

Innovation

The Story So Far

Innovation drives economic potential, especially as incomes rise and workforce and investment growth moderate. Promoting innovation is more difficult than cutting interest rates or approving projects. Innovativeness within an economy is an outcome reflecting education, intellectual property rights (IPR) protection, marketplace competition, and myriad other factors. Some countries have formal innovation policies and some do not, and opinions vary on whether government intervention helps or hurts in the long run. Many Chinese, Japanese, and other innovation policies have fallen short in the past, while centers of invention in the United States such as Silicon Valley, Boston, and Austin have succeeded with limited government policy support. In other cases, innovation interventions have helped, at least for a while.

- The 2013 Third Plenum released a series of decisions aiming at improving the innovation environment in China. Compared with previous innovation strategies, the Third Plenum placed a greater emphasis on market forces, calling for “market-based technology innovation mechanisms” while announcing that the “market is to play a key part in determining innovation programs and allocation of funds and assessing results, and administrative dominance is to be abolished.”
- In May 2015, China officially launched Made in China 2025 (MC2025), a 10-year strategic plan for achieving new levels of innovation in emerging sectors. The MC2025 agenda diluted the Third Plenum’s emphasis on market mechanisms with more elements of central planning. The blueprint set performance targets for 10 key industries in the proportions of domestic content and domestic control of intellectual property. An associated implementation road map document laid out specific benchmarks for global market share to be achieved by Chinese firms in emerging sectors, generating significant international backlash.
- Recognizing the prevalence of subsidy abuses and excess capacity related to its industrial policy programs, Beijing announced in December 2017 that it would gradually phase out some subsidy programs, such as for photovoltaic power generation and new energy vehicles (NEV).
- In March 2018, the U.S. Trade Representative’s Section 301 Report concluded that key parts of China’s technology push, including MC2025, were “unreasonable or discriminatory and burden or restrict

U.S. commerce.” The United States then imposed trade tariffs on \$250 billion worth of Chinese imports over the course of 2018, including some products related to MC2025 and many that were not.

- In May 2019, the U.S. Trade Representative raised tariffs from 10% to 25% on nearly \$200 billion of goods from China and started to review tariffs on the remainder of imports from China. Beijing retaliated by raising tariff rates on some imports from the United States. The U.S. Department of Commerce also added several Chinese high-tech manufacturers to its “Entity List”—a list of companies believed to present national security risks to the United States—effectively restricting those firms’ access to U.S. exports.

Methodology

China’s goal is to grow innovative industries and prune low-value sunset sectors. Indicators such as patent filings are increasing, but analysts question their quality. To measure progress, we estimate the industrial value-added (IVA)—a measure of meaningful output—of innovative industries as a share of all IVA in China, which tells us how much innovative structural adjustment is happening. Because China does not publish all IVA data details, we use an indirect approach to do this. Our supplemental gauges look at value-added growth rates in specific industries, China’s performance compared with that of advanced economies in specific industries, China’s trade competitiveness in innovative products, and two-way payments flows for the use of intellectual property.

Quarterly Assessment and Outlook

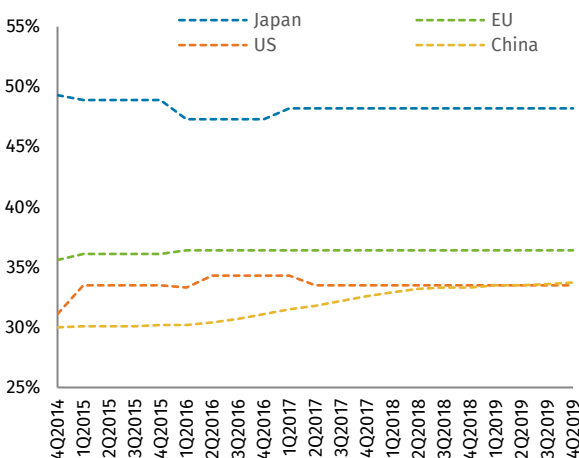
- We upgrade our assessment of innovation reform in 4Q2019. Innovative industries contributed more to China’s economy relative to other industries compared with 3Q2019, but this improvement may be temporary, given that the early Chinese New Year holiday resulted in frontloaded production in December.
- Five out of seven innovative industries outperformed average industrial sector growth. Universal equipment (e.g., machine tools) and auto manufacturing value-added fell behind, with autos sinking to an all-time low growth in 2019.
- As economic activities stall due to the COVID-19 response, policymakers are both turning innovative activities into new pillars of the economy and helping more traditional businesses digitize their operations.

