

The China effect on global innovation

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Today's discussion

China's innovation imperative

How Chinese innovation works

Realizing the China effect on global innovation

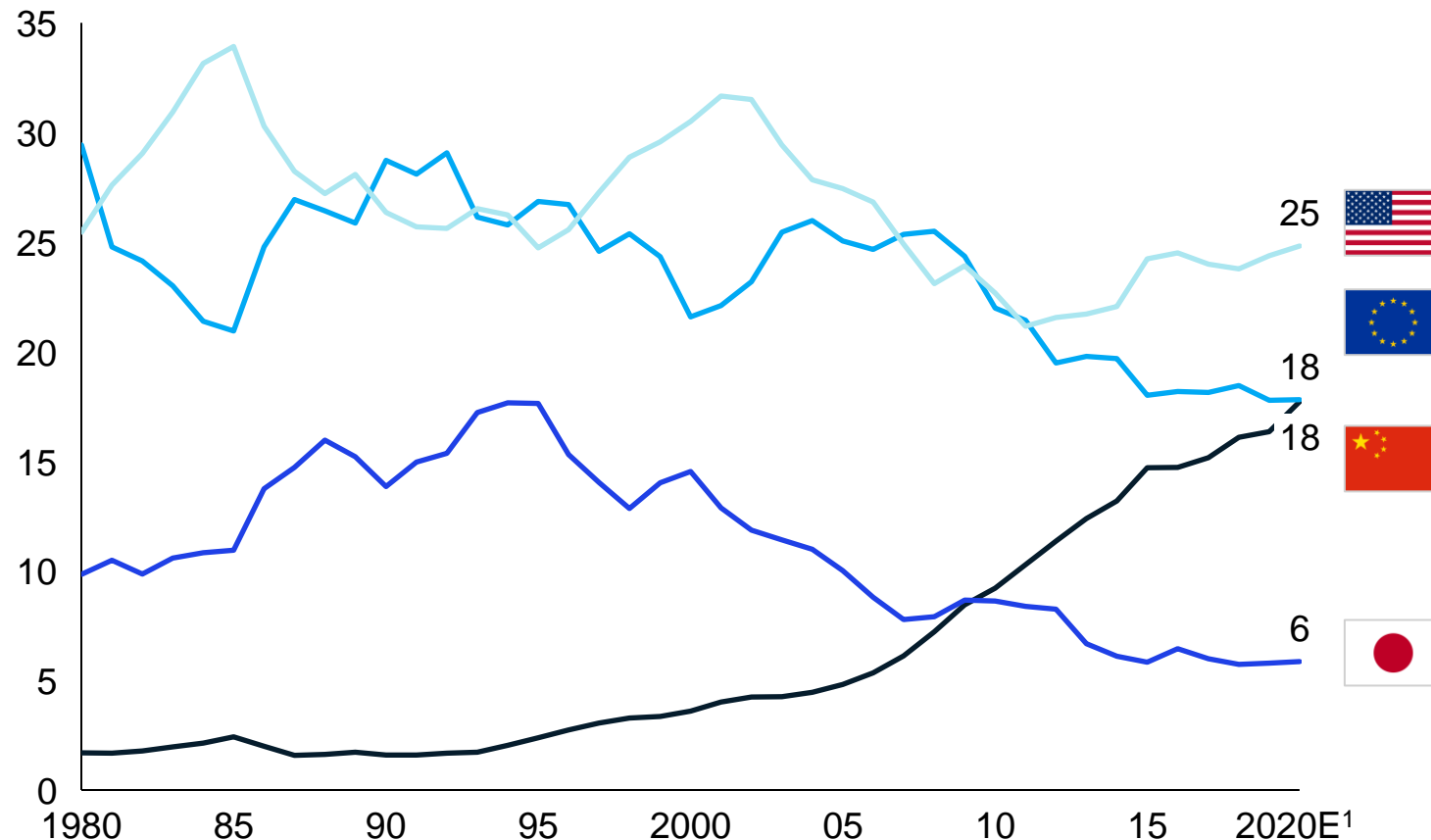


China has been a rising economy in past decades . . .

. . . Yet it is facing structural challenges

GDP by region, 1980-2020

Percent of World GDP



1. Based on IMF forecasts

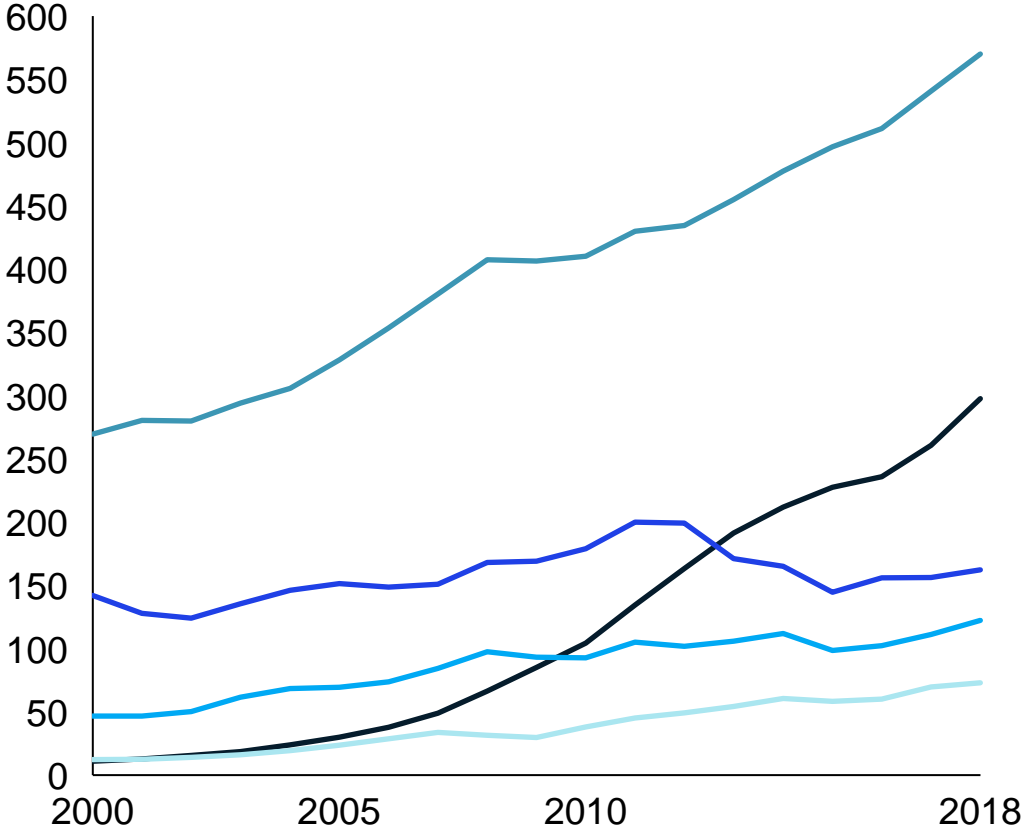
Source: IMF; BIS; CEIC; HIS; McKinsey analysis

