GLOBAL X ETFs RESEARCH

Introducing the Global X China Disruption ETF (KEJI)

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KEJI – Global X China Disruption ETF

On February 24, 2021, we introduced the Global X China Disruption ETF (KEJI) on Nasdaq. KEJI is an actively-managed fund sub-advised by Mirae Asset Global Investments (Hong Kong) Limited that seeks to invest in companies that are economically tied to disruptive innovation in China. Disruptive themes targeted by KEJI may include advancements in technology, changing demographics and consumer preferences, and adaptations to the physical environment.

With the world's largest population and second largest economy, China is at the center of several disruptive themes. Its expanding middle class increasingly consists of a new generation of consumers with distinct spending habits and preferences. At the same time, the country's government and business leaders are positioning the economy for long term growth through substantial investments in technology, health care, education, and infrastructure. From a thematic investing perspective, these developments in China are too large and influential for investors to ignore. As such, we created the Global X China Disruption ETF (KEJI) to target companies that stand likely to benefit from several disruptive themes emerging in China and impacting the world at large. In this piece, we'll discuss these China-centric themes, the tailwinds supporting them, and how our actively managed KEJI ETF seeks to identify the companies leading in these disruptions.

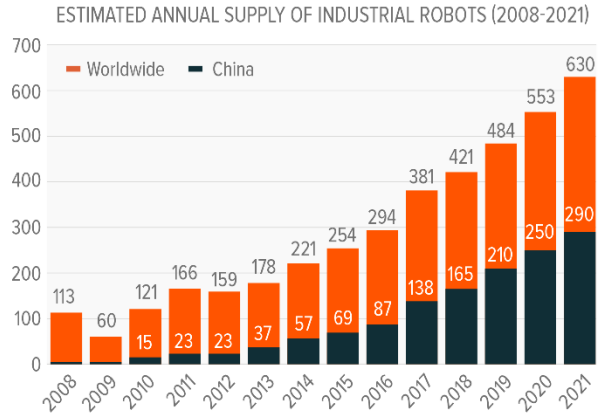
Disruptive Themes in China

At Global X, we have designed more than 25 thematic ETFs over the last ten years to harness the investment potential of disruptive global trends. Generally, we believe in implementing a geographic-agnostic approach to thematic investing, preferring to provide exposure to companies from around the world that are best-positioned to benefit from the materialization of structural themes, rather than lasering in on specific geographies. Yet we believe China is increasingly an exception to the rule. Beijing's top-down, long term economic planning, combined with the country's progressively dynamic private sector and rising middle class has caused certain themes to accelerate within China's borders. Below, we identify and discuss several themes that are rapidly reshaping China's economy.

- **Robotics & Artificial Intelligence:** China is the largest industrial robotics market globally; larger than Korea, the US, and Japan, combined.[1] Yet, China's robot density (the number of robots per 10,000 manufacturing workers) is still low compared to more developed countries. At 97, its density is higher than the world average at 85, but ranks fifteenth globally, far below Korea (710), Singapore (658), Germany (322) and Japan (308).[2] Highlighted by our research team in 2019: "as wages continue to rise in China, manufacturing jobs increasingly move to lower-cost Asian peers like Vietnam, Cambodia and Thailand." This suggests that in order to remain competitive, China must rapidly shift to automated manufacturing techniques to reduce costs. This will likely not just come in the form of importing robots from foreign firms, but increasingly from developing a domestic robotics and artificial intelligence industry.

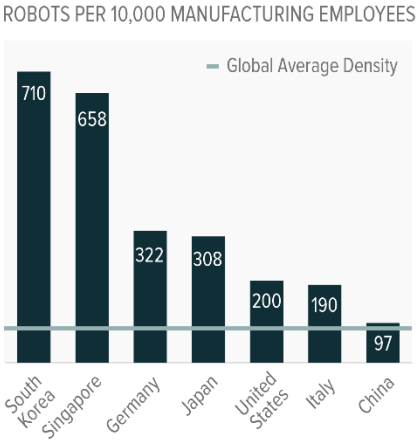
GROWTH OF INDUSTRIAL ROBOTICS WORLDWIDE & CHINA (THOUSANDS)

Source: Global X ETFs. IFR World Robotics, 2018. *Forecasted.



