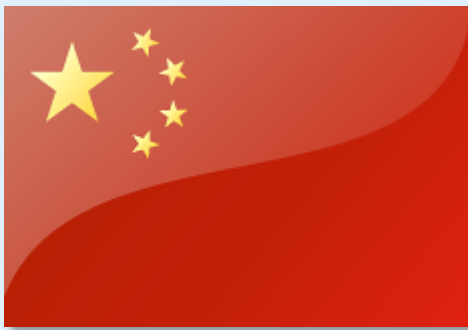


China Innovation



1. Define the need (of the theme, in the world):



Innovation has transformed the world over the past two centuries. This “perennial gale of creative destruction” as described by Joseph Schumpeter in 1942, has resulted in:

- an eight-fold increase in global population;
- driven over 50% of productivity growth; and
- impacted everything from the way we travel, communicate, work and even find a date.

The pace of this “gale” has only intensified in recent times, as shown by the increased pace of adoption. For example, it took 70 years for the washing machine to reach full penetration, 20 years for the colour TV, yet only 5 years for social media.

Interestingly, winners from these waves of innovation aren’t necessarily the incumbents. This is no more evident than in the turnover of the leading companies in the S&P 500, where the average lifespan has declined from 60 years in 1958 to 24 years in 2016 and is forecast to reach just 12 years by 2021.

We expect the next innovation waves will drive exponential growth in companies that develop, enable and adopt these disruptive forces. Meanwhile, those companies that don’t embrace innovation will likely meander in a linear growth world, gradually losing their relevance.

From a geographical perspective, China is at the forefront of the next wave of innovation, partly due to its significant structural advantages. As the “godfather of Artificial Intelligence (AI) in China”, Kai-Fu Lee once said “data is the new oil, and China is the new Saudi Arabia”. Data creation, access and analysis is paramount to the development of the next generation of innovations. China has created more data than any other country and continues to outgrow global data growth. Additionally, the country is uniquely positioned at the crossroads of innovations - both as a source and a destination for the most innovative companies. Domestically, government policy and regulations have long been supportive of innovation, an effect that is now materializing. For example, China now has:

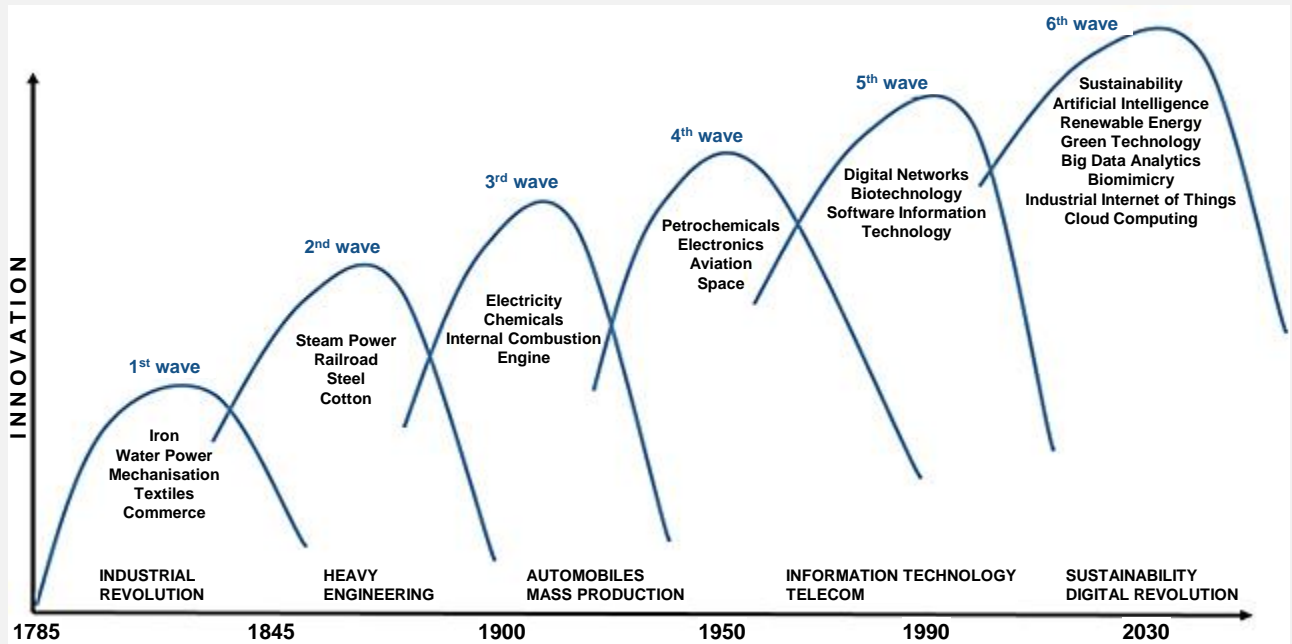
- 8.3x more STEM graduates than the US;
- is home to the largest number of leading innovative companies;
- was granted 31% of global patents - more than any other country; and
- has overtaken the US to become the largest producer of global research papers.

At the same time, China is a critical destination for globally innovative companies attracted to a population of increasingly connected, affluent and global citizens. China has the largest population of smartphone users, most of which are digital natives accustomed to living their life online. Furthermore, it is increasingly becoming the home to supply chains for high value added products. Hence, the country offers global companies a fertile ground for innovation, a huge market and the ability to scale up successful innovation. For us, these are key factors that companies with genuine and unique IP, cannot ignore.

Although the types of innovations will evolve over time, we believe the innovation theme and China’s leadership is perpetual in nature.