- **Rapidly aging population:** 26% of population expected to be over 65 by 2050
- **Rising debt:** Debt to GDP ratio of ~270% in 2020 vs. ~210% emerging market average
- **Increasing labor cost:** 2.5x higher than Vietnam
- **Changing relationship with the world:** EU define China as Economic competitor /systemic rival

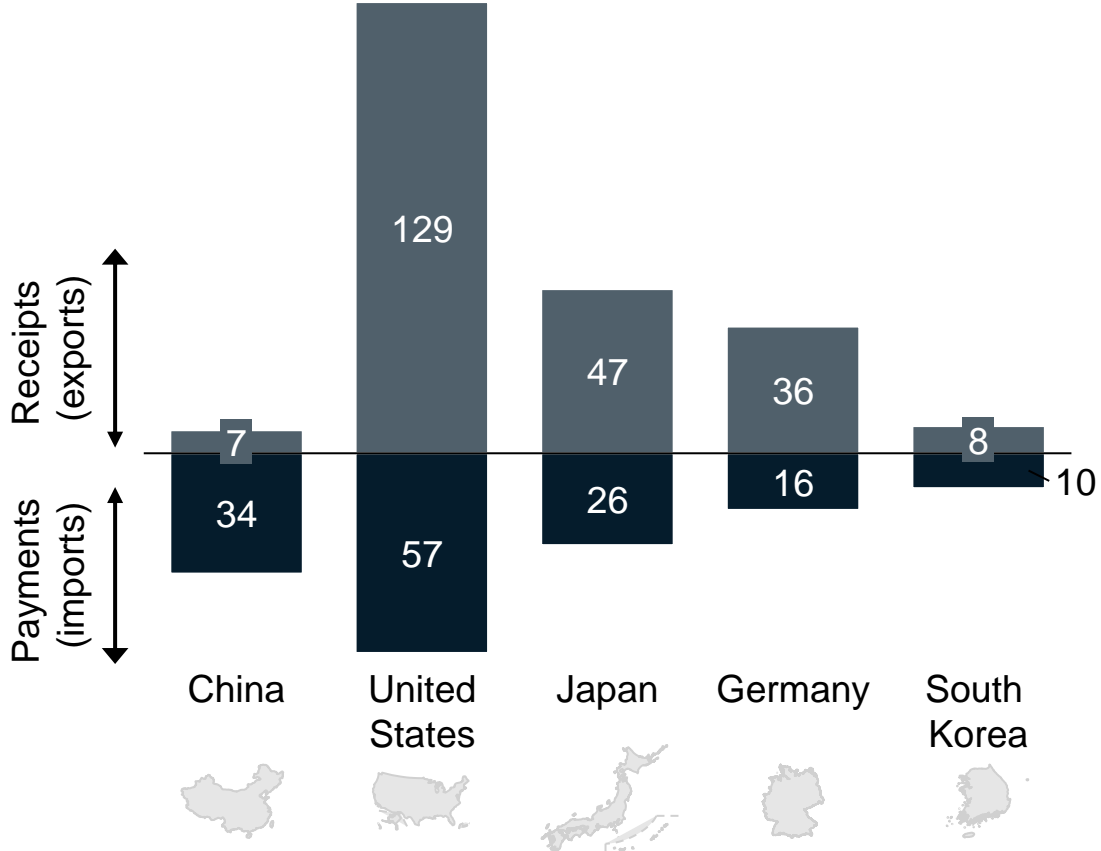
China has increased its investment in R&D, but is still a significant importer of technology.

\$ billion

R&D expenditure by country



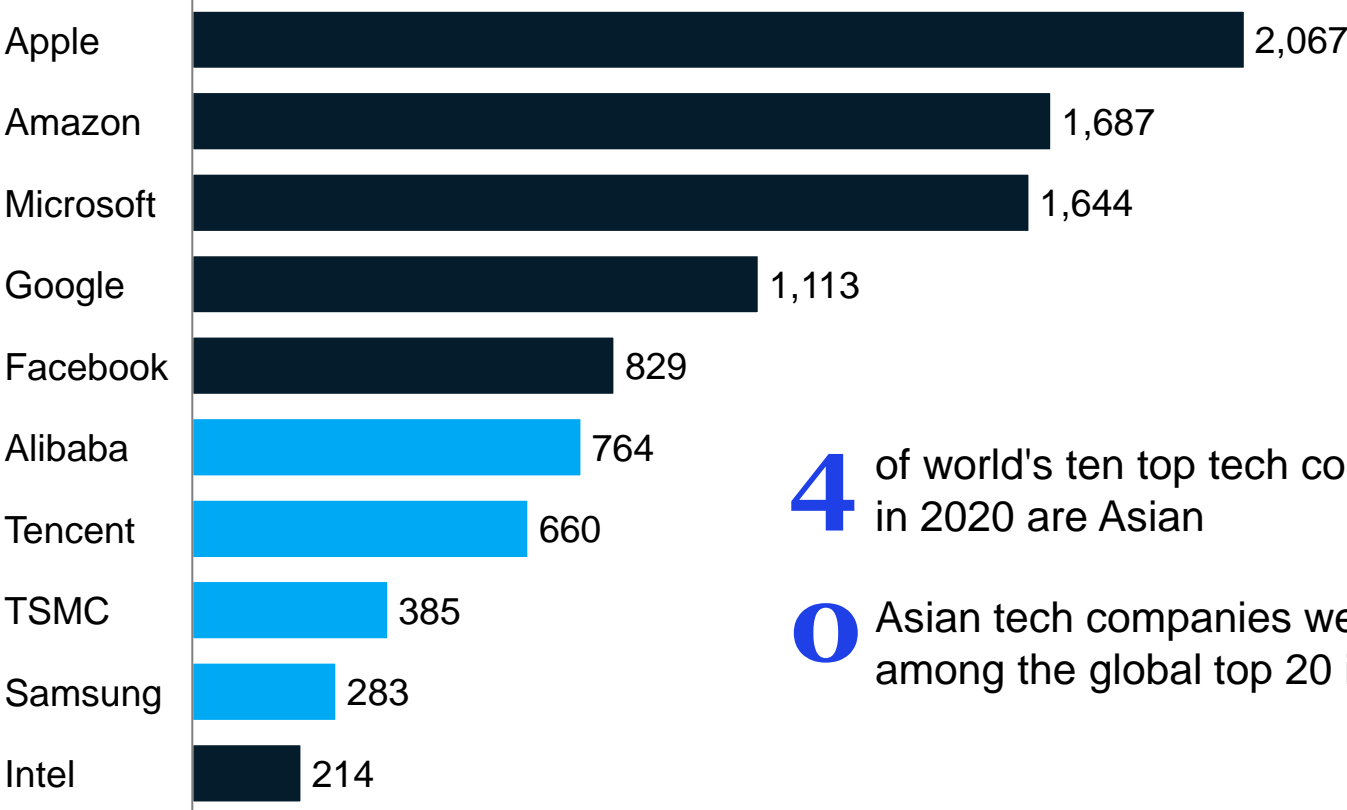
Trade in IP charges by country, 2019



Source: McKinsey analysis; World Bank

Asia is building a strong position in technology.

