

China Unicorns

Preparing to gallop



Asia Pacific/China, Equity Research, 18 March 2019

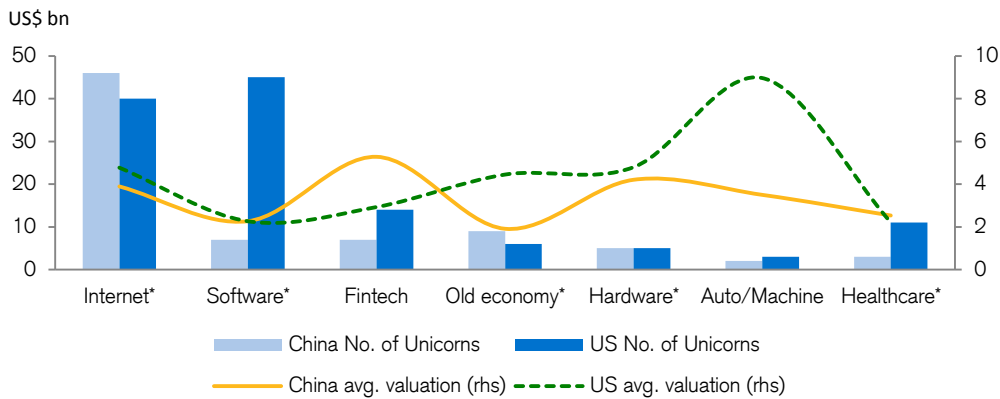
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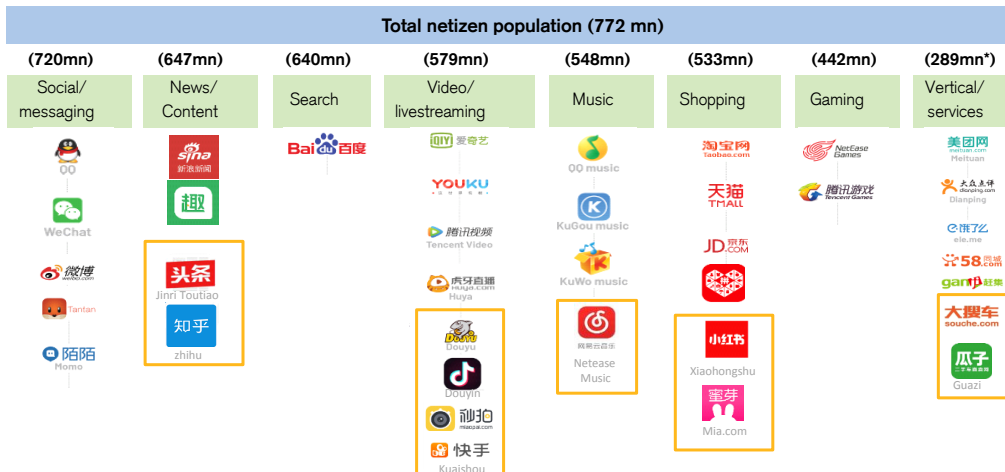
Focus charts

Figure 1: Where to find China's unicorns...



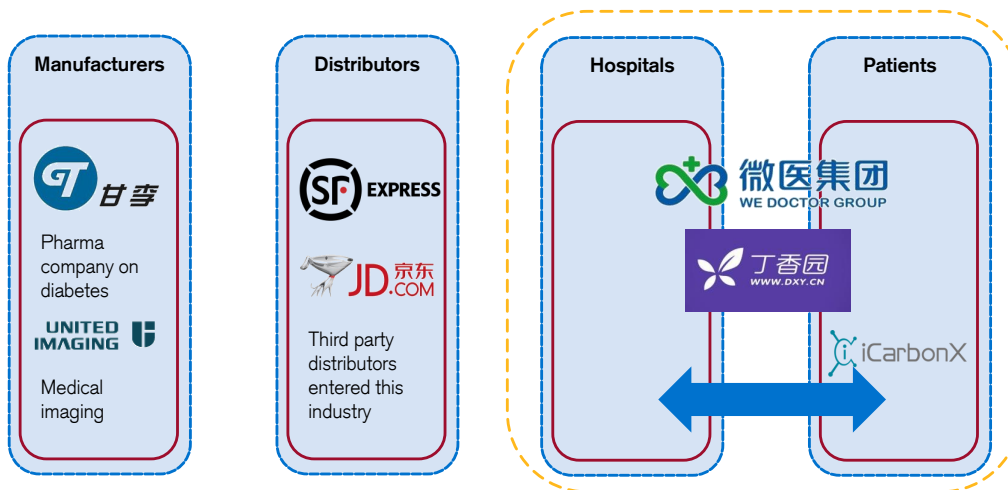
Note: * **Internet** also includes e-commerce/O2O/Games, **Software** also includes AI/Big Data/Robotics, **Hardware** also includes Semiconductors, **Healthcare** also includes Biotech, **Old economy** includes Property, Retailing, Construction, Logistic and Media. Source: CB Insights .

Figure 2: ...in the internet sector...



Note: * Meituan's monthly active users in Dec-2017; other verticals had a smaller user base. Source: CNNIC, Credit Suisse research

Figure 3: ...and the healthcare sector



Source: CNNIC, Credit Suisse research

China Unicorns

China is the second-largest source of “unicorns” in the world. We expect most China unicorns to come from the Auto, FinTech, Internet, Healthcare and Tech Hardware sectors. Hong Kong and China exchanges are getting ready for the next big wave.