ROBOT DENSITY IN 2018

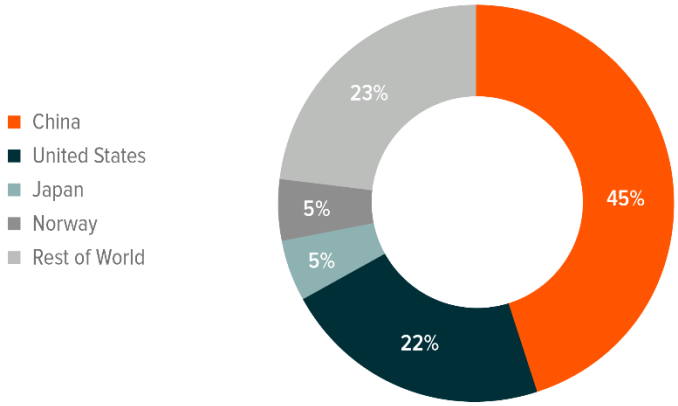
Source: Global X ETFs. World Robotics, IFR, October 2018, ifr.org .



- **Autonomous & Electric Vehicles:** China is the world's largest car market, meaning its government policies and the innovations of its auto OEMs can play a substantial role in influencing the global auto industry. With the emergence of next generation electric vehicles, alongside dangerous levels of urban air pollution, China and its auto industry have made a decisive effort to lead in the EV revolution. In many provinces, buying an electric vehicle is incentivized, so that it's easier, faster, and sometimes even cheaper, to purchase than a traditional internal combustion engine (ICE) vehicle. Beyond these incentives, certain provinces, like Hunan, are banning the sale of fossil fuel cars as early as 2030, while Beijing and Shanghai are transitioning their entire taxi fleets over to EVs in the coming years.[3] It is no surprise then, that China deploys the most EVs in the world, accounting for nearly half of the world's EV car stock.

  Beijing's policies supporting electric vehicle production and adoption, including targeting 5 million electric vehicles (EVs) in use, quotas for EV manufacturers and importers, subsidies, government procurement initiatives, and EV charging station construction, are critical tenets of aggressive climate change initiatives within China to clean urban air pollution, reduce dependence on foreign oil, and elevate domestic EV manufacturers within the global auto industry.

WORLD ELECTRIC CAR STOCK – END OF 2018 (5.1 MILLION VEHICLES TOTAL)
Source: Global X ETFs. IEA, Global EV Outlook 2019. Columbia SIPA Center on Global Energy Policy.