1. Define the need (of the theme, in the world):

Waves of Innovation drives growth in productivity, population and economy

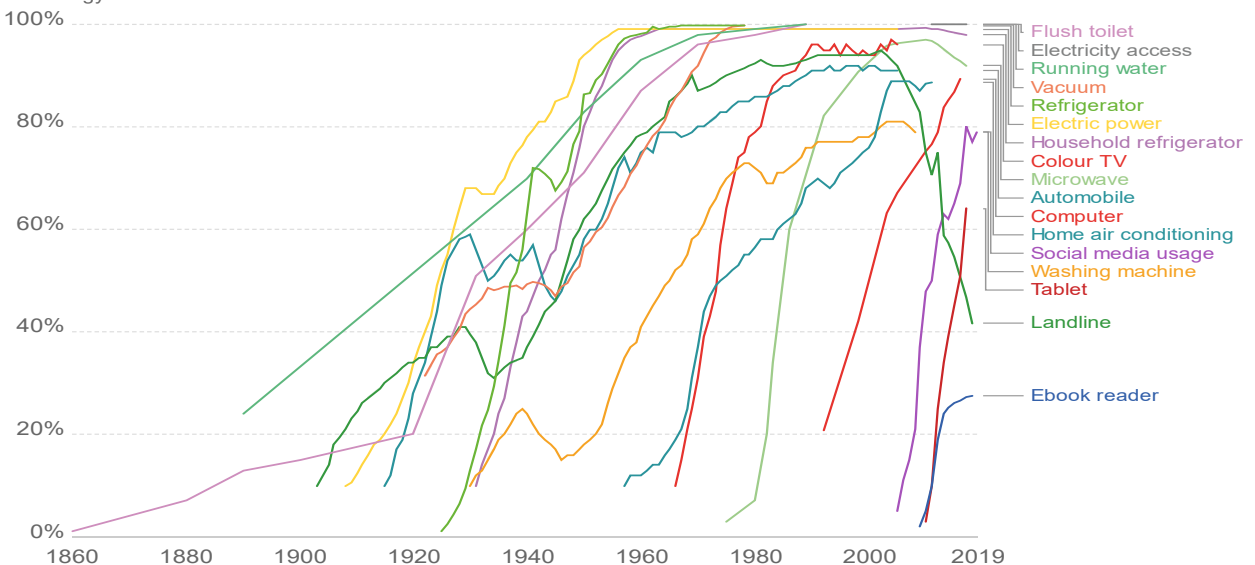


The pace of adoption of innovation is increasing

Technology adoption in US households

Technology adoption rates, measured as the percentage of households in the United States using a particular technology.

Our World
in Data



Source: Top Chart: www.oxfordre.com

Source: Bottom Chart: Comin ad Hobjin 2004 and others

2. Define the universe & our reason for defining it:



Technology innovation



Lifestyle Innovation



Environmental innovation

Based on different areas where innovation occurs and is impactful, we have defined three innovative themes - technology innovation, lifestyle innovation and environmental innovation.

	Technology	Lifestyle	Environmental
Description	<p>Under this theme we've identified three sub-themes - AI/digitization, automation & robotics and future mobility:</p> <ul style="list-style-type: none"> AI/digitization: Developing and implementing artificial intelligence, machine learning and broader digital technology to generate new revenue streams, expand TAM, and improve productivity. Automation & robotics: automatic production and operation without human intervention such as to improve quality and efficiency. Future mobility: new technologies and business models such as ride-hailing and sharing, autonomous driving and delivery, and micro mobility are changing the way people get around and live their lives. Invest in both enablers and adopters of these new technologies and business models, with key sectors including: semi-conductors, IT hardware and software, internet, industrial, factory/machine automation, and some consumer companies etc. 	<ul style="list-style-type: none"> This theme is based around transforming and improving our lives through innovative solutions through three sub-themes – Healthy, Wealthy & Wise. Healthy: Drug innovations in China with the transformation from generic drugs to me-too/better drugs and eventually to truly original drugs. Other examples include personalised nutrition, food technology and telemedicine. Wealthy: Developing new ways to save, invest and spend money. Wise: New methods for learning such as online education, digital entertainment. 	<ul style="list-style-type: none"> Development and application of products and processes that contribute to sustainable environmental protection and ecological improvements. Key areas include EV makers and supply chain, waste treatment, alternative energy etc.
End markets	<ul style="list-style-type: none"> Offer structural growth driven by higher penetration or broader application of these technologies and business models. But sometimes they are also subject to economic cycles and product cycles. 	<ul style="list-style-type: none"> Mostly structural growth driven by higher penetration and new user cases of innovative products and services. 	<ul style="list-style-type: none"> Mostly structural growth driven by higher penetration. But sometimes are also subject to regulation and policy cycles.
Stock examples	<ul style="list-style-type: none"> TSMC, Alibaba, Largan, Estun Automation, Meituan Dianping 	<ul style="list-style-type: none"> Wuxi Apptec, Jiangsu Hengrui, Trip.com, Koolearn 	<ul style="list-style-type: none"> CATL, Intron, Sanhua

3. Substantiate quantum and duration of the theme:

We believe that the three innovative themes identified above are in the very early stages of adoption and will be significant drivers of change and growth for at least the next few decades.

It is estimated that the 'technology innovation' theme will see the total addressable market increase from US\$738bn in 2019 to US\$2.2trn by 2025 led by the growth in AI software (42% CAGR), Autonomous Vehicles (40% CAGR) and Industrial IoT (22% CAGR).

The enormous breadth of use cases for a technological innovation mean that this theme will have a long duration. AI and automation have the potential to disrupt almost every sector to varying degrees much the same way as the internet has. Since the introduction of the iPhone, the global internet sector has outperformed MSCI World by 824% and continues to do so (see chart page 5).