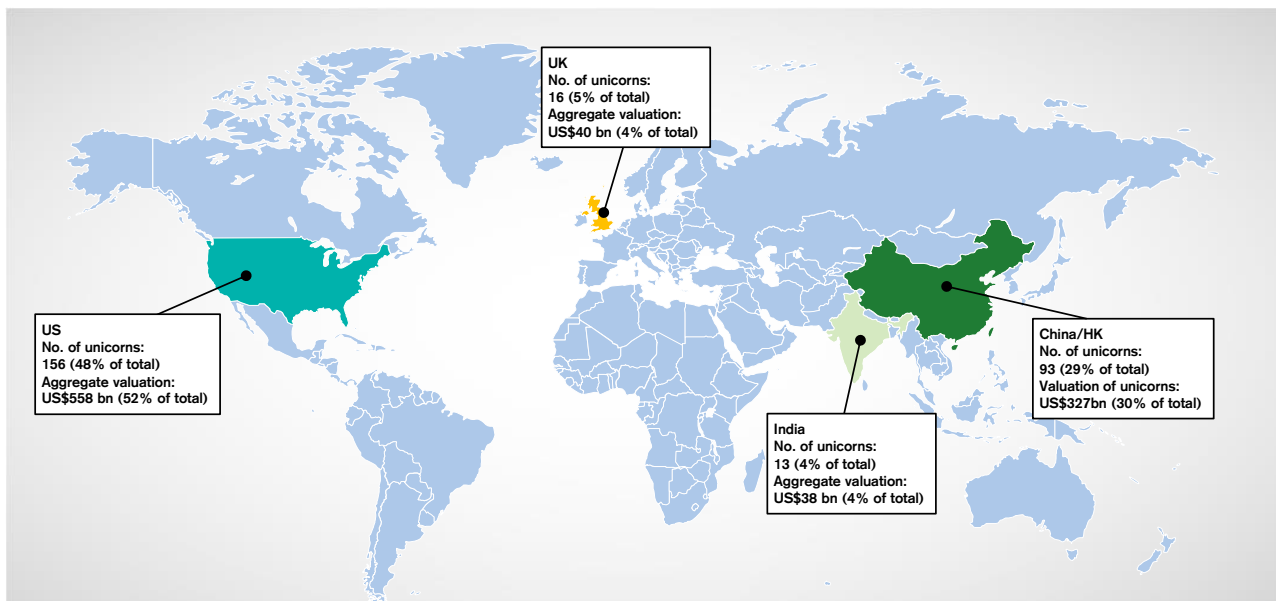
Following the US, China is the second-largest source of “unicorns” (commonly defined as start-up companies with valuations of >US\$1 bn). The general trends and prospects of Chinese unicorns in different sectors are:

- **Trend and characteristics.** Compared with the US, China's scientific research, especially basic research, is still in a catch-up phase, so in the artificial intelligence (AI), hardware and biotech area, the spending hasn't yielded many unicorns yet. On the other hand, China's consumer market is large, fast-growing, yet under-developed, providing rich soil for unicorns riding business model innovation. In the next few years, internet may continue to dominate, but AI/Big data and biotech should start to catch up.
- **China/HK listing regime overhaul to prepare for the next big wave.** In China, the Sci-Tech Innovation

Board is soon to be launched in Shanghai. It will be an encouraging test field with completely new designs. It welcomes pre-profit innovative companies, red chips and weighted-voting-right (WVR) companies. In Hong Kong, three changes adopted in 2018 were well received by companies and investors, including embracing pre-revenue early-stage biotech companies, WVR companies and a concessionary route to secondary listing.

- **Key trends of major sectors.** Our sector analysts focus discussions on the key trends of five major sectors: Auto, FinTech, Internet, Healthcare and Technology Hardware.
- **Selected unicorns:** A two-page company profile for 60 companies which have reached the status of a “unicorn” is provided for investors' reference.

Figure 4: Unicorns by countries



Source: CB Insights



“ China’s consumer market is large, fast-growing, yet under-developed.

Preparing to gallop

China is the second-largest source of “unicorns” in the world. We expect most China unicorns to come from the Auto, FinTech, Internet, Healthcare and Tech Hardware sectors. Hong Kong and China exchanges are getting ready for the next big wave.

China's unicorns: Trends and characters

Following the US, China is now the second-largest source of unicorns. According to CB Insights, as of 20 February, the world has 326 private start-ups with valuations exceeding US\$1 bn and an estimated total valuation of US\$1,080 bn. China contributes 29% of the companies and 30% of the total valuation.

Compared with US unicorns, China's scientific research, especially basic research, is still in a catch-up phase, so in AI, hardware and biotech, which require heavy scientific input, there are not a lot of unicorns. On the other hand, China's consumer market is large, fast-growing, yet under-developed, providing rich soil for unicorns riding business model innovation, which explains the large amount of unicorns in the internet sector.

In the next few years, the internet sector may continue to dominate Chinese unicorns. With the increased R&D spending of the past few years, we also see the emergence of unicorns in sectors with a much bigger technology input. Most notably, biotech and AI/Big Data should stand out. China has a big advantage in AI/Big Data due to its huge available data with its large population and also a wide gene pool for biotech research.

Fighting for the love of unicorns

Hong Kong and China have both adapted themselves to new business models and company features, in order to prepare for the next big wave. In China, the Sci-Tech Innovation Board is soon to be launched in Shanghai. It will be an encouraging test field with completely new designs. It embraces innovative companies in seven fields, and welcomes pre-profit ones by a different set of financial tests focusing on market cap. Red chips and weighted-voting-right companies are eligible for listing. The 23x P/E cap in IPO pricing will be removed. The IPO system will transition to registration based. Other features show that designers hope its players should be professional investors. The Sci-Tech Innovation Board may incubate some great companies of tomorrow. The

mechanism if it proves successful may also be used in the whole equity market to improve its efficiency. In Hong Kong, three big changes that were well received by companies and investors in 2018 are: (1) permitting pre-revenue early-stage biotech companies to get listed; (2) allowing companies with different voting right structures to get listed; and (3) creating a concessionary route for secondary listing for qualifying issuers.

Key trends of major sectors

Our sector analysts focus discussions on the key trends of five major sectors: Auto, FinTech, Internet, Healthcare and Technology Hardware.

In the **Auto** sector, we identify three mega trends in the smart EV industry: electrification, autonomous driving and smart features. We expect China's new energy vehicle (NEV) sales to enjoy a 28% 13-year CAGR from 2017-30. In **FinTech**, rapid growth will be driven by technology advancement and under-served demand for financial services. The payment volume of China's third-party payments market is expected to see a 32% CAGR over 2017-21 and reach Rmb470 tn in 2021E (source: Frost & Sullivan, Oliver Wyman). In the **Healthcare** sector, China's “Big health” market reached Rmb4.9 tn per the government in 2017. In the **Internet** sector, China had the largest number of internet users at 772 mn by end-2017. Some 98% of internet users are mobile netizens, attributed to a higher smartphone ownership in China. In **Technology Hardware**, the global AI market is expected to grow from US\$7.3 bn in 2018 to US\$89 bn in 2025, with a 45% CAGR. China's AI market comprises about 12% of the global market. China is expected to become a leader in AI by 2030 driven by strong venture capital investment, the largest number of smartphone users and a strong talent base.

Selected unicorns

In this section, two-page company profiles for 60 companies which have reached the status of a “unicorn” are provided for investors' reference.