Top ten global tech companies by 2020 market capitalization, \$ billion

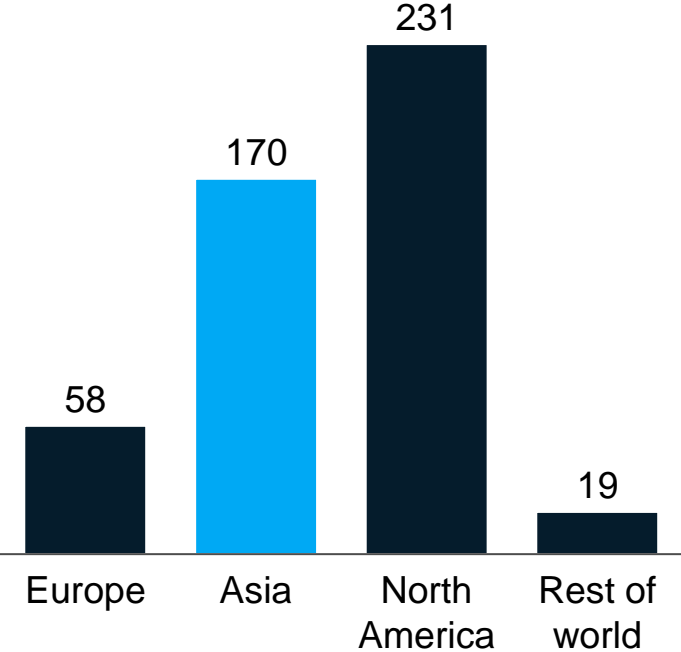


4 of world's ten top tech companies in 2020 are Asian

0 Asian tech companies were among the global top 20 in 2009

Asia Other

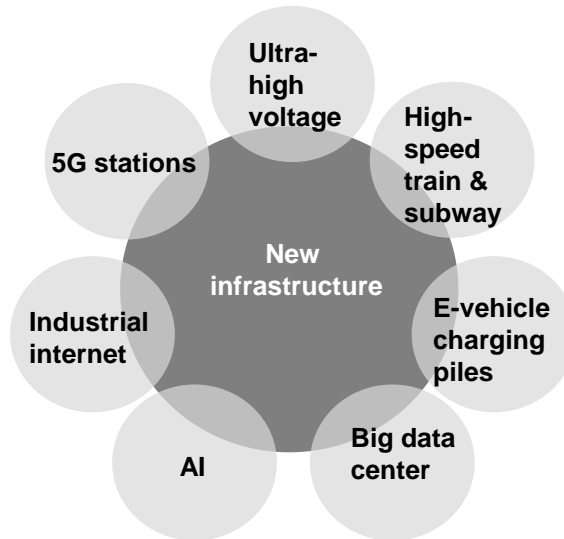
Number of unicorns by region, July 2020



36% of unicorns today are in Asia

Chinese government has published series of plans to promote further investment in innovation

New infrastructure

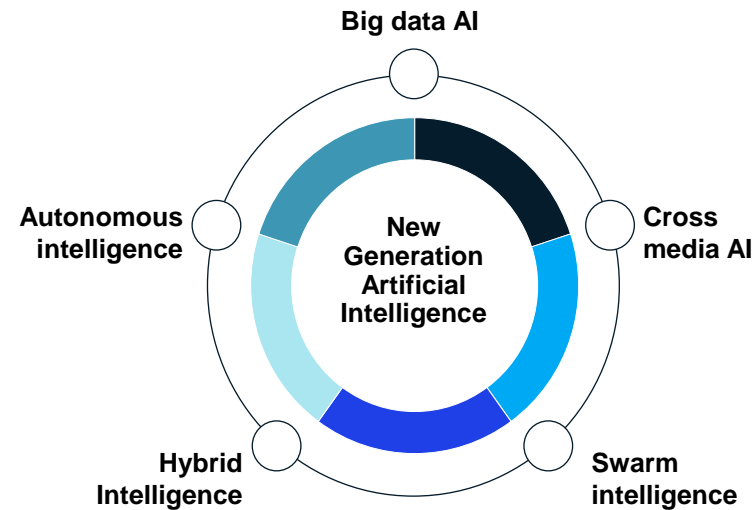


China's investment in new infrastructure could reach over **RMB 15 trillion** during 2020-2025

New infrastructure could represent **15-20%** of infrastructure investment in 2025, from **7-10%** in 2020

The initiative could create **200 thousand new employment** each year, and **save ~RMB 5 trillion** cost in manufacturing sector for China

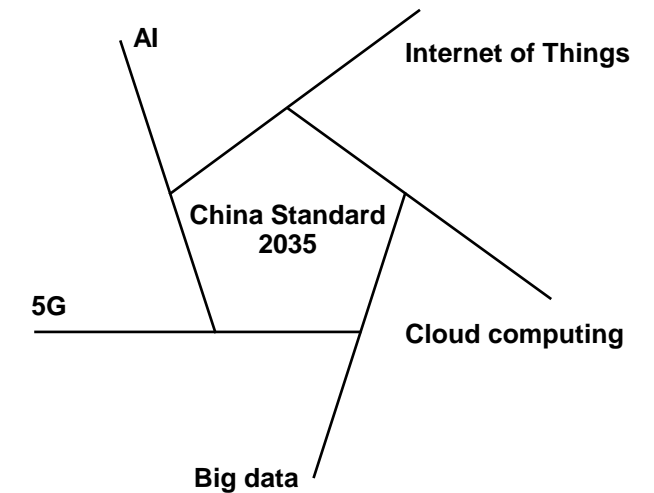
New Generation AI



By 2025, the market size of core AI industry exceeds **RMB 400 billion**, and the size of the entire related industry chain reaches **RMB 5 trillion**

By 2030, the market size of core AI industry exceeds **RMB 1 trillion**, and the size of the entire related industry chain reaches **RMB 10 trillion**

