

## 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 often 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 2013 Third Plenum’s emphasis on market mechanisms with more elements of central planning. The blueprint set specific performance targets for 10 key industries in proportions of domestic content and domestic control of intellectual property. An associated implementation roadmap 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 in photovoltaic (PV) power generation and new energy vehicles (NEV).
- In March 2018, the U.S. Section 301 Investigation 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.

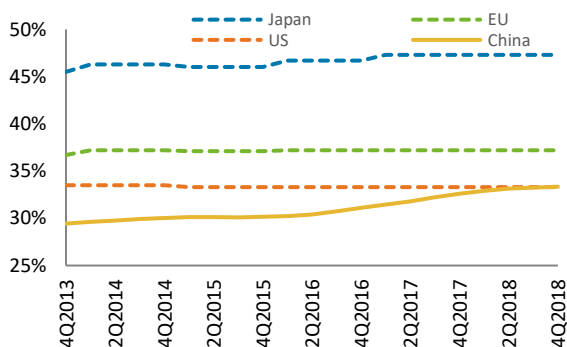
### METHODOLOGY

*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 presently 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

#### Primary Indicator: Innovation Industry Share in Industrial Value-added

4qma, percentage



Source: National Bureau of Statistics, Rhodium Group.

- Our assessment of China’s innovation progress is moderately positive, the same as last quarter. Our primary indicator shows that China has reached parity with the United States in terms of the contribution of innovative industries to domestic economic activity.
- This may not hold, as government stimulus for infrastructure boosts lower tech industrial activity. The relative growth of the innovative industry share of output is already decelerating.
- Leaders’ debate on the merits of industrial and innovation policies was on display in unusual public discussion during the National People’s Congress (NPC) in March. External

pressure is growing, with the European Union (EU) now turning toward a more confrontational position.

### THIS QUARTER'S NUMBERS

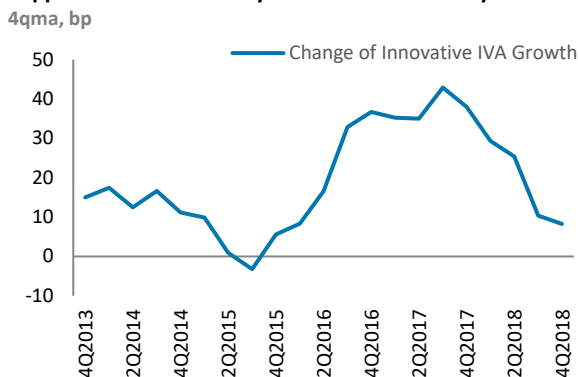
Our primary indicator, **Innovative Industry Share in Industrial Value-Added**, shows that China's innovative industries accounted for 33.3% of domestic industrial value-added in the fourth quarter of 2018—the same level as our updated assessment of the 2017 U.S. level. In other words, Chinese industrial policies have been successful based on this particular measure of innovation. Innovative industries have outpaced traditional ones in China's industrial structure for years, and now they drive as much value-added as in developed economies. We have argued for the past year that China would soon reach U.S. levels: that moment has arrived.

Whether China can sustain this is less certain. As Beijing turns back to stimulus to support the economy, traditional industries are rebounding, reducing the relative weight of innovative industries as a whole. The innovative sector is still growing, but structural adjustment is slowing (see **Volatility in Innovative Industry**).

The outlook differs among these industries. While equipment manufacturing and information technology are handling the current slowdown well, transportation equipment (both auto and non-auto) continues to slow (as in our last review; see **Industrial Value-Added Growth Rates for Specific Innovative Industries**). In value-added terms, the auto sector grew by 5.7% year-on-year (yoy) in 4Q2018, the same as the industrial average and down from 8.9% in 3Q2018. The auto sector is set for further weakness, as auto sales were down -14% yoy in the first two months of 2019. The non-auto transportation equipment sector (i.e., rail, ships, aircraft) fell below the industrial average, at 4.2%, but may rebound modestly as a result of stimulus spending on infrastructure.