Figure 5: List of selected unicorns

#	Name	Classification	Valuation (US\$ bn)	Business
1	17zuoye	Internet/e-commerce/O2O/Games	1	Online K12 education platform offering smart homework solution
2	4Paradigm	AI/Big Data/Robotics/Software	1	An artificial intelligence technology and service provider focused on the B2B area
3	58 Daojia	Internet/e-commerce/O2O/Games	1	A multi-category local services platform
4	AIWAYS	Auto	2	An intelligent new energy vehicle company
5	BeiBei	Internet/e-commerce/O2O/Games	1	A maternal and infant product e-commerce platform
6	Beijing LaKala Billing Services	Fintech	2	Integrated internet financial service platform
7	Bitmain Technologies	Fintech	12	Producer of integrated circuits for cryptocurrency mining and mining hardware
8	Cambricon	Hardware/Semi	2	Developer of AI chips for cloud based AI server, intelligent devices and AI robotics
9	CAO CAO	Internet/e-commerce/O2O/Games	2	A ride-hailing startup backed by automotive manufacturer Geely
10	Cloudwalk	Fintech	3	An artificial intelligence facial recognition company
11	Coocaa	Hardware/Semi	1	Smart TV R&D and living room entertainment content operations
12	Dasouche	Internet/e-commerce/O2O/Games	3	Used car dealing, new car leasing and financing
13	Didi Chuxing	Internet/e-commerce/O2O/Games	56	Mobile transportation platform offering a full range of app-based ride service
14	Ding Xiang Yuan	Internet/e-commerce/O2O/Games	1	Forum for doctors to share experience and knowledge
15	DJI Innovations	Hardware/Semi	10	Global leader in civilian drones and aerial imaging technology
16	Douyu	Internet/e-commerce/O2O/Games	2	Tencent-backed livestreaming game platform
17	EasyHome	Retail	6	Interior design and decoration, furniture and building materials, smart logistics, etc.
18	Face++ (Megvii)	AI/Big Data/Robotics/Software	1	Provider of AI algorithms and solutions to help build city-wide IoT systems
19	Gan & Lee Pharmaceuticals	Healthcare/Biotech	2	Leader in China diabetes drug market focusing on insulin
20	Guazi (Chehaoduo)	Internet/e-commerce/O2O/Games	7	Online used car trading platform
21	Hellobike	Internet/e-commerce/O2O/Games	1	Bike-sharing platform focusing on lower-tier cities
22	Henlius	Healthcare/Biotech	3	A biopharmaceutical company in biosimilar and innovative biologic drug development,
23	Hujiang	Internet/e-commerce/O2O/Games	1	Comprehensive online education platform
24	iCarbonX	Healthcare/Biotech	1	A platform for people to monitor health status, predict trends and improve lifestyle
25	Intellifusion	AI/Big Data/Robotics/Software	3	An artificial intelligence company focusing on 'non-cooperative' visual intelligence
26	Koolearn	Internet/e-commerce/O2O/Games	1	Online education service provider
27	Kuaishou	Internet/e-commerce/O2O/Games	3	Video sharing platform
28	Lianjia (Homelink)	Internet/e-commerce/O2O/Games	6	A secondary property brokerage platform
29	Lu.com	Fintech	38	Online wealth management and retail lending technology platform
30	Manbang Group	Internet/e-commerce/O2O/Games	6	The largest truck hailing service platform
31	Meicai	Internet/e-commerce/O2O/Games	3	Provider of one-stop all-category agricultural product procurement services
32	Mia.com	Internet/e-commerce/O2O/Games	1	E-commerce platform selling mother and baby products
33	MINISO Life	Retail	2	A retail chain selling household items, daily life products and so on
34	Mofang Gongyu	Property	1	Leading player in the rental apartment market
35	Momenta	AI/Big Data/Robotics/Software	1	An autonomous driving start-up aiming to build the 'Brains' for autonomous vehicles
36	New Dada	Logistics	1	Same-city on-demand logistics platform connecting merchants and services
37	Royole Corporation	Hardware/Semi	3	Developer of innovative flexible display technologies and related electronic products
38	Shansong Express (FlashEx)	Logistics	1	Short-distance (usually same-city) delivery on demand service provider
39	Tiger Brokers	Fintech	1	Online stock brokerage
40	Tongdun Technology	AI/Big Data/Robotics/Software	1	Third-party intelligent risk management service provider
41	Toutiao (Bytedance)	Internet/eCommerce/O2O/Games	75	Operator of China's largest news aggregator and multiple hit video apps
42	Trendy Group International	Retail	2	International fashion entity with more than 9 brands
43	Tuandaiwang	Fintech	1	P2P platform serving SMEs' financing demand
44	Tuhu	Internet/e-commerce/O2O/Games	1	An online retailer for auto aftermarkets products and services with omni-channel retail
45	Tujia	Internet/e-commerce/O2O/Games	2	Homestay booking platform
46	UBTECH Robotics	AI/Big Data/Robotics/Software	5	AI and humanoid robotic company
47	Unisound	AI/Big Data/Robotics/Software	1	Intelligent voice and speech processing technologies and applications
48	United Imaging Healthcare	Healthcare/Biotech	5	Developer of Color Doppler ultrasound, MRI products and digital medical imaging tech
49	Vipkid	Internet/ec-ommerce/O2O/Games	3	Online education platform providing English training courses
50	We Doctor (Guahao)	Internet/e-commerce/O2O/Games	2	Operating Guahao which connects medical institutions, doctors and patients
51	Xiaohongshu	Internet/e-commerce/O2O/Games	3	Social e-commerce app helping urban females discover, share and buy from overseas
52	XiaoZhu	Internet/e-commerce/O2O/Games	1	Online homing sharing platform
53	YH Global	Logistics	1	Supply chain, financing service, etc.
54	Yiguo	Internet/e-commerce/O2O/Games	1	An e-commerce platform for agricultural products
55	YITU Technology	AI/Big Data/Robotics/Software	2	Integrating AI business applications for security, finance, transport and healthcare
56	Yixia	Internet/e-commerce/O2O/Games	1	Mobile platform for sharing short videos
57	Yuanfudao	Internet/e-commerce/O2O/Games	3	Online K12 tutoring
58	Zhangmen	Internet/e-commerce/O2O/Games	8	Online K12 one-on-one tutoring
59	Zhaogang	Internet/e-commerce/O2O/Games	1	The biggest e-commerce platform for steel industry
60	Zhihu	Internet/e-commerce/O2O/Games	3	Chinese versioned Quora -question-and-answer site

Source: : Company data, CB Insights



“ Unicorns are usually defined as private start-up companies with over a US\$1 bn valuation.

China's unicorns: Trends and characters

The value of China unicorns is worth 33% of the global total. By 2017, VC funding in Asia (mainly driven by China) was similar in size to that in North America.

"Unicorns" are usually defined as private start-up companies with over a US\$1 bn valuation. As of 20th February, according to CB Insights, there were 326 unicorns globally. Of this, 156 originated from the US and 93 from China/Hong Kong, i.e. China/Hong Kong is only second behind the US as a destination for emerging unicorns. The total value of the 326 companies is estimated to be US\$1,080 bn, with unicorns in the US worth US\$558 bn (52% of the total) and unicorns in China/Hong Kong worth US\$325 bn (30% of the total).