China's per capita spend on healthcare is a fraction of that of their developed peers. However, as incomes grow, and the population urbanizes, the expenditure growth is expected to outstrip China's peers. With foreign companies supplying dominating innovation patent-protected pharmaceuticals, coupled with the increased focus on R&D, there is huge scope for domestic innovation in pharmaceuticals over the long-term.

Total addressable market (TAM) US\$bn	2018	2022	2025	CAGR
Artificial Intelligence Software	15	63	180	42.1%
Autonomous Vehicles	33	147	337	39.5%
Industrial Robotics	18	30	43	13.1%
Semiconductors	478	691	912	9.7%
Industrial Software	35	48	60	7.7%
Industrial IoT	159	359	627	21.7%
Total	738	1337	2159	16.6%

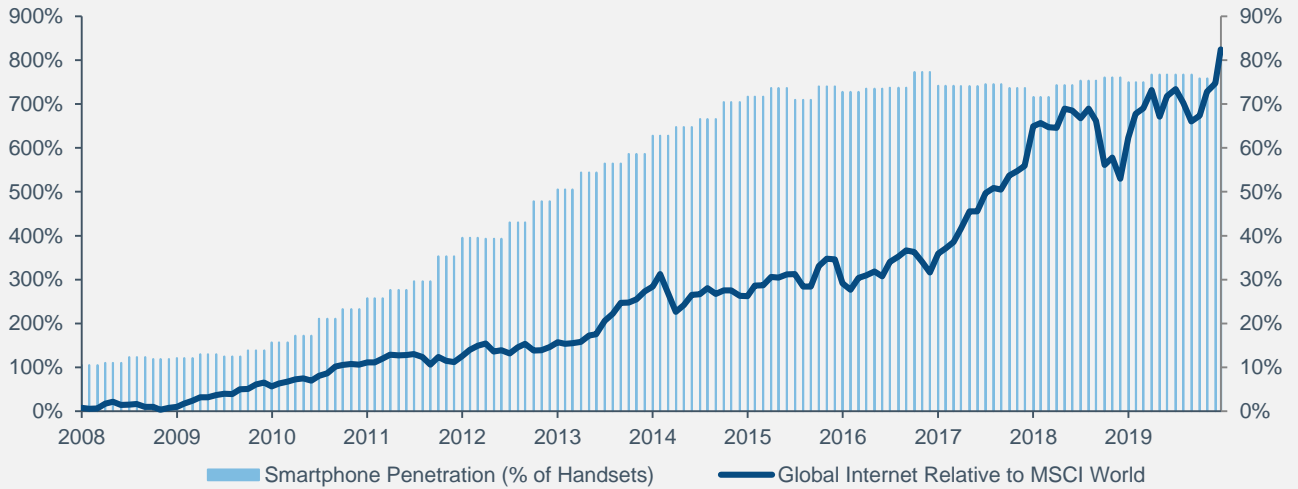


Source: Top table: Markets & Markets (AI Software), Allied Markets (AI Software, Autonomous Vehicles, Industrial IoT), Mordor Intelligence (Robotics), Statista (Semiconductors), Techavio (Industrial Software), Transparency Market Research (IoT Hardware), Morgan Stanley, August 2019

Source: Bottom Chart: <https://www.oneragtime.com/24-industries-disrupted-by-ai-infographic/>

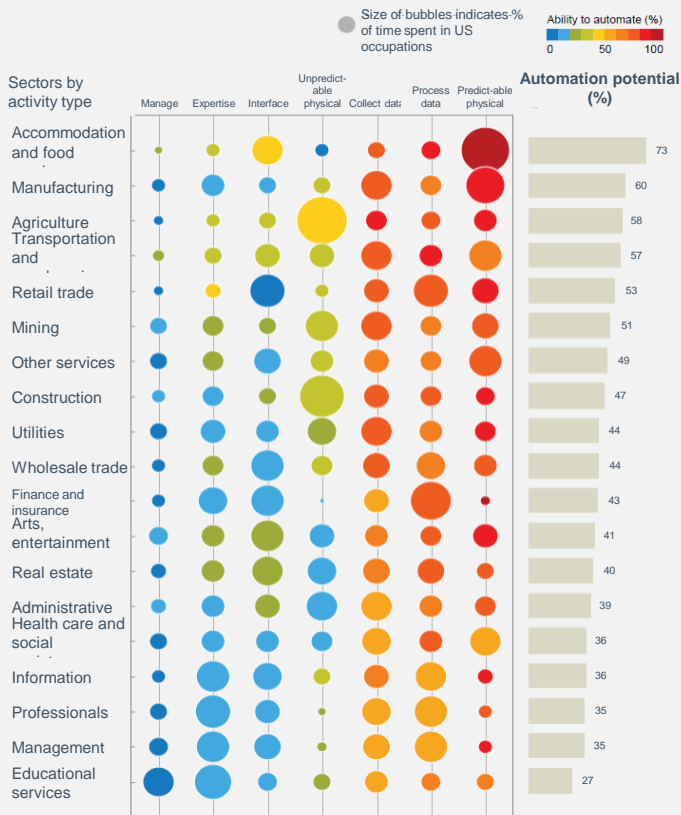
3. Substantiate quantum and duration of the theme:

Global internet sector has outperformed by 824% since the introduction of the iPhone.