This Quarter's Numbers

Innovative industries played a bigger role in China's economy in 4Q2019. Our primary indicator, **Innovative Industry Share in Industrial Value-Added (IVA)**, increased 17 basis points compared with a 3-basis point improvement in 3Q2019, indicating an acceleration in innovative value-added growth. Innovative manufacturing industries accounted for 33.7% of total industrial sector value-added, a fraction higher than the last reported U.S. level of 33.6% (as of 2017) but below the European Union average (36.4% as of 2017).

Primary Indicator: Innovation Industry Share in Industrial Value-added

4qma, percentage



Source: OECD, National Bureau of Statistics, Rhodium Group.

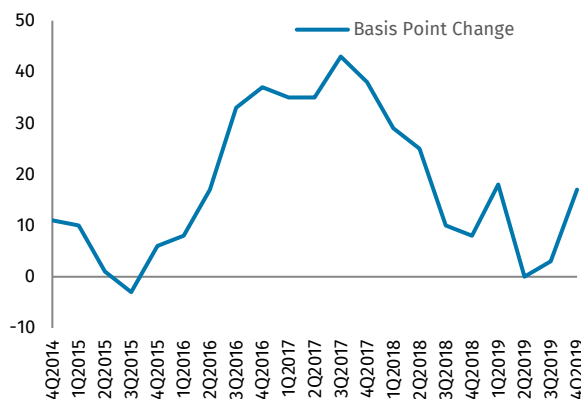
Actual improvement is likely limited and driven by seasonal factors. An early Chinese New Year in 2020 pulled some January production forward to December 2019, contributing to strong performance in the fourth quarter. Relative performance across innovative industries remained unchanged. Five out of the seven industries we track outperformed the industrial sector average, and the other two industries—auto and universal equipment—fell below (see **Industrial Value-Added Growth Rates for Specific Innovative Industries**). The auto manufacturing industry—second largest in terms of total value-added—recorded 1.9% growth in 2019, its lowest on record.

A robust intellectual property (IP) regime is essential for innovation. As IP is better protected, enforced, and utilized, China's payments for the use of IP should increase imports, but 2019 data suggest that progress is stalled. Full-year royalty payments for the use of IP from other countries (IP imports) declined from \$35.8 billion in 2018 to \$34.3 billion in 2019, while exports (payments by other countries for the use of China's IP) increased slightly from a low base of \$5.6 billion to \$6.6 billion (see

Intellectual Property Flows). As a result, China's two-way IP trade with the world actually decreased in 2019.

Supplemental 1: Volatility in Innovative Industry

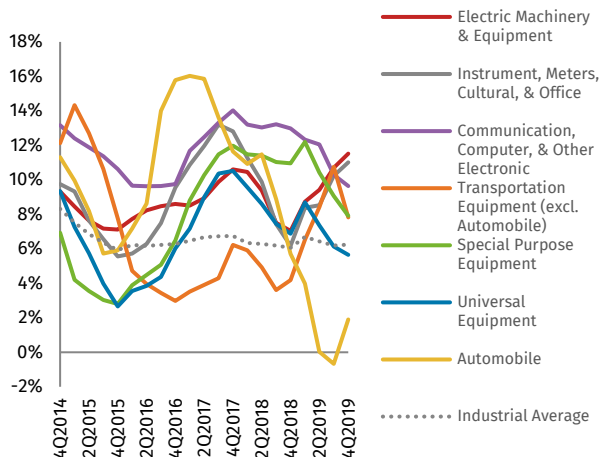
4qma, bp



Source: National Bureau of Statistics, Rhodium Group.