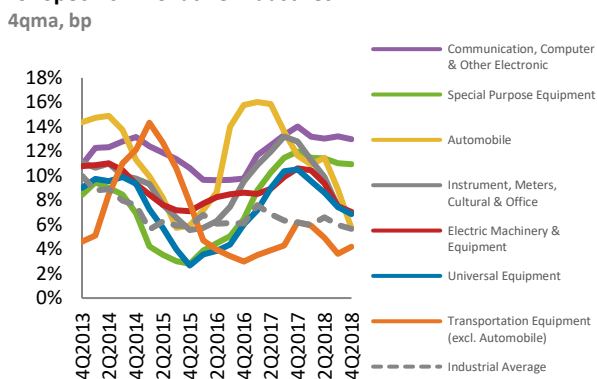
One important stimulus tool is tax relief. At the annual NPC in March, the government announced surprisingly deep corporate value-added tax cuts. Non-innovative industries will benefit more than innovative ones, likely slowing the rising share of innovative industries. Sectors like steel, which accounts for roughly 10% of total industrial value-added in our indicator, are more likely to respond to the tax cuts by expanding production instead of passing tax savings downstream. Meanwhile, some innovation-specific incentives, such as the producer subsidy for NEVs, are scheduled to phase out in 2019.

### Supplemental 1: Volatility in Innovative Industry



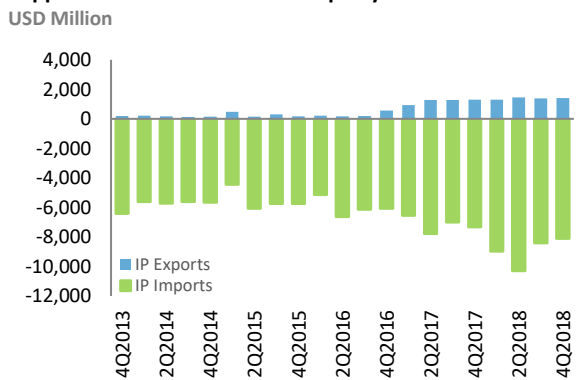
Source: National Bureau of Statistics, Rhodium Group.

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



Source: National Bureau of Statistics, Rhodium Group.

### Supplemental 3: Intellectual Property Flows



Source: National Bureau of Statistics, Rhodium Group.

## POLICY ANALYSIS

Chinese officials are debating the merits of industrial and innovation policies in light of a growing global backlash and tough trade negotiations with Washington. At the NPC, former Minister of Finance Lou Jiwei issued a rare public rebuke of the flagship MC2025 industrial plan, calling it “a waste of money.” Premier Li Keqiang did not mention the plan once in his annual work report to the government, and Minister Miao Wei of the Ministry of Industry and Information Technology also avoided the topic during his press interactions. This was no coincidence, and state media have barely mentioned the plan since late 2018, presumably under government guidance.

Still, while Li avoided mentioning MC2025, he did commit to building China into “a major manufacturing power,” reflecting continued support in the bureaucracy for industrial policy in general. This led some observers to conclude that Beijing had merely changed its rhetoric but not any underlying policies. Another interpretation is that Beijing plans more substantive moves but is holding them back for deal making with Washington.

The NPC passed a new unified Foreign Investment Law on March 15, which nominally prohibits forced technology transfer and offers more protection from IPR infringement. Just after the NPC, the State Council announced that it had rescinded several technology import and export regulations that benefited technology users at the cost of original owners. While Beijing extolled the virtues of these shifts, the global response was cautious due to uncertainty about implementation.

One of the most important specific high-innovation sectors grew increasingly fraught this quarter: 5th-generation cellular network (5G) technology. Beijing’s long-standing goal has been commercial rollout of 5G in China this year. Between 2013 and 2018, the three dominant telecom operators invested more than RMB 1 trillion (\$150 billion) in the 4G network, with investments in new applications and services several times greater. But despite the attention to 5G at home and—increasingly—a battle over the reliability and security of Chinese 5G for other nations abroad, financial statements of China’s major telecom operators suggest that their actual planned 5G-related investment in China will be less than RMB 20 billion (\$2.9 billion) in 2019.

China’s moderation on industrial policy may be too late to forestall pushback from developed economies. In March 2019, the EU Commission and the European External Action Service (EEAS) issued a statement on EU-China relations just ahead of a European Council session and President Xi Jinping’s visit to Italy and France. The EU statement promoted a “more realistic, assertive, and multi-faceted approach” to China and defined China as a “competitor” in many areas, including technology leadership. Brussels and member states are talking about restricting Chinese

investment, matching China’s state aid with industrial support of their own, and other surprisingly robust if somewhat illiberal steps. While Europe is still viewed as less resistant to Chinese entreaties than the United States, these inchoate restrictive measures could cast a long shadow over China’s ability to tap into a major advanced innovation hub.