trust law, enforcing trade laws, etc.) that were critical in enabling continued economic leadership. Today, the evidence that we will do the same is not as compelling, especially as scholars like Joffe dismiss any calls as the boy “crying wolf.”

The second major flaw with his analysis is that he compares the United States to other nations only on dollar denominated GDP measures. For example, he says that in 2012 the U.S. economy was three times the size of Japan. So what? Any comparative measure has to be about hourly productivity, not GDP, and about traded sector strength, not overall economy strength. He also dismisses the use of purchasing power parity (PPP) comparisons despite the fact that these are used by international organizations like the World Bank and the OECD to compare economic performance of nations. He doesn't like PPP because it shows, as the World Bank has noted, that China is about to surpass the United States as the world's largest economy. This flies in the face of Joffe's argument that China's economy is only half as large as America's.

All in all, this is a disappointing analysis of a topic that is important to get right.

The Zero Marginal Cost Society: The Internet of Things, the Collaborative Commons, and the Eclipse of Capitalism by Jeremy Rifkin

It's become de rigueur for authors claiming to be futurists to extoll the coming technology wonders that are in store for us, painting a utopian (or depending on their view, dystopian) picture where technology proceeds exponentially and transforms the world. The latest entry to the techno-utopian club is Jeremy Rifkin's *Zero Marginal Cost Society*. He argues that within less than 50 years, technology will have proceeded to the point where there will be virtually no more jobs, where the marginal cost of everything will be zero and where capitalism will cease to exist. Besides that not much will change.

He goes on to claim “The Internet of Things' is already boosting productivity to the point where the marginal cost of producing many goods and services is nearly zero, making them practically free. The result is corporate profits are beginning to dry up, property rights are weakening, and an economy based on scarcity is slowly giving way to an economy of abundance.” Not only will we not have any jobs, but we won't have any businesses either, because when goods and services become free (because the marginal cost is zero) “profits dry up, the exchange of property in markets shuts down, and the capitalist system dies.”

Sounds like Marx's *The Communist Manifesto*. Are we going to all be driving SUV's and having our own private planes in this nirvana “co-op” world? Nope, because “the accumulation of wealth is an albatross... with each additional foray into this hedonistic fantasy brings more unhappiness, pulling them ever downward in vicious cycle of addiction from which there is no escape.” There are so many problems with this tome it's hard to know where to start. So we won't. Let us save you the time: Rifkin is wrong.

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