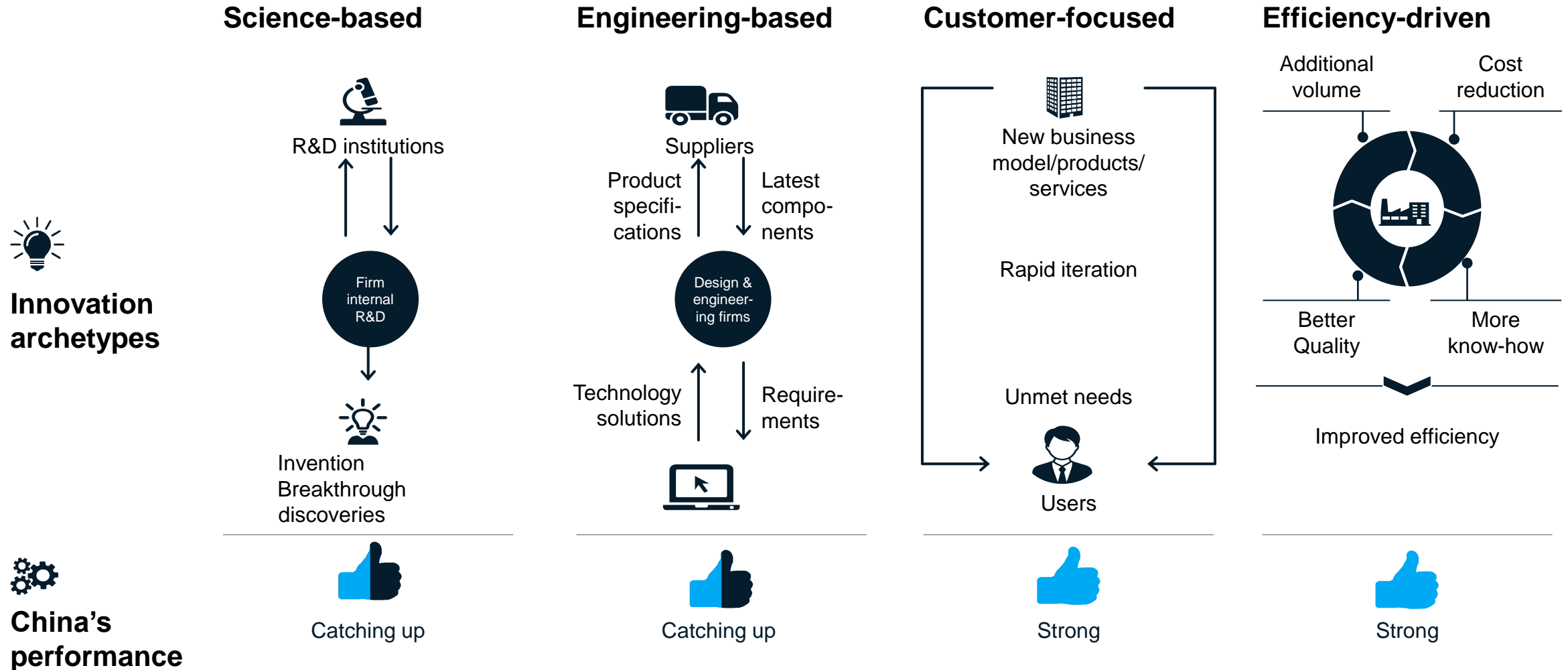
China standard 2035



The China Standards 2035 plan stresses the importance of becoming a global leader in the next generation of emerging technologies such as **5G, Internet of Things and AI**

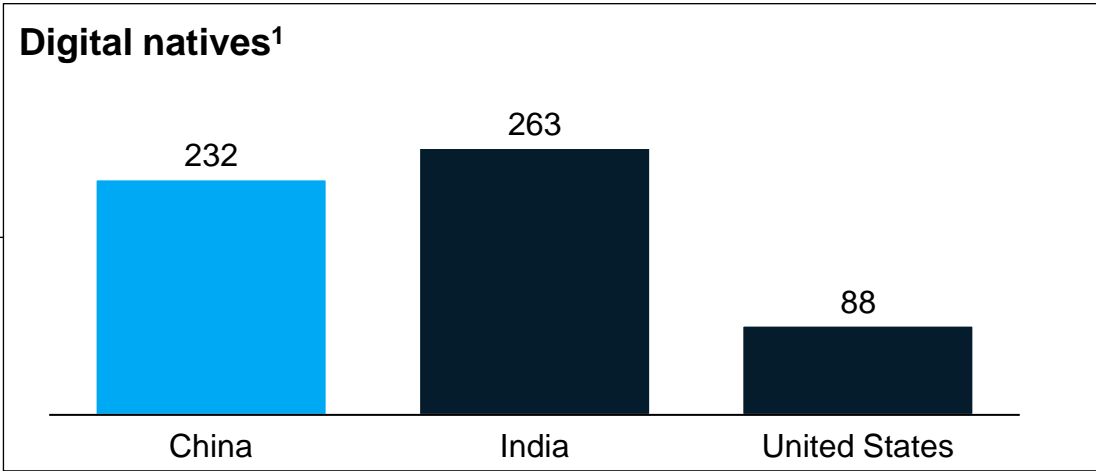
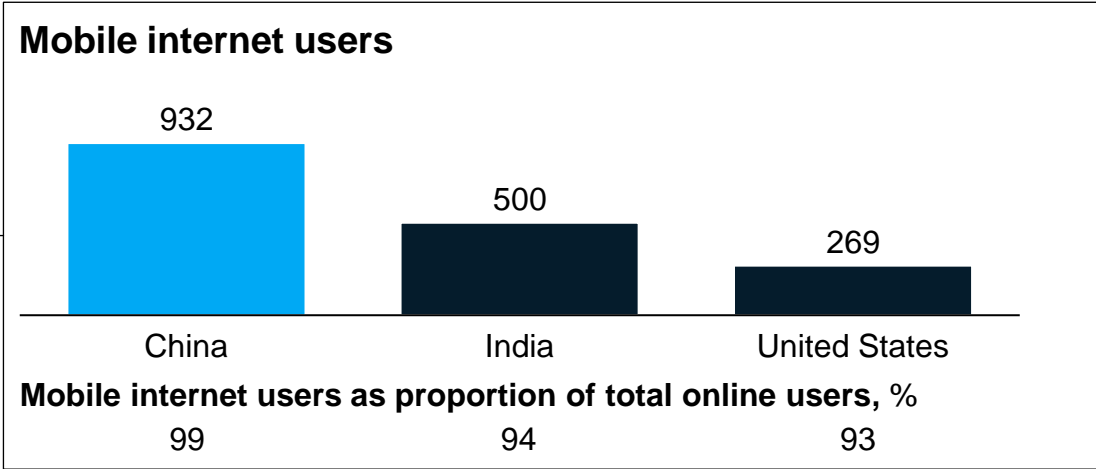
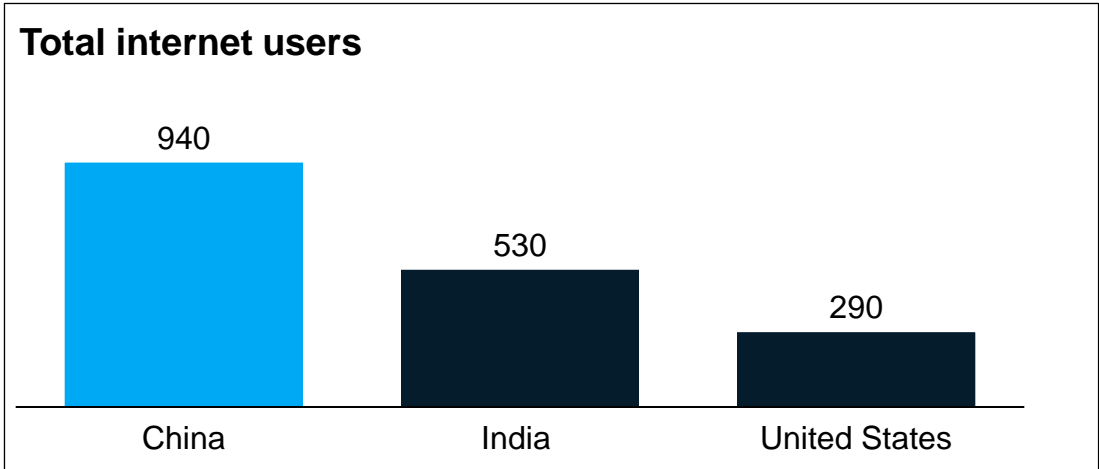
The plan indicates China needs to boost the quality of the companies going abroad and contributing to global standards