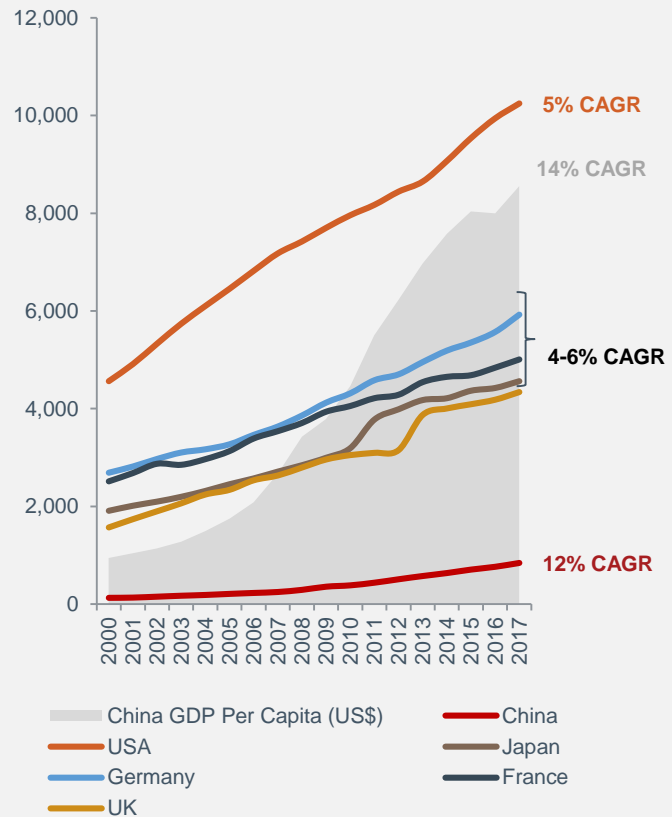


Source: Fidelity International, Bloomberg: OGIGXT Index (G347), March 2020

Technical potential for automation across sectors varies depending on mix of activity types



Per Capita Health Expenditure (PPP)



Source: US Bureau of Labor Statistics; McKinsey Global Institute analysis, January 2017

Source: WHO, Fidelity International, March 2020

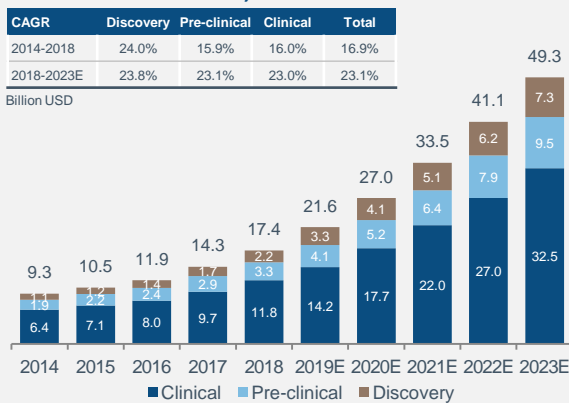
4. Where we are in the lifecycle of the theme

Whilst we are still in the first inning of these themes, the pace of change is accelerating. Three examples shown below focus on healthcare, software and EV.

Healthcare

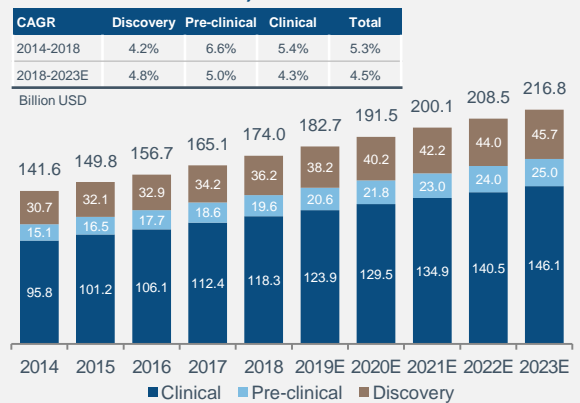
China has historically underspent on healthcare R&D which has been accelerating. Government has completely transformed the drug approval review process which becomes faster, more transparent and with higher assurance of quality. Meanwhile, China's drug development is increasingly integrated with the rest of the world which encourages those with the know-how to utilize the large Chinese patient pool for fast clinical trials. The R&D talent pool in the China is also improving attracted by the opportunities in China. As a result, China will steadily deliver more and faster drug innovations, initially in me-too/me-better products, and gradually in truly original drugs.

China R&D Expenditure & Breakdown by Discovery, Pre-clinical and Clinical, 2014-2023E



Source: Frost & Sullivan, Pharmaron, November 2019

Global R&D Expenditure & Breakdown by Discovery, Pre-clinical and Clinical, 2014-2023E

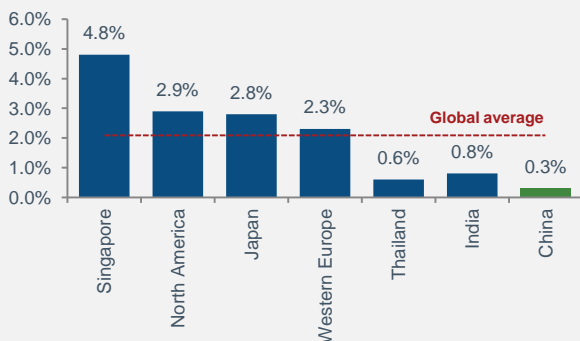


Source: Frost & Sullivan, Pharmaron, November 2019

Software

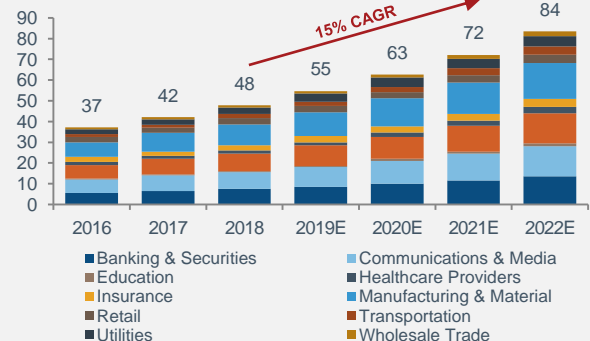
China is under-invested in IT services and software compared to many other countries. With rising labour costs and the need for digital transformation, China is rapidly increasing spending on IT services and software (cloud migration and software localization are also important drivers).