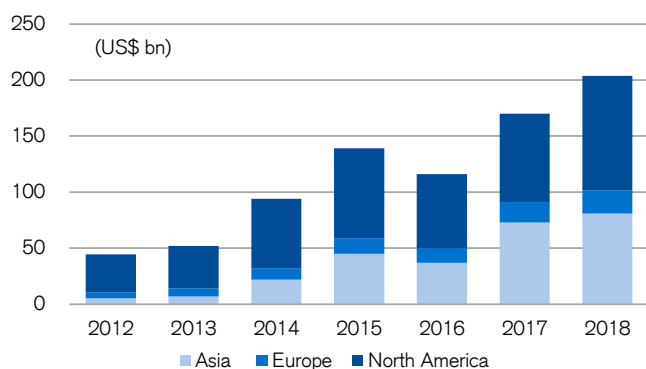
The rise of China as a key source of new unicorns in the past few years has also been reflected in the sharp rise in VC funding in Asia. In 2012, VC funding in Asia was only around US\$5 bn, similar to that of Europe, and only around 15% of North America (mainly the US). By 2017, VC funding in Asia, mainly driven by China, was similar to that of North America but way ahead of Europe. In 2018, VC funding in North America surged almost 30% to US\$102 bn, while that of Asia only went up 11%, resulting in the gap between the two regions widening again.

Figure 5: Unicorns by country

As at 20-Feb-2019	Number of Unicorns		Aggregate valuation	
	Number	%	US\$ bn	%
China/HK	93	29%	327	30%
US	156	48%	558	52%
UK	16	5%	40	4%
India	13	4%	38	4%
APAC ex-China ex-India	19	6%	65	6%
Europe ex-UK	21	6%	41	4%
Others	8	2%	12	1%
Total	326	100%	1,080	100%

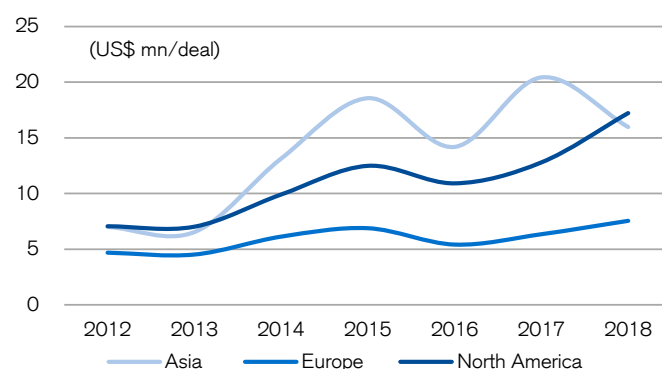
Source: CB Insights

Figure 6: Total size of VC funding by region



Source: PsC/CB Insights "MoneyTree™ Report" 4Q18

Figure 7: Average deal size of VC funding by region



Source: PsC/CB Insights "MoneyTree™ Report" 4Q18

Between 2014 and 2017, the average size per VC deal in Asia was also much bigger, mainly due to the transactions related to the large internet platform companies which are usually much bigger than other types of start-ups. But in 2018, the number of large internet deals was reducing in Asia replaced by more niche players, so the average deal size was declining. At the same time, the average deal size in the US was rising, and

surpassed that of Asia in 2018. From 4Q16 onwards, of the 47 largest global transactions (in the top 5 in each quarter with six transactions in 4Q17 and 4Q18 as there are deals tied in value), 19 (40%) originated from China. However, from 2H18 onwards, China is becoming less dominant among the big deals.

Figure 8: Largest VC funding around the world (4Q16-4Q18)

4Q18			
Company	Location	Industry	Funds raised (US\$ mn)
Coupang	Seoul, South Korea	Mobile commerce	2,000
Lu.com	Shanghai, China	Accounting & finance	1,330
Epic Games	Cary, United States	Gaming	1,250
View	Milpitas, United States	General building materials	1,100
Tokopedia	Jakarta, Indonesia	e-commerce	1,100
Swiggy	Bengaluru, India	Food & grocery	1,000
3Q18			
Company	Location	Industry	Funds raised (US\$ mn)
Grab	Singapore	Mobile commerce	1,000
WeWork	NY, United States	Facilities	1,000
Lucid Motors	Newark, United States	Automobile manufacturing	1,000
Oyo Rooms	New Delhi, India	e-commerce	1,000
Xpeng Motors	Guangzhou, China	Automobile manufacturing	585
2Q18			
Company	Location	Industry	Funds raised (US\$ mn)
Manbang Group	Guiyang, China	Internet software & services	1,900
Grab	Singapore	Mobile commerce	1,000
UBETECH Robotics	Shenzhen, China	Consumer electronics	820
Hellobike	Shanghai, China	Mobile commerce	700
SenseTime	Beijing, China	Scientific, Engineering software	620
1Q18			
Company	Location	Industry	Funds raised (US\$ mn)
Easyhome	Beijing, China	Home furnishings & improvement	2,054
GO-JEK	Jakarta, Indonesia	Mobile software & services	1,500
Uber	CA, United States	Mobile commerce	1,250
Mobike	Shanghai, China	Mobile commerce	1,000
Chehaoduo	Beijing, China	e-commerce	818
4Q17			
Company	Location	Industry	Funds raised (US\$ mn)
Didi Chuxing	Beijing, China	Mobile commerce	4,000
China Internet Plus	Beijing, China	e-commerce	4,000
Olacabs	Bengaluru, India	Mobile commerce	1,100
Ofo	Beijing, China	Mobile commerce	1,000
NIO	Shanghai, China	Automobile manufacturing	1,000
3Q17			
Company	Location	Industry	Funds raised (US\$ mn)
Grab	Singapore	Mobile commerce	2,000
WeWork	NY, United States	Facilities	1,700
Flipkart	Bengaluru, India	e-commerce	1,400
Roivant Sciences	Basel, Switzerland	Biotechnology	1,100
Tokopedia	Jakarta, Indonesia	e-commerce	1,100
2Q17			
Company	Location	Industry	Funds raised (USD mn)
Didi Chuxing	Beijing, China	Mobile commerce	5,500
One97 Communications	Noida, India	Mobile software & services	1,400
GO-JEK	Jakarta, Indonesia	Mobile software & services	1,200
Bytedance	Beijing, China	Mobile software & services	1,000
Ele.me	Shanghai, China	e-commerce	1,000
1Q17			
Company	Location	Industry	Funds raised (US\$ mn)
Flipkart	Bengaluru, India	e-commerce	1,000
GRAIL	Menlo Park, United States	Disease diagnosis	900
NIO	Shanghai, China	Automobile manufacturing	600
Social Finance	San Francisco, United States	e-commerce	500
Uxin Pai	Beijing, China	e-commerce	500
4Q16			
Company	Location	Industry	Funds raised (US\$ mn)
OneWeb	Virginia, United States	Telecom services	1,200
Yixia	Beijing, China	Mobile software & services	500
Careem Networks	Dubai, United Arab Emirates	Mobile commerce	350
Innovent Biologics	Suzhou, China	Drug manufacturing	385
WeWork	New York, United States	Facilities	260