Supplemental 2: Industrial Value-Added Growth Rates for Specific Innovative Industries

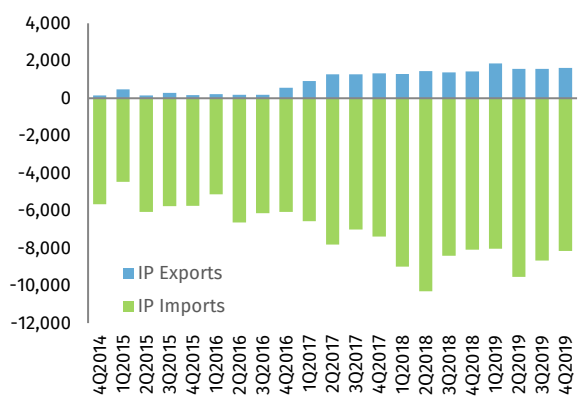
4qma, percent



Source: National Bureau of Statistics, Rhodium Group.

Supplemental 3: Intellectual Property Flows

USD Million



Source: National Bureau of Statistics, Rhodium Group.

Policy Analysis

Policymakers are pivoting to innovative activities as China's economy stalls under COVID-19. Recent policy developments elevate innovation as an economic and political priority, promote digital services and strategic emerging industries, and strengthen IP protection. Such policies include both market mechanisms and industrial policies.

Beijing is elevating innovative industries to become pillars of the economy. An April 2020 [Guideline](#) jointly published by the State Council and the Chinese Communist Party (CCP) Central Committee aims to liberalize the allocation of factors of production. These include not only conventional inputs of land, labor, and capital but also *technology and data*. China is thus the first country to officially treat data as a foundational production factor, demonstrating Beijing's strong focus on innovation, but it is unclear how this will work in practice.

In the *Guideline*, Beijing proposes three measures to strengthen the role of data: (1) widening access to public data for all; (2) improving usability and interoperability of private sector data (if data are collected and stored in more standardized and accessible ways, they will become more valuable for more users); and (3) strengthening data source integration and data security protection (to clarify what data can be used for what purposes, while making nonsensitive data easier to use in general). These measures speak to bottlenecks digital industries face in China. Currently, China's enormous databank is woefully underutilized due to restricted access to public data. Underdeveloped privacy and security standards make data exchange risky, and legal ambiguities around privately held data impair marketization. These bottlenecks have impaired China's innovative potential, especially in industries reliant on data and data-enabled applications. China's access to mass data confers a competitive advantage over private and foreign companies. While this change seems to open access marginally, domestic companies stand to benefit more.

The rationale behind the *Guideline* appears market oriented on the surface. It is not the first time that Beijing has tried to boost digital industries (the ambitious "Internet Plus" program was rolled out in 2015). But instead of telling industries what applications they should develop, this *Guideline* focuses on improving institutional conditions with rules and infrastructure. This is moderately positive.

But Beijing has not abandoned industrial policy. At the ministry level, industry targeting is still a common theme in COVID-19 policy response packages. In February 25

guidelines to facilitate reopening the economy, Ministry of Industry and Information Technology (MIIT) listed nine strategic and emerging industries as policy priorities, including industrial robotics and additive manufacturing (3-D printing). Media reported that China's National Integrated Circuit Industry Investment Fund, a government-guided equity fund created in 2014, will start to make investments with its estimated 200 billion yuan second funding round in March 2020, targeting high-end equipment and new materials.

The COVID-19 outbreak response required restricted worker migration and reducing traditional labor-intensive economic activity, thus putting a premium on new industries that minimize human contact. In a February address, President Xi Jinping emphasized that the government should promote digital services to boost household consumption and ramp up 5G applications, e-commerce, and online entertainment. In April, the National Development and Reform Commission (NDRC) identified "new infrastructure" to be prioritized in investment projects: information and communication technology infrastructure, such as 5G and Internet of Things (IoT); "fusion" infrastructure, such as Smart City traffic applications; and infrastructure that supports research and development activities.