Global IT Services and Software spending as % of GDP: China is under invested



Source: Gartner, Morgan Stanley, June 2019

China IT Services and Software spending by vertical industries (USD bn)



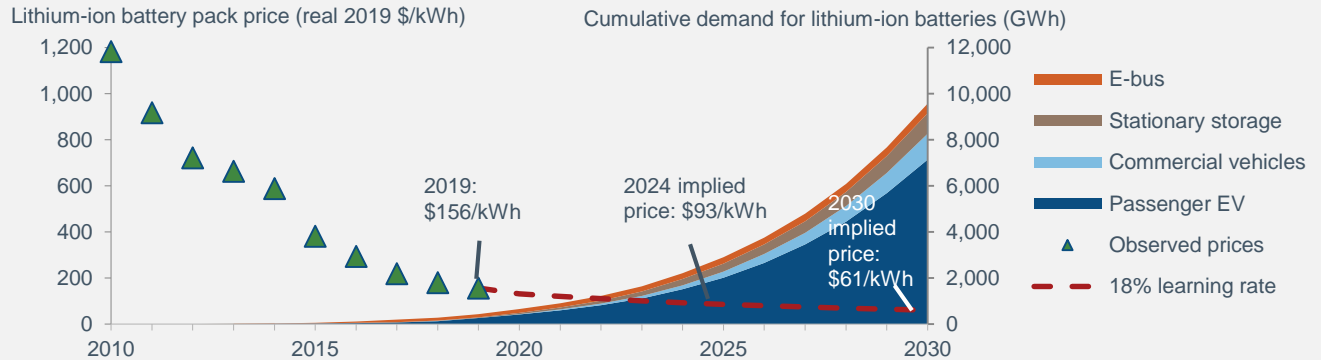
Source: Gartner, Morgan Stanley, June 2019

4. Where we are in the lifecycle of the theme

EV

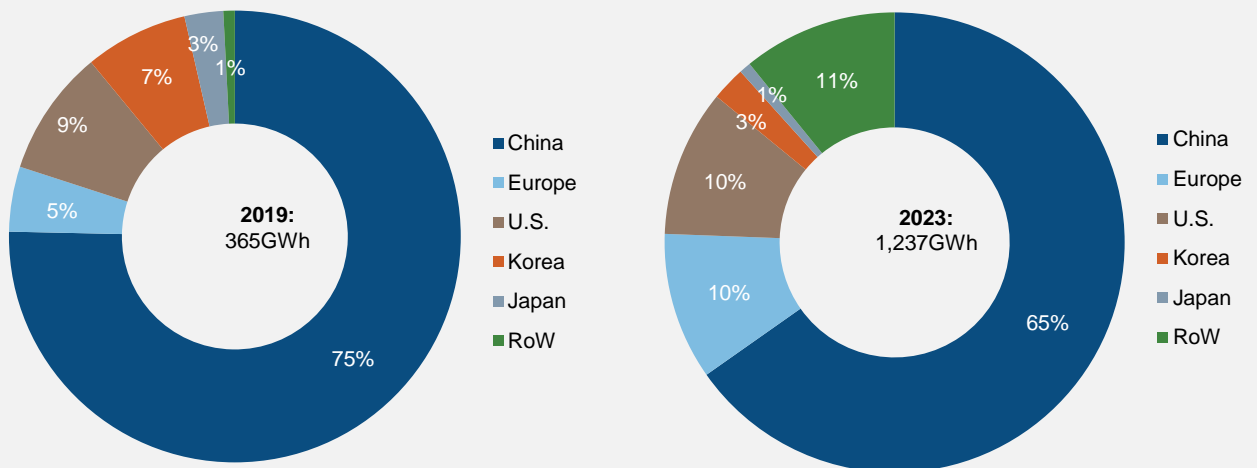
As EV battery prices continue to decline driven by advances in battery technology and scale, EV will become more economically competitive with ICEs leading to exponential growth in battery demand over the next 10 years. China has the largest battery manufacturing capacity in the world with potentially 65% market share by 2023. Leading players will benefit from the soaring EV demand.