Source: PwC/CB Insights "MoneyTreeTM Report" various issues

Characteristics of China's unicorns

Despite China and the US being the two countries dominating the unicorn scene, the characteristics of their respective unicorns are quite different. It is fair to say that Chinese unicorns are driven more by business model innovation which takes advantage of the large, fast-growing but fragmented consumer market in China, but there are probably more genuine high-tech companies among US unicorns at this stage. Indeed, the sector breakdown of Chinese unicorns is quite similar to that of all other countries (ex-US), implying the possibility of similar factors influencing their business environment. To illustrate this point, we break down the business of Chinese and US unicorns into seven categories: (1) Internet/e-commerce/O2O/Games, which usually are companies focused on business model innovations and directly serving consumer demand; (2) AI/Big Data/Robotics/Software which mostly serve companies rather than consumers; (3) Fintech; (4) traditional Old Economy business; (5) Hardware/semiconductor manufacturers, including both final products for consumers or components; (6) Auto/Machinery; and (7) Healthcare/Biotech.

As shown in the figure below, 49 out of 93 Chinese unicorns (53%) are in the Internet/e-commerce/O2O/Games space, similar to 48% of all other countries excluding US. In

contrast, the ratio was only 29% among US unicorns. Indeed, in the US, the ratio of unicorns in sectors requiring more advanced scientific research capability, such as AI/Big Data/Robotics/Software (40% vs 14% in China and 23% in Others) and healthcare/biotech (9% vs 4% and 5%), is higher than in China and other countries. The reason for this divergence is that compared to the US, other countries' level of scientific research is still in the catch-up phase, but emerging markets such as China and India have a very large and fast-growing consumer market.

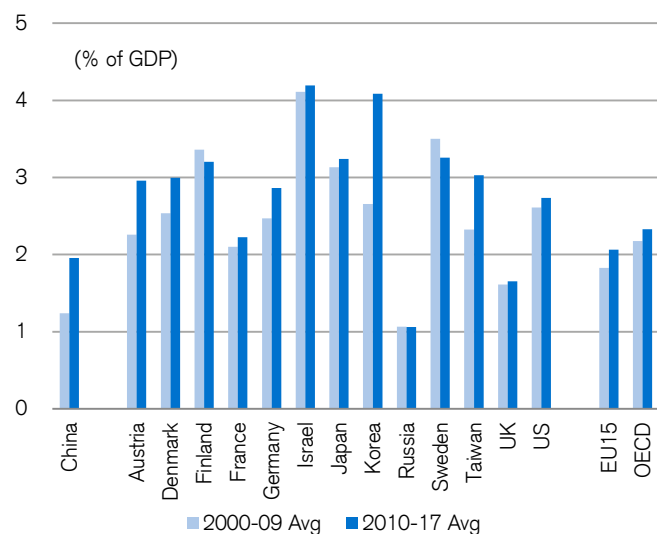
The characteristics of Chinese unicorns mentioned above reflect the country's stage of development as well as the absolute size of its economy. To start with, despite China catching up very quickly in the past few years, its investment in R&D (which drives technology development and provides the foundation for the emergence of unicorns) was only 1.2% of GDP from 2000-09, way below that of the OECD (2.2%). The R&D of China has increased rapidly in the past few years, reaching 2.0% of GDP for 2010-17, only slightly lower than the OECD level of 2.3%. Indeed, by 2017, China's R&D had already reached 2.1% of GDP. However, China's R&D as a percentage of GDP is still much lower than many other smaller economies which have invested heavily in technology, such as Japan, Korea, Taiwan, Sweden, Germany, Israel and Finland, among others.

Figure 9: Comparing China and US unicorns

	China			US			Others		
	No. of Deals	Avg. valuation %	(US\$ bn)	No. of Deals	Avg. valuation %	(US\$ bn)	No. of Deals	Avg. valuation %	(US\$ bn)
Internet/eCommerce/O2O/Games	49	52.7	4.47	45	28.8	4.52	37	48.1	3.09
AI/Big Data/Robotics/Software	13	14.0	1.75	62	39.7	2.28	18	23.4	1.96
Fintech	7	7.5	3.11	16	10.3	3.87	12	15.6	1.96
Old economy	12	12.9	1.89	11	7.1	5.62	5	6.5	1.30
Hardware/Semi	5	5.4	4.21	6	3.8	4.26	1	1.3	2.00
Auto/Machine	3	3.2	2.86	2	1.3	11.25	0	0.0	0.00
Healthcare/Biotech	4	4.3	2.63	14	9.0	2.99	4	5.2	3.43
Total	93	100	3.51	156	100	3.58	77	100	2.54

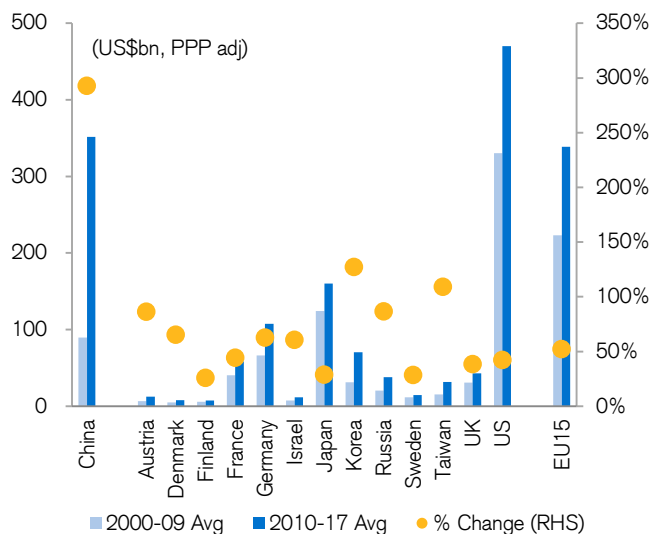
Source: Credit Suisse estimates, CB Insights

Figure 10: R&D as a % of GDP



Source: OECD

Figure 11: Average R&D spending per annum



Source: OECD

In absolute terms, due to the large scale of the Chinese economy, on a PPP basis, China's average R&D spending p.a. for 2010–17 was only smaller than that of the US and similar to the EU15 in total, while the absolute level of China's R&D was much lower than the US and Europe in 2000–09. In short, despite its huge size, China is a relative “newcomer” in the game of R&D and innovation, and it takes time for R&D spending to translate into commercial products/services.

