

Dan Breznitz and Michael Murphree, **Run of the Red Queen: Government, Innovation, Globalization, and Economic Growth in China**, New Haven, CT: Yale University Press, 2011, 278 pp., \$28.18 (hardcover), \$19.95 (e-edition).

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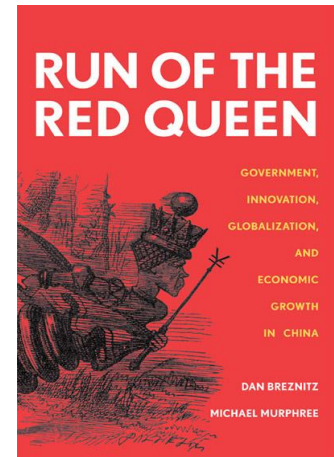
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China's impressive economic growth since the 1990s has spurred significant scrutiny from within and outside its borders, much of it focused on the sustainability of its economic development model. In *Run of the Red Queen*, Dan Breznitz and Michael Murphree provide a counterview to the prevalent fetishism of novel technology in global society and argue that China's current innovation system can support sustainable economic growth in China. "Sustainability" is defined in their book as "the ability of the Chinese economy to continue to grow at a high rate for the next fifteen to twenty years" (p. 11).

The authors challenge the traditional conception of innovation and economic growth. They see innovation in terms of the creation of new technologies, services, and products, as well as in terms of improvement, adaptation, and creation in different segments of research, development, and production chains. They distinguish among several categories of innovation: organizational, incremental, process, and second-generation. This is where China excels, rather than in novel-product innovation, which generally involves the mixing, re-creation, or redesign of existing technologies. The Chinese path of innovation and economic growth largely precludes novel-product innovation; instead, it allows China to shine in process, production, and second-generation innovation.

The authors also question the prevalent logic that research and development (R&D) of new technologies automatically leads to innovation, which, in turn, spurs economic growth. Drawing on Schumpeter's (1961) *The Theory of Economic Development*, they argue that economic growth only occurs when inventions are adapted to establish new industries, improve the efficiency of the production process, or enhance the quality of existing products and services. As China's example demonstrates, in the promotion of economic growth, the process of adapting a new technology is as important as that of inventing it.

Breznitz and Murphree (2011) argue that the "Run-of-the-Red-Queen" model is sustainable in China due to the "fragmentation of production" (p. 13). As globalization proceeds, the production of goods and services in vertically integrated manufacturers within one geographical location is challenged. Companies begin to divide their business activities into discrete modules and outsource them, which leads to the fragmentation of production and later to spatial specialization in specific stages of production or modes of innovation. China has emerged as a critical part of global production networks and developed



deep mutual dependence with its foreign counterparts. Breznitz and Murphree acknowledge that China does not excel in cutting-edge, novel-product R&D. Rather, they suggest that its innovation capabilities at other stages of the production chain provide sustainable economic growth based on the breadth of its production activities and its diverse regional strength.

China's political-economic system gradually shaped its "Run-of-the-Red Queen" model. Its economic reform is characterized by political rivalries between conservatives and reformers within the central government, between the center and the local governments, and among other interest groups. These ongoing rivalries spawned a parallel political system consisting of central government institutions and regional political actors. Provincial political economies remain largely autonomous and act as loci of reforms, but the central government retains control over major domains critical to the development of innovation capabilities and the IT industry.

At the core of the Chinese political system is "structured uncertainty," which is defined as "an agreement to disagree about the goals and methods of policy" (p. 38). A low level of institutionalization accompanies structured uncertainty. The four main causes of China's structured uncertainty are (a) the need for reform in a centrally planned socialist state, (b) a bureaucracy organized to balance the interests and power of different levels of government institutions, (c) the personalized nature of power and influence, and (d) the ambiguous and ever-changing goal of economic reforms. Although the structured uncertainty of Chinese politics allows for multiple interpretations about the best way to implement a given policy, it also increases the unpredictability of political decisions. As a result, indivisibility, inappropriability, and uncertainty are amplified by structured uncertainty that continues to discourage Chinese investment in novel-technology R&D.

Chapter 2 describes how China's parallel system works to shape its innovation patterns. The argument rests on a detailed analysis of China's telecommunications industry, national technology standards, science parks, and *minying* companies, which are nongovernmental people-run enterprises. (The ambiguity of the name is an excellent example of China's structured uncertainty.) As the political economy of Chinese telecommunications and the development of national standards demonstrate, China has not yet developed an overarching plan nor coordination of technology innovation at the national level. The most important institutions for technology innovation oversee the technology industry, property, the financial system, education, and research. These institutions overlap and compete, are less market oriented, and are more conservative than are regional political institutions. Therefore, although the central government is powerful in critical industries and technology developments and sets goals to foster indigenous novel innovation, its structured uncertainty discourages domestic Chinese companies from taking long-term risks to develop research in novel technologies, to support routine R&D, and to foster process and second-generation innovation.