Battery Price and Demand



Source: Bloomberg, Fidelity International Estimates, May 2020

Battery Manufacturing Capacity Global Breakdown



Source: Bloomberg, Fidelity International Estimates, May 2020

Source: Bloomberg, Fidelity International Estimates, May 2020

5. Case Studies

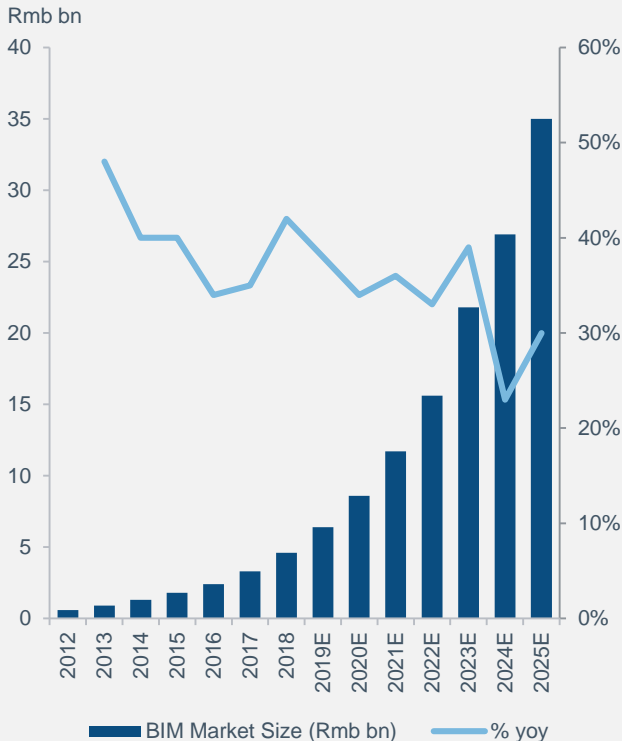
Theme: Technology Innovation

Glodon is a leading software provider for the construction industry in China. Their software helps construction companies digitise the cost estimation, quantity surveying and project management functions of a project. Digitizing processes both reduces the customers costs as simplify the processes, with their dominant market share a testament to the quality of their solution. Earnings growth will be driven the transition to a Cloud SaaS model and the increasing penetration of construction management software which is currently nascent. Additionally, DM peers have shown that the increased visibility of recurring earnings from the transition to the SaaS model can lead to a significant valuation re-rating.

CASE STUDY 1 : Glodon Co Ltd

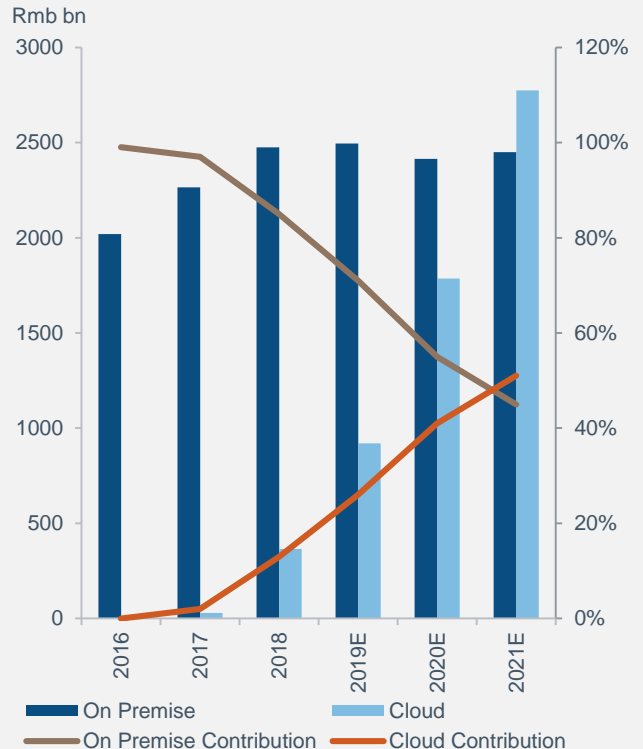


Forecast of Market Size



Source: Macquarie, January 2020

Cloud Revenue Growth & Contribution Forecast



Source: Macquarie; January 2020

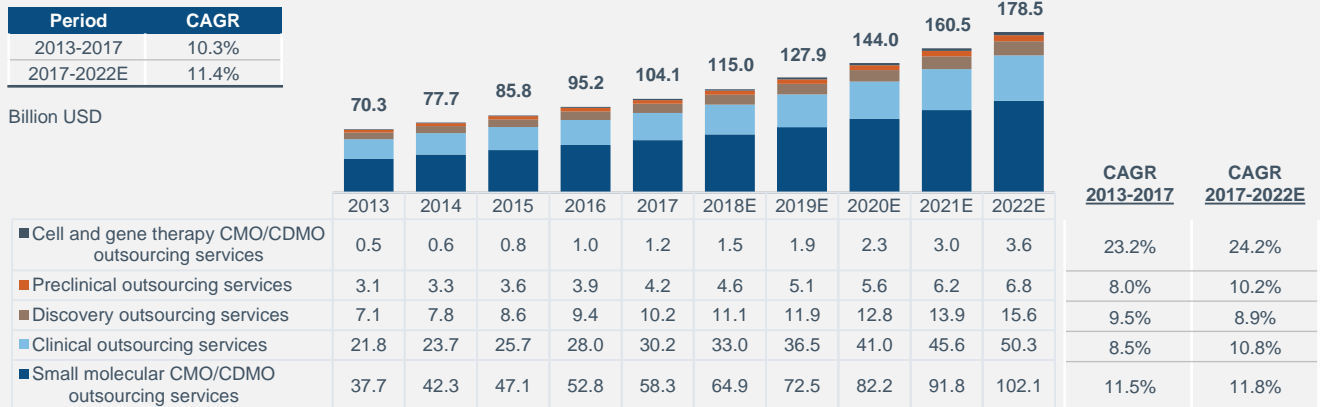
5. Case Studies

CASE STUDY 2 : Wuxi AppTec Co Ltd

Theme: Lifestyle Innovation

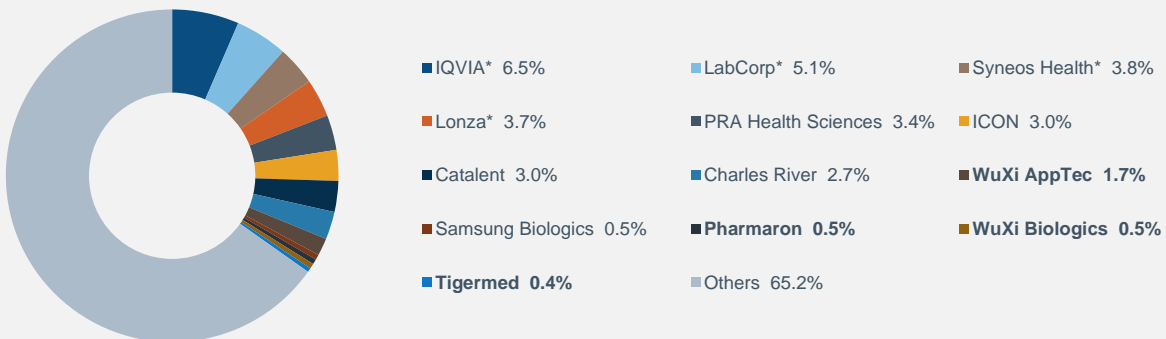
Wuxi AppTec is one of the largest pharmaceutical outsourcing service providers in Asia. Equipped with comprehensive and global outsourcing platform covering the full range of early-stage drug discovery to manufacturing, the company is well positioned to benefit from the rapid growth of pharmaceutical R&D outsourcing demand – both globally, as well as specifically from China.