China's innovation performance varies by archetype



Customer-focused: China is home to the largest online population in the world

Million, 2020

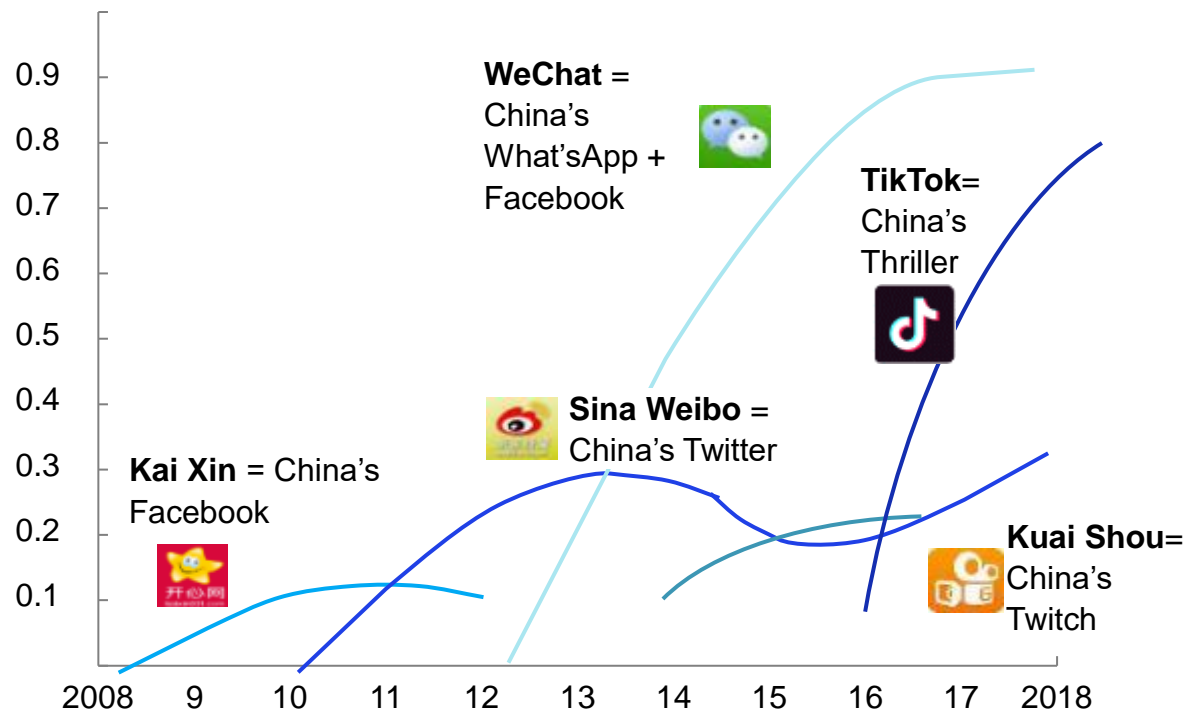


1. Defined as internet users aged 25 or under.

Customer-focused: New challengers constantly emerge

4 waves of social transitions occurred within 10 years

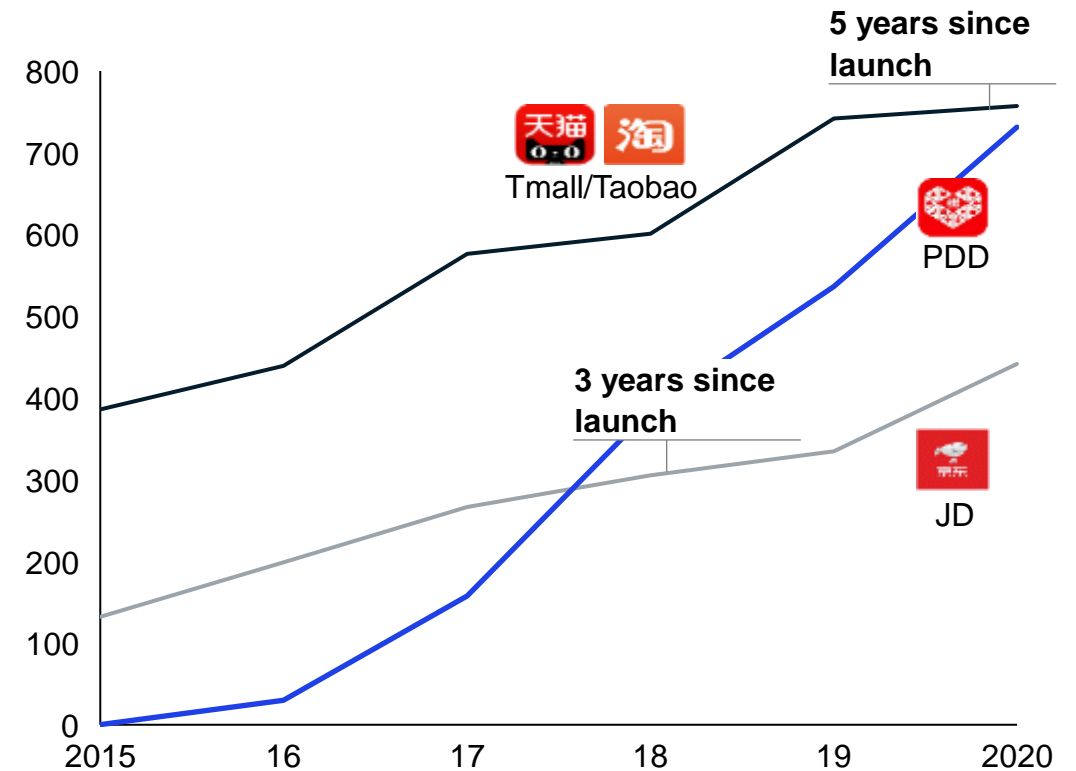
Popularity¹, MAU; Billions



1. Popularity measured by MAU 2. 12 months ends each Q3