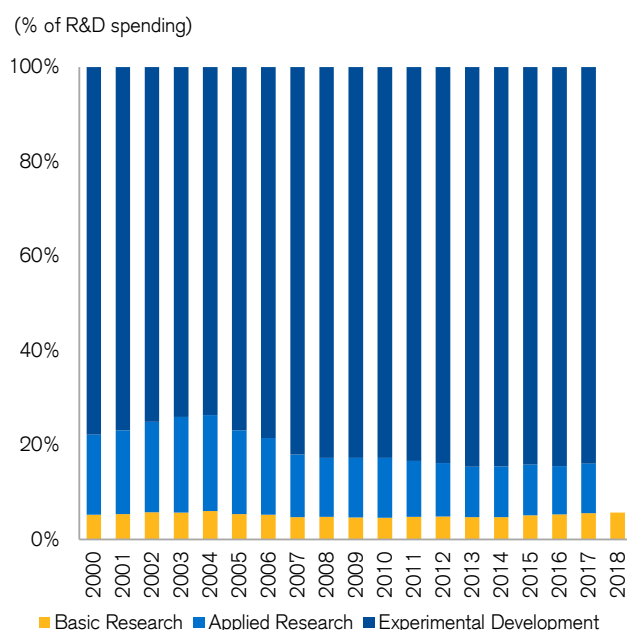
Another key characteristic of China's R&D is that its portion of basic research is very small compared to other applied research (mid-stream) and experimental development (down-stream) spending. Only around 6% of total R&D spending was on basic research even in recent years. As a percentage of GDP, China's basic research spending is way behind that of other countries which spend heavily on R&D. For example, China's absolute R&D spend (PPP adjusted) is still smaller than that of the US, but the US spends almost 0.5% of GDP on basic research, i.e., more than 5x in absolute terms than China. Most of China's R&D spending is in experimental development, which is consistent with why most of its unicorns are basically engaged in business model innovation rather than new technology products.

The low level of spending on basic research is partly due to most of China's R&D being undertaken by companies rather than universities or government research institutes. But even in China's universities and government research institutes, a significant part of their scientific research work is in mid- to down-stream research rather than basic research. If China really wants to catch up with global innovation, it needs to spend much more on basic research, which is expensive and slow to yield results.

Apart from being a big latecomer in science and technology development, another reason for Chinese unicorns focusing in platform companies serving consumers is the existence of a large, and still under-developed, consumer market and service sector. According to the IMF World Economic Outlook Database, China's consumer market (including both private and government consumption) is already the second largest in the world in 2018, and China's consumer market is forecast to grow by 54% in USD terms between 2018 and 2023. Compared to the key developed world economies with strong R&D (the list of countries above) and all other economies with a top 10 population in the world such as India and Brazil, the growth of China's consumer market was among the highest. This is a key reason why most of China's unicorns (all of them are private sector start-ups) are targeting the consumer market.

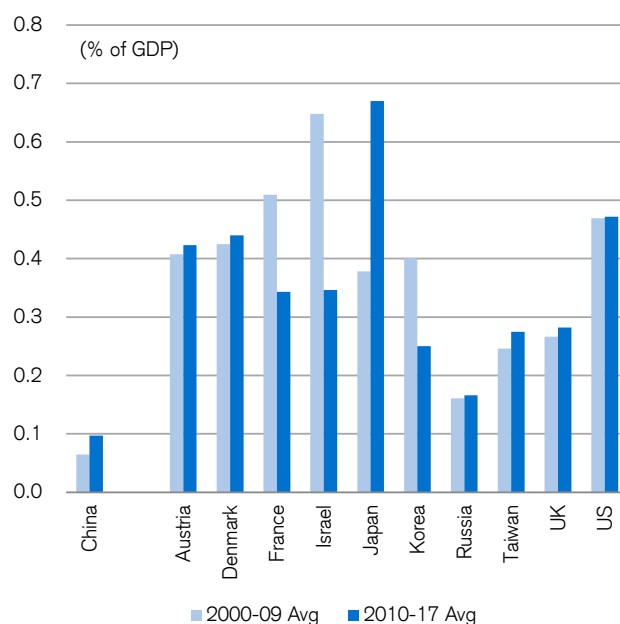
While China's consumer market is large and fast-growing, its “investment market” is extremely large but growth is slower. According to the IMF, total investment in China was US\$5.9 tn in 2018, only slightly smaller than the combined investment of US (US\$3.5 tn) and EU (US\$3.9 tn). The growth of China's investment market is slower at only 37% between 2018 and 2023—slightly faster than most developed world economies', but slower than other populous emerging markets. Indeed, given the mega size of China's investment market, it should also offer room for unicorns to emerge. However, the reason why we have not seen many is probably due to investment spending in China usually coming from the government, and upstream/heavy industrial sectors are usually state-owned, which leaves less room for private sector companies to operate.

Figure 12: China's R&D by research type



Source: CEIC

Figure 13: Basic research as a % of GDP

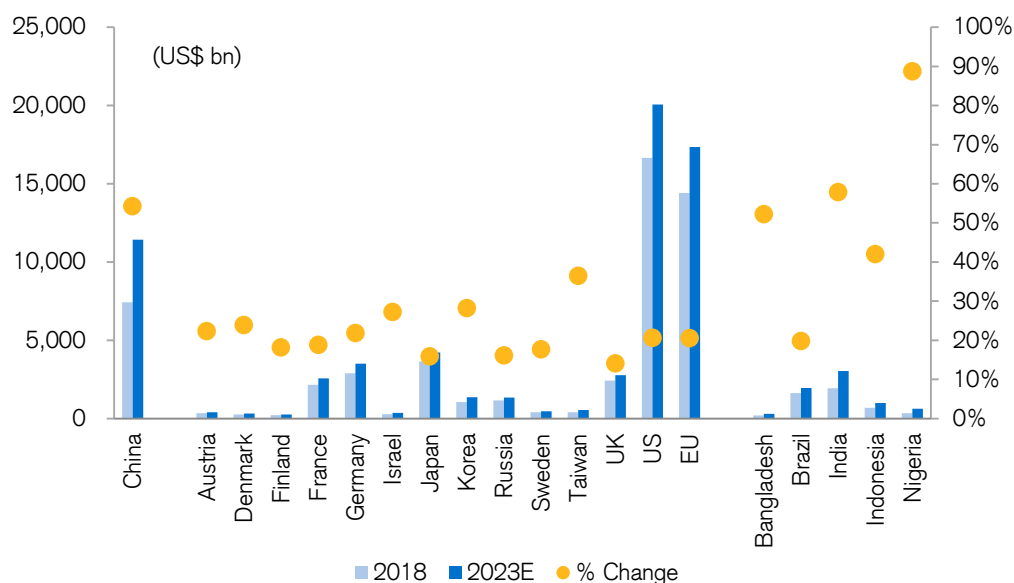


Source: OECD

Another key characteristic of China's unicorns is that they mostly are service sector companies (predominantly internet), despite China's industrial sector (mining, manufacturing, utilities and construction) being huge. In 2016, China's industrial sector GDP was already larger than that of the US and EU. Its growth momentum between 2010 and 2016, at 58%, was much faster than that of the US, EU and other economies which had invested heavily in R&D, as well as almost all the developing populous countries, with the exception of Bangladesh and Pakistan. This implies China's industrial sector is already rather developed, so with the exception of some new emerging sectors, such as AI/Robotics, it would be relatively difficult for new unicorns to emerge from hardware.