Historical and Forecasted Market Size of Global Pharmaceutical R&D Outsourcing Services 2013-2022E



Source: Frost & Sullivan, UBS, January 2020; CMO = contract research organization, CDMO = contract development & manufacturing organization, CAGR = compound annual growth rate

Global Contract Research Organisation (CRO) + Contract Manufacturing Organisations (CMO) Market Share 2018



Note: * Only includes CRO/CMO related business for market share calculation (e.g. IQVIA's IMS business is excluded).

Source: Frost & Sullivan, UBS, January 2020

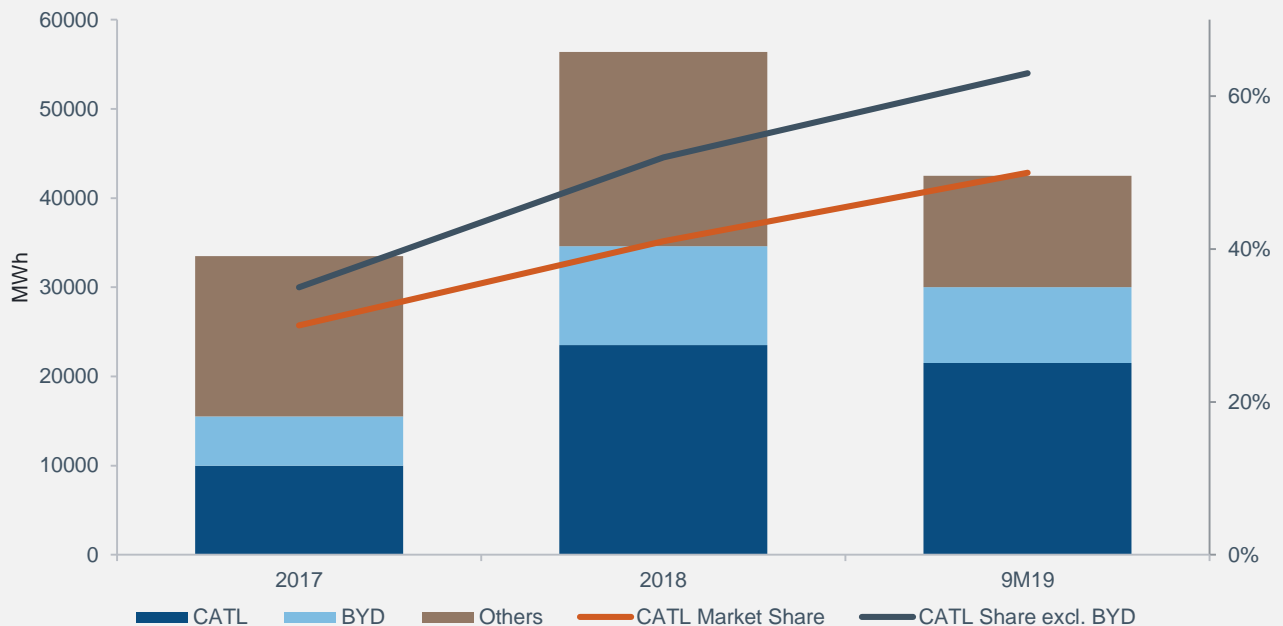
5. Case Studies

CASE STUDY 3 : Contemporary Amperex Technology Co Ltd (CATL)

Theme: Environmental Innovation

CATL is the world's largest electric vehicle (EV) battery supplier with 24% global market share and 50% market share in China. It supplies most of the major Chinese auto OEMs and some major global OEMs like Daimler, BMW and VW. Their leadership has been underpinned by technical superiority and upstream integration. With EV penetration still nascent but nearing the inflexion point, as battery costs decline and regulatory pressure on fossil fuel cars intensifies, the total addressable market will grow rapidly.

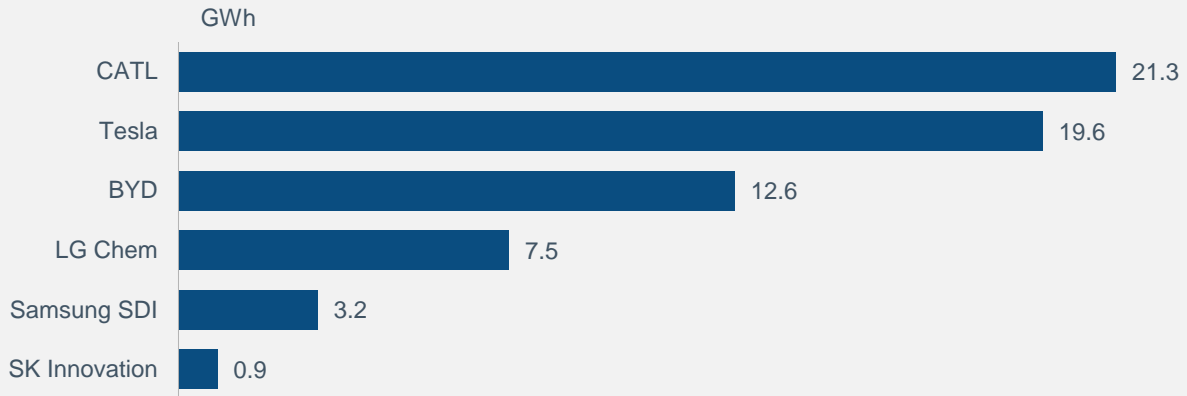
CATL Chinese Market Share in China power battery industry