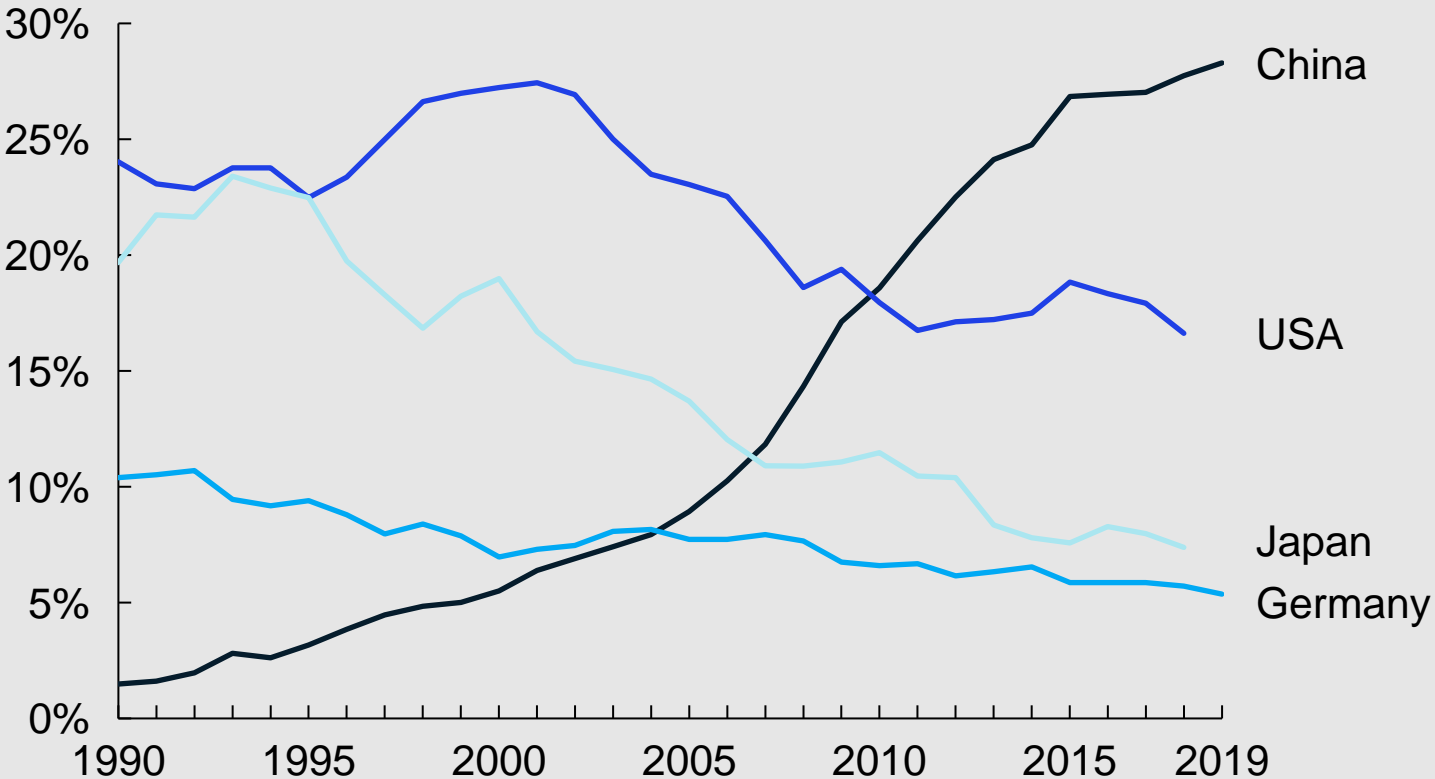
eCommerce battle with new winner like PDD emerge

Annual active buyer², Million



**Efficiency-driven:
China is the world's
leading
manufacturer**

Share of manufacturing value add, 1990-2019 , Percent



Source: IHS Global Insights; World Bank; McKinsey Global Institute analysis

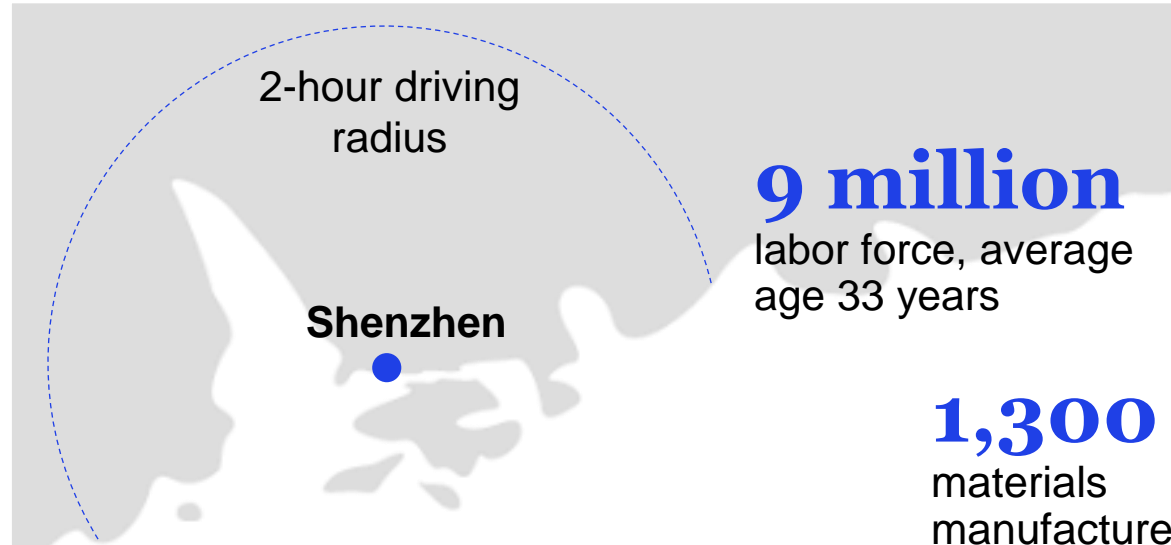
Efficiency-driven: China has developed a strong ecosystem advantage in manufacturing – Shenzhen example