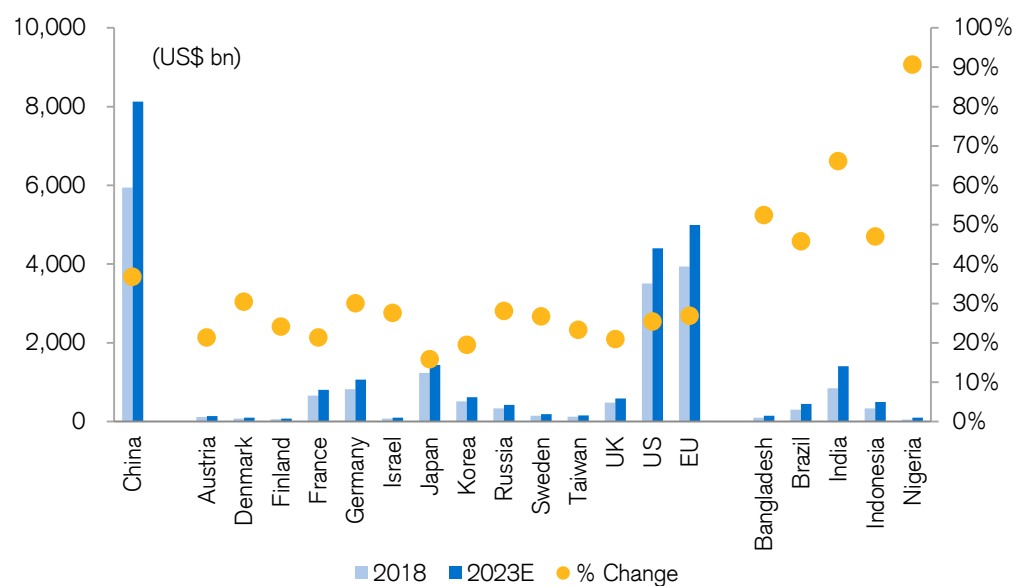
In contrast, China's service sector GDP is still very small. In 2016, it was only barely larger than that of Japan, but less than half that of the US and EU. At the same time, between 2010 and 2016 it grew by 115%, well ahead of all major economies. With the anticipated faster growth of consumption versus investment, it is expected that the services sector in China will maintain very high growth in the years ahead. Also, the domestic services sector was dominated by a very inefficient state-owned system (particularly in consumer goods/services distribution), which allows the new technology-enhanced services sector to grow very rapidly. These are the key factors behind the large amount of unicorns that have emerged in the consumption/services sector, and this trend is unlikely to change in the near future.

Figure 14: China's consumer market compared to other major economies



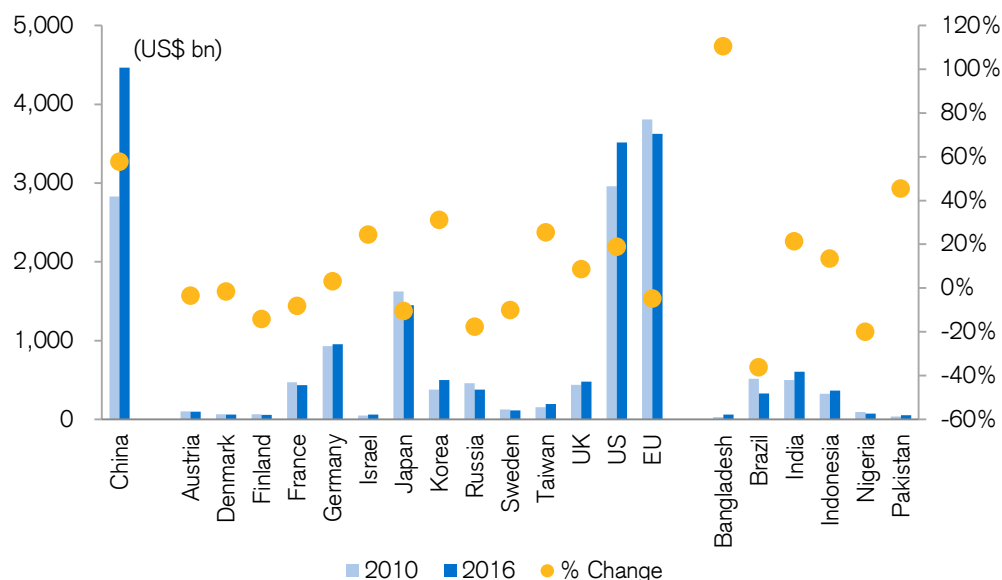
Source: IMF World Economic Outlook Database April 2018

Figure 15: China's investment market compared to other major economies



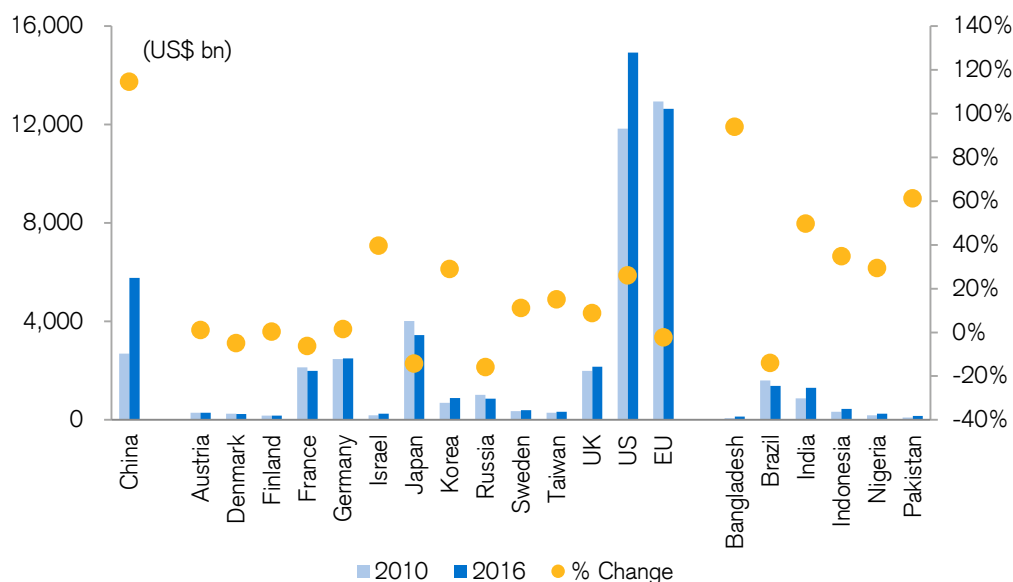
Source: IMF World Economic Outlook Database April 2018