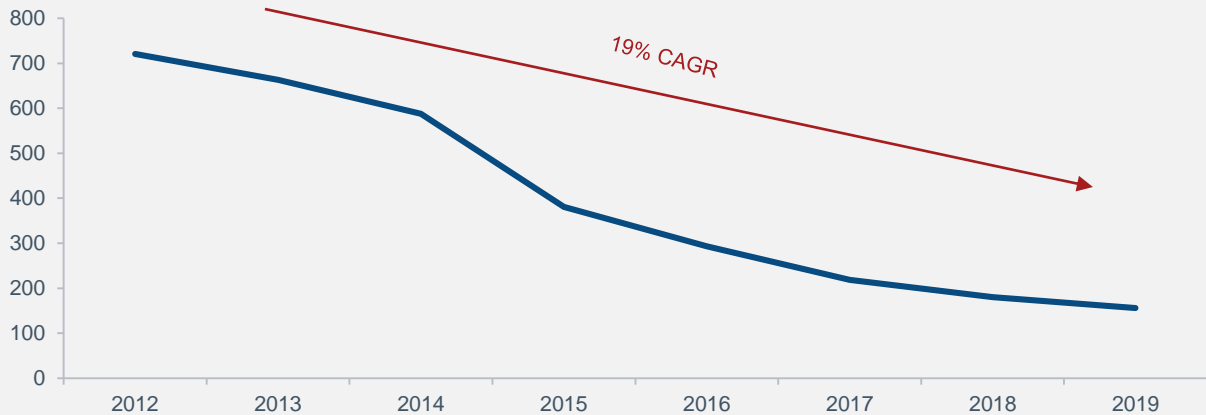
Source: Macquarie, November 2019, MWh = Megawatt hour

5. Case Studies

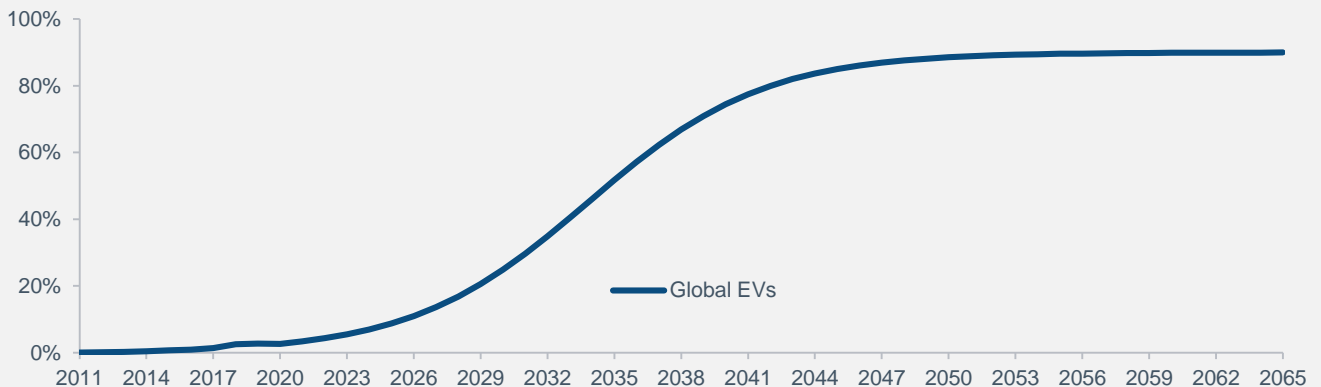
EV Battery Producers Capacity



Electric Vehicle (EV) Battery Pack Costs (US\$/kWh)



Global EV Penetration



Source: Fidelity International, Bloomberg January 2020, GWh = Gigawatt hour, KWh = Kilowatt hour

6. Risks to thematic achievement

- Cyclical. While most companies can enjoy structural growth, some of them do get impacted by economy and business cycles. We intend to mitigate this risk by adjusting exposure to cyclical sectors based on the [point of the business cycle] which will be identified through company meetings along the value chain, extreme investor positioning and sentiment and proprietary indicators such as the FLI (Fidelity Leading Indicator).
- Potential supply chain disruption due to deglobalization could delay roll-out. Whilst we recognize this as a potential short-term risk, the longer-term opportunity from the domestication of the technology and healthcare supply chains is seen as a far bigger opportunity. Balancing these conflict horizons is the key to managing this risk.
- Potential slower adoption curve due to regulatory changes regarding subsidies, data privacy etc. The regulatory environment often lags innovation. However, regulatory change does not happen in a vacuum and we intend to stay ahead of potential changes by gauging the regulatory atmosphere through interaction with consumers, industry experts and regulators themselves. In addition to this, overseas examples of regulatory change often set a precedent which we will utilize aided by the global research team.



7. ESG Issues and Thematic Purity



The following ESG issues are relevant to the three innovative themes:

- data privacy and security and the preparedness to respond to new regulations;
- quality of data governance;
- the ability to attract and retain talent, whilst effectively managing labour costs;
- environmental management of issues including controlling water & energy use and electronic waste;
- corporate governance around ethics and compliance risks.

We believe, in general, these innovative companies are ahead of the traditional companies in terms of ESG awareness, strategies and implementation to address concerns. Indeed, we have witnessed the innovative leaders in China been making genuine efforts to improve ESG performance and delivering a positive social impact.

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