Design and prototype

Shenzhen design firms

5X faster at
20~50%
cost

Scale up, manufacture



1,000+
electrical equipment manufacturers

300+
apparel manufacturers

2,000+
electronics manufacturers

Reach customers

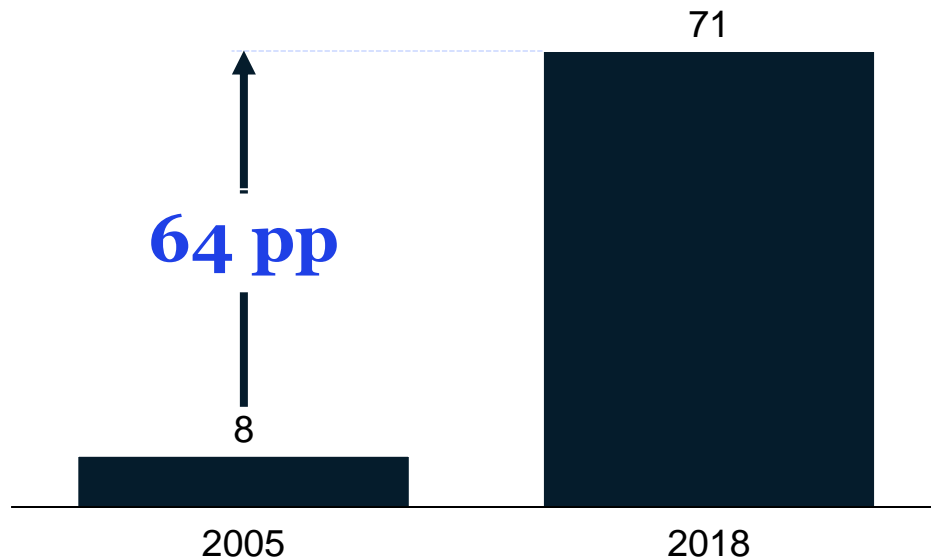
Shenzhen

#1
in cargo throughput in seaports and airports



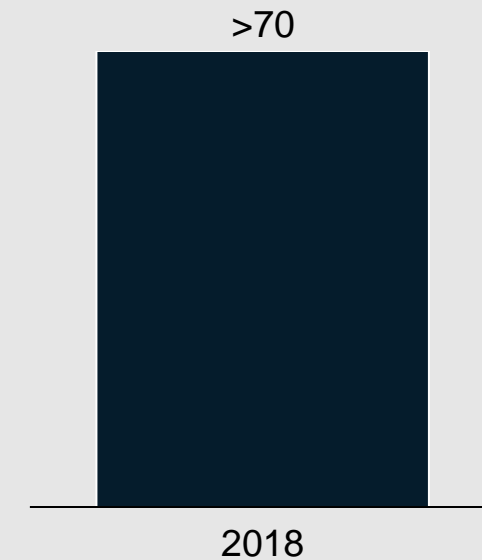
Efficiency-driven: China has emerged as global leader in solar panel and consumer drone production

Share of solar panel production by China
% of global share



9 out of top 10 global solar panel makers are Chinese

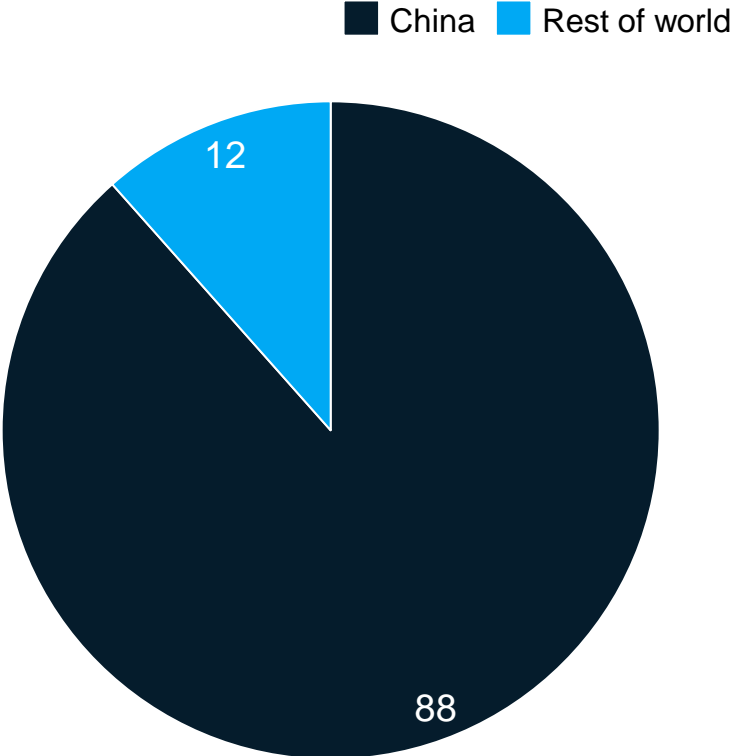
Share of consumer drone production by China
% of global share



7 out of top 10 global consumer drone makers are Chinese

Engineering-based: Chinese government can facilitate innovation through demand generation

Newly constructed high speed rail¹ Share of global total, percent, 2010-2019



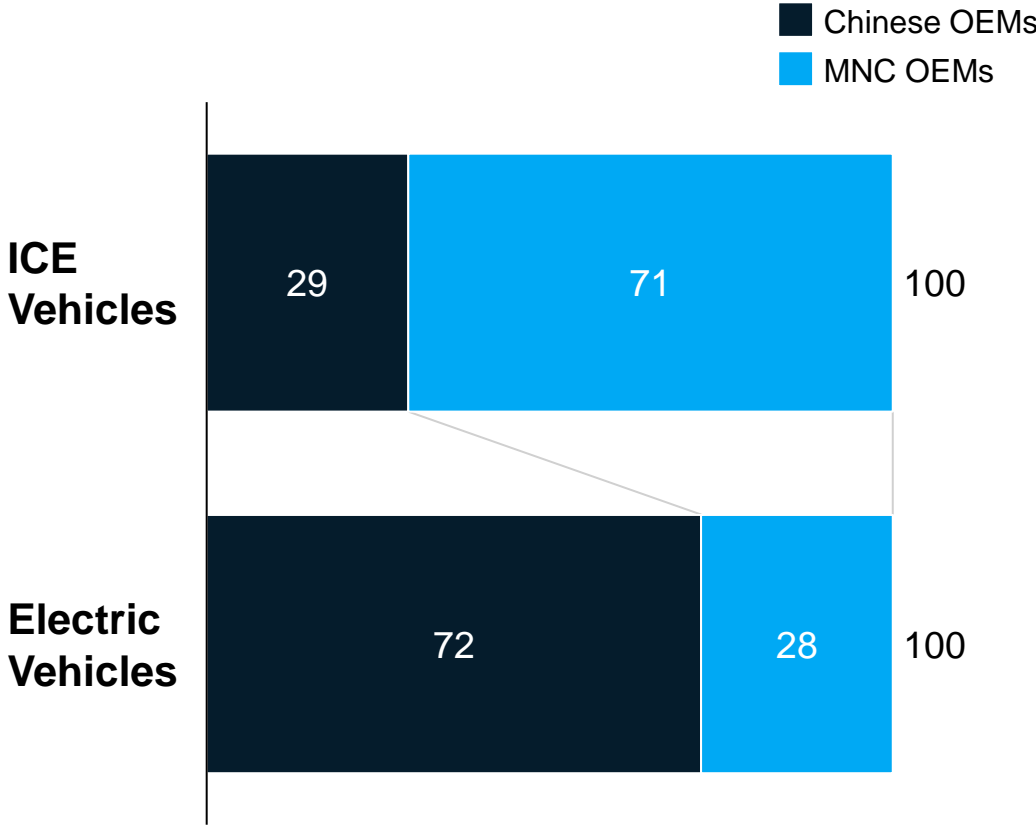
New prototype under development: Designed to float above the track to hit 600km per hour