At the regional (provincial) level, local governments are delegated responsibility to implement ambiguous, ever-changing central government policies. It is unclear how much leeway local officials possess. The only reliable benchmark is the rapid and continuous economic growth of the region. National science parks and the creation of *minying* companies—initiated by the center but operated by local governments—show how local institutions implement the center's policies based on their own

interpretations and interests, regardless of the stated purpose of the central government. This negotiated relationship between central policy makers and local implementers also allows the process to move forward and incremental innovation to flourish, even as it inhibits long-term, high-risk novel innovation.

Chapters 3–5 compare and contrast three different strategies adopted by three regions and how each approach influenced the IT sector in its respective region. Beijing is known for strong deindustrialization and abundant university talent available to join research facilities. Shanghai's approach to technology is designed to attract foreign firms to the area, which made it a business capital, but its ability to be innovative over the long term is still in doubt. By contrast, the Pearl River Delta lacks Beijing's educational and research infrastructure and Shanghai's planned economies, but the region has managed to promote innovation by excelling in its production capabilities.

Chapter 3 likens Beijing to an Asian "Silicon Valley" since its emergence as China's IT capital. One of the most populous cities in the world (almost 20 million), Beijing is the home of China's top universities and its most advanced R&D centers. It provides an impressive pool of talent, but its physical and social infrastructure lags behind other successful technology innovation zones because its IT companies concentrate on second-generation innovation or fill domestic market niches. Beijing's talent pool of graduates excels in structured, organized, and supervised environments, but most of them demonstrate questionable leadership potential. Further, the government's huge effort to deindustrialize Beijing has forced many firms to outsource production, mostly to other Chinese regions.

After 1949 the Soviet Union helped China increase its science and technology capacity, mostly in Beijing. Under a work-unit system called *danwei*, housing, education, medical care, pensions, and employment were set by an individual's *danwei*. This system created structures that resemble industrial city-states. Beijing's market development also diminished its institutional and legal capacities. Businesses often hoarded funds as a defense against the absence of laws and regulations for approving business operations, establishing patents, protecting property rights, or managing finances. Multinational firms, recognizing that their intellectual property was at risk in China, embraced four strategies: (a) limiting their R&D by concentrating more on development than on research; (b) breaking down their R&D into components so that the components developed in China had limited commercial value; (c) concentrating their sales on Greater China to localize their products; and (d) conducting basic research that had little short-term commercial value.

Chapter 4 focuses on Shanghai, a city that strives to be a cosmopolitan global megacity. Its strong local government and control systems are among the most sophisticated in China for spurring growth. Shanghai's government leaders early on identified and sought to attract foreign firms, which could help rapidly upgrade the capabilities of the domestic companies and promote high growth rates.

Shanghai also is home to strong IT clusters. But unlike Beijing, where most non-R&D divisions are outsourced, Shanghai's IT companies continue to manufacture in the region, creating employment opportunities for less educated workers. However, the R&D work performed in Shanghai is mostly development related and less sophisticated than is the R&D centered in Beijing. And non-Shanghai *hukou* talents are encouraged to move to Shanghai, but the difficulty to their permanent relocation is

increased. As a result, Shanghai remains important for foreign investment, R&D, and training future corporate leaders.

Chapter 5 discusses the Pearl River Delta (PRD) in Guangdong province, just north of Hong Kong. The PRD is a leader for the production and development of IT hardware and, despite rising costs and the erosion of its first-mover advantage, continues to deepen its expertise. Although relatively less studied than Beijing and Shanghai, PRD markets fill many niches that are critical to the IT industry. The PRD especially excels in the IT export processing business, established during the Maoist era when local self-sufficiency and planning for businesses was combined before sufficient education infrastructures were in place. Unlike Beijing and Shanghai, the PRD does not promote a planned economy. To promote manufacturing, the local government welcomed migrants from other provinces. Land and construction permits were made available to all classes of the business—foreign or domestic, state-owned, and private. Despite economic reversals, the PRD remains a premier innovation and production market.

Breznitz and Murphree conclude by offering practical lessons based on the “Run-of-the-Red-Queen” model to help economic planners in China and elsewhere. They urge Chinese policy makers to rely on existing innovation capabilities, institutional systems, and its critical international economic position to gradually improve and extend innovation rather than force Chinese firms into novel-technology innovation. China and others should avoid the West’s preoccupation with novel innovation and leverage opportunities created by a fragmented global economy.

The *Run of the Red Queen* presents an original, insightful analysis of China’s political system and challenges the overly simplistic logic of innovation and economic growth. However, some of its bold arguments are debatable. For example, how should the concept of “innovation” be defined? Is it only about novel product invention, or should it be expanded to include the creative implementation and adaptation of existing technologies? Is China an innovative country by any definition? Is the Chinese economic model really sustainable as labor costs keep rising? What will happen if the Chinese government continues to undermine the “Run-of-the-Red-Queen” model? In addition, the authors might have further clarified their model and expanded on how the macropolitical system of China has contributed to its formation. Still, this volume deserves to be carefully studied by China’s economic planners and policy makers, as well as by business and government officials in developed and emerging economies who want to understand and emulate China’s explosive economic growth over the past two decades. Breznitz and Murphree alert policy makers to the dangers of blindly following the prevailing economic logic, cautioning them to seek their own path toward their development goals.

Reference

Schumpeter, J. A. (1961). *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle*. Cambridge, MA: Harvard University Press.