Figure 16: China's industrial sector GDP compared to other major economies



Source: World Development Indicators (World Bank)

Figure 17: China's services sector GDP compared to other major economies



Source: World Development Indicators (World Bank)

Looking ahead

In the next few years, we believe that the internet sector will still be dominant among Chinese unicorns, given the large room for China's consumer market to grow, and the inefficiency of traditional consumer services (like distribution) in the country. Given the increased R&D spending in last the few years, we should also see the emergence of some unicorns being much more technology- rather than business model-focused. Most notably, two sectors, biotech and AI/Big Data, will likely stand out. Apart from the large amount of new research spend in these two sectors, China also has a big advantage in terms of its large available data, given the significant amount of consumer activities on line, which help to generate a lot of data for analytical purposes. China's large population also provides a very wide gene pool for study.

Companies Mentioned *(Price as of 15-Mar-2019)*

111 (YI.OQ, \$7.7)
360 (601360.SS, Rmb26.15)
51 Credit Card (2051.HK, HK\$5.6)
58.com Inc. (WUBA.N, \$61.83)
Alibaba Group Holding Limited (BABA.N, \$180.66)
Alphabet (GOOG.OQ, \$1191.21)
Amazon.com Inc. (AMZN.OQ, \$1713.52)
Apple Inc (AAPL.OQ, \$187.17)
BMW (BMWG.DE, €74.09)
Baic Bluepark New Energy Technology Co.,Ltd (600733.SS, Rmb8.63)
Baidu (BIDU.OQ, \$170.2)
Bank of China Ltd (601988.SS, Rmb3.79)
Bank of China Ltd (3988.HK, HK\$3.68)
Bilibili (BILI.OQ, \$18.68)
BlackRock (BLK.N, \$435.6)
Cango (CANG.N, \$7.77)
Capital One Financial Corp. (COF.N, \$84.23)
Changhong (600839.SS, Rmb3.56)
China Literature Limited (0772.HK, HK\$34.7)
China Merchants Bank Co Ltd (3968.HK, HK\$36.3)
China Merchants Bank Co Ltd (600036.SS, Rmb31.67)
China Vanke H (2202.HK, HK\$30.2)
Citigroup Inc. (C.N, \$64.75)
CooTek (Cayman) (CTK.N, \$9.62)
Ctrip.com International, Ltd. (CTRP.OQ, \$41.74)
Daimler (DAIGN.DE, €51.67)
Dongfeng Motor Group Company Limited (0489.HK, HK\$8.02)
Focus Media Info (002027.SZ, Rmb6.76)
Fosun International Ltd (0656.HK, HK\$12.28)
Foxconn Industrial Internet (601138.SS, Rmb14.86)
Geely Automobile Holdings Ltd (0175.HK, HK\$13.82)
General Motors (GM.N, \$38.13)
Giant Network (002558.SZ, Rmb24.71)
Goldman Sachs Group, Inc. (GS.N, \$197.54)
Guangzhou Automobile Group (2238.HK, HK\$9.27)
Guangzhou Automobile Group (601238.SS, Rmb11.68)
HSBC Hldg (0005.HK, HK\$64.85)
HUYA Inc. (HUYA.N, \$26.1)
Haier Electronics Grp (1169.HK, HK\$23.85)
Hangzhou Hikvision Digital Technology Co., Ltd. (002415.SZ, Rmb35.85)
Hisense Electric Co., Ltd (600060.SS, Rmb10.73)
Huifu (1806.HK, HK\$3.96)
IBM (IBM.N, \$139.89)
Industrial & Commercial Bank of China (1398.HK, HK\$5.97)
Industrial & Commercial Bank of China (601398.SS, Rmb5.58)
Inke (3700.HK, HK\$1.85)
Innolux Corporation (3481.TW, NT\$9.98)
JD.com (JD.OQ, \$28.01)
JPMorgan Chase & Co. (JPM.N, \$105.85)
KONKA GROUP (000016.SZ, Rmb5.14)
Leju Holdings (LEJU.N, \$1.72)
Meituan Dianping (3690.HK, HK\$53.95)
Mitsubishi UFJ Financial Group (8306.T, ¥572)
NetEase.com (NTES.OQ, \$243.06)
Nio Inc (NIO.N, \$5.8)
Oppein (603833.SS, Rmb101.7)
PICC P&C (2328.HK, HK\$8.98)
PWRD (002624.SZ, Rmb32.18)
Panasonic (6752.T, ¥963)
PayPal Holdings, Inc. (PYPL.OQ, \$100.56)
Pinduoduo Inc (PDD.OQ, \$24.96)
Ping An (601318.SS, Rmb73.85)
Ping An (2318.HK, HK\$86.25)
Ping An Hlthcr (1833.HK, HK\$44.3)
Qeeka Home (1739.HK, HK\$3.67)
Qutoutiao (QTT.OQ, \$15.2)
SAIC Motor Corp Ltd (600104.SS, Rmb25.78)
SK Holdings (034730.KS, ₩273,000)
Siemens (SIEGn.DE, €97.98)
Skyworth Digital (0751.HK, HK\$2.68)
Snap Inc. (SNAP.N, \$11.14)
Suning Commerce Group Co., Ltd. (002024.SZ, Rmb12.27)
Sunny Optical Technology Group Co.Limited (2382.HK, HK\$96.15)
Suofeiya Home Collection Co Ltd (002572.SZ, Rmb21.48)
TAL Education Group (TAL.N, \$34.09)
TCL Corporation (000100.SZ, Rmb3.75)
Tencent Holdings (0700.HK, HK\$359.0)
Tesla Inc (TSLA.OQ, \$275.84)
Tibet Tourism (600749.SS, Rmb9.93)
Uxin (UXIN.OQ, \$3.85)
VCREDIT Holdings Limited (2003.HK, HK\$8.98)
Vipshop Holdings Limited (VIPS.N, \$7.79)
Weibo Corporation (WB.OQ, \$62.67)
Wise Talent Info (6100.HK, HK\$26.05)
Xiaomi Corporation (1810.HK, HK\$11.58)
YY (YY.OQ, \$82.29)
Yirendai Ltd. (YRD.N, \$12.89)

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This research report is authored by:

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