1. Refer to high speed rails that their maximal speeds are over 250 km/h

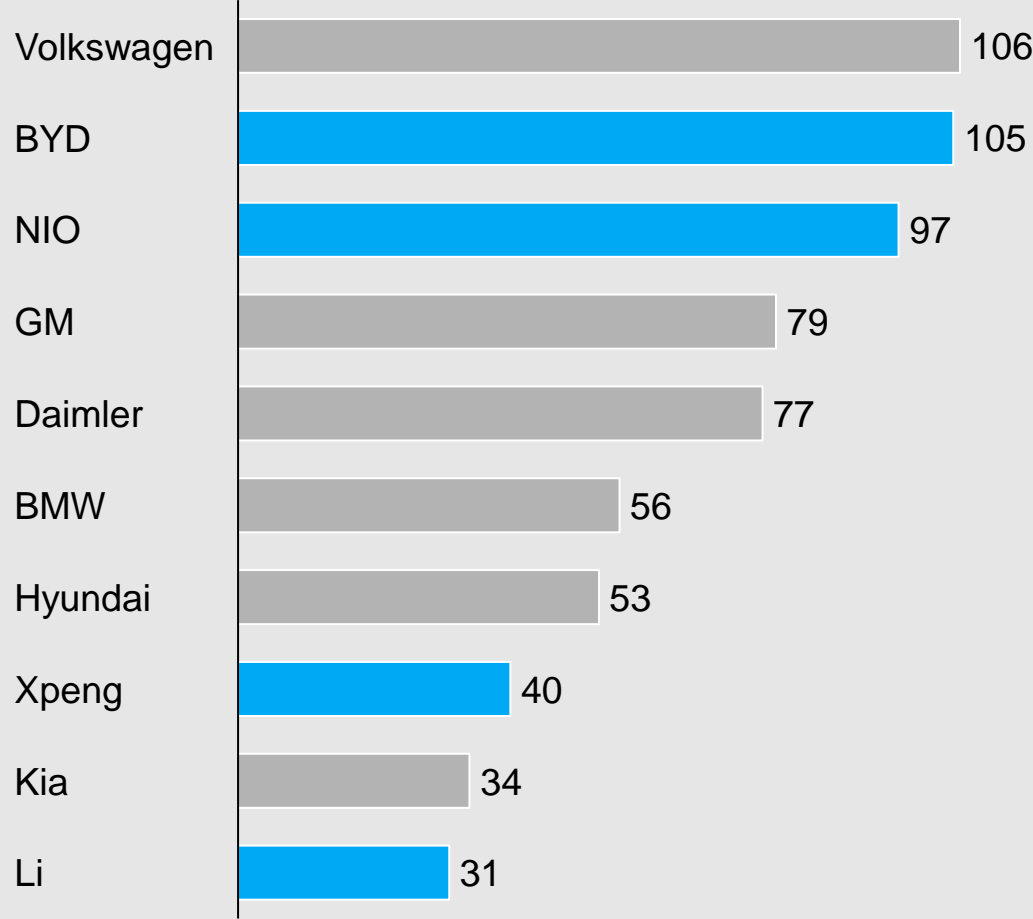
Engineering-based: Chinese OEMs are taking a big share in the EV space

Market share (%) in the China passenger vehicles market 2020



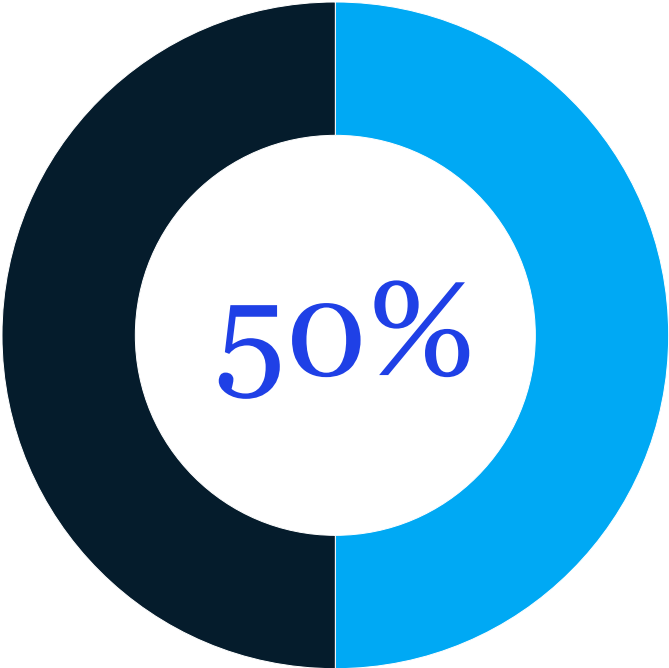
Source: China new car insurance registration database; web search

Market capitalization, billion USD, as of Jan 25 2021

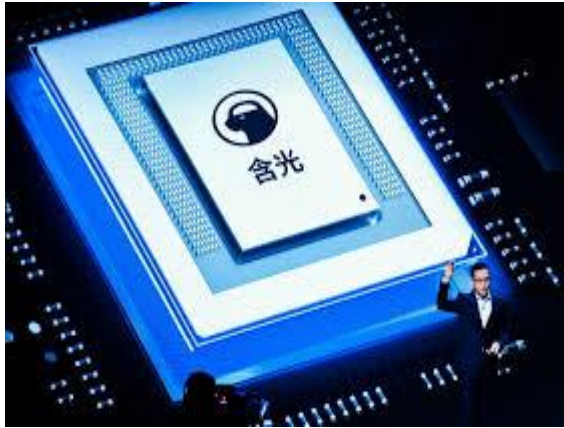
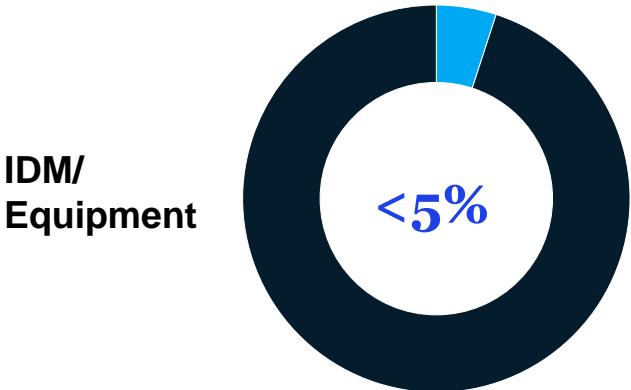
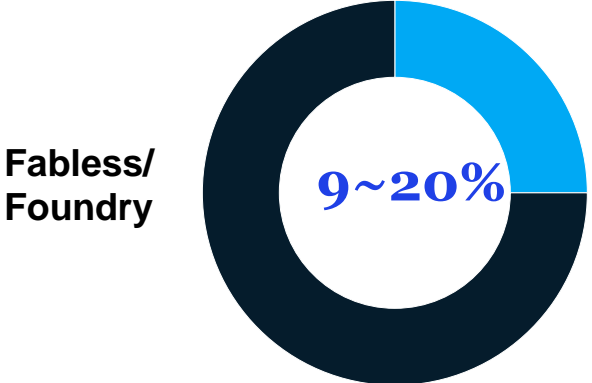


Science-based: Chinese players have made moderate progress in some parts of value chains

China's share of global semiconductor consumption, 2019



Chinese market share 2019



What is the China effect on global innovation?



Cheaper

50% cheaper smartphone, yet offering comparable or better hardware features

10~30%

manufacturing labor and science researcher cost vs. counterparts in developed countries



Faster

5x faster prototyping process by design firms in Shenzhen

940 million

Internet users enabling rapid commercialization (vs. 290 million in the US)



Global

7 out of 10 largest pharmaceutical companies with R&D sites in Shanghai

7,500

researchers employed by a Chinese CRO to support research at global scale