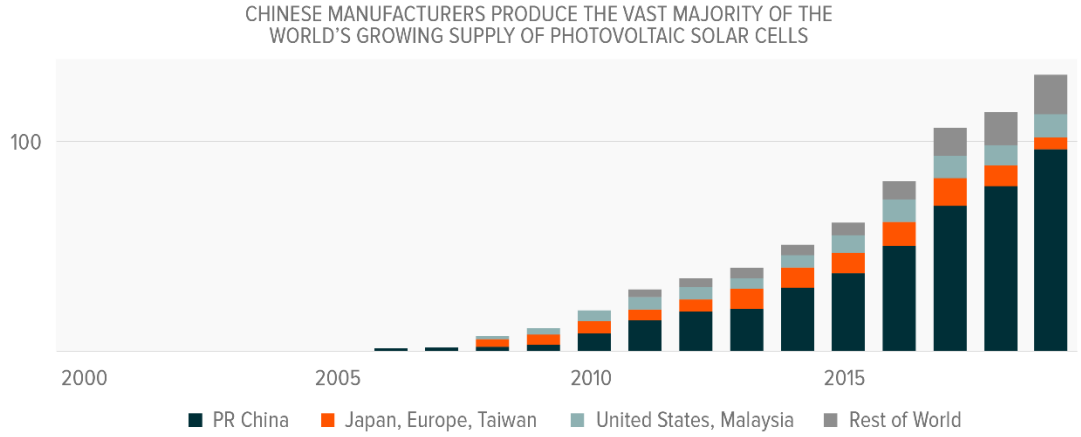


Beyond EVs, China is also focused on bringing its artificial intelligence research to the transportation space with the introduction of autonomous vehicles. Smart road systems can be found being tested across China, where cars or busses communicate with one another and infrastructure systems to establish more predictable and efficient traffic patterns. In November, Beijing announced it is targeting to have smart vehicles with automation account for more than half of all new auto sales by 2025. Over the next few decades, autonomous vehicles are expected to continue climbing, with McKinsey projecting that by 2040, China will account for as much as 66% of distance traveled by autonomous vehicles globally.[4]

- **Climate Change:** Apart from China's commitments to accelerate the adoption of EVs, the country has also set aggressive targets to reduce its carbon emissions and embrace renewable energy and cleantech. Policies set out under the Belt and Road Initiative (BRI), Strategic Emerging Industries, and Made in China 2025 incentivize cleantech adoption by manufacturers and consumers alike to replace China's dependence on coal with its own clean energy industries that would mitigate severe air pollution, a dependence on foreign coal, and a rise in domestic respiratory disease. As a result of these policies, the International Energy Agency (IEA) projects that China will have produced 36-40% of the world's growth in solar and wind energy between 2017-2022.[5] Further, combining China's investment in cleantech with its manufacturing prowess, China is now the world's largest producer of solar panels, wind turbines, electric vehicles and lithium-ion batteries. And as the world's largest producer of solar and wind power energy, China now has a major role in setting standards and supplying cleantech efforts globally.[6]

CHINA DOMINATES GLOBAL SOLAR PRODUCTION

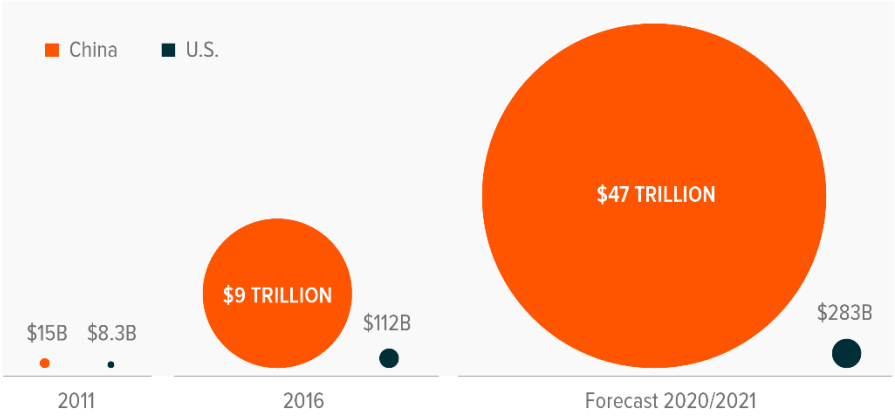
Source: MIT Technology Review, "How China rules clean tech, in charts," Aug 19, 2020. European Commission's Joint Research Center.



- **FinTech:** Chinese internet users spend 7.5x more money via mobile transactions than US consumers. With relatively newer financial services industries, EMs like China tend to more easily adopt the latest technology without needing to force out old business models, like bank branches and credit cards. China has the highest adoption rate of mobile payments globally, with over 80% of consumers using mobile payments in 2018 versus under 10% in the US.[7] The number of mobile payments in China accelerated even prior to COVID-19, rising 21.1% year-on-year (YoY) in 2019 to $14.7 trillion.[8] For perspective, consumers in China spent just $377 billion five years earlier, demonstrating the rapid rise of this new technology.[9]

NO CONTEST. WHEN IT COMES TO MOBILE PAYMENTS, CHINA DWARFS THE U.S.

Source: iResearch (China); Forrester (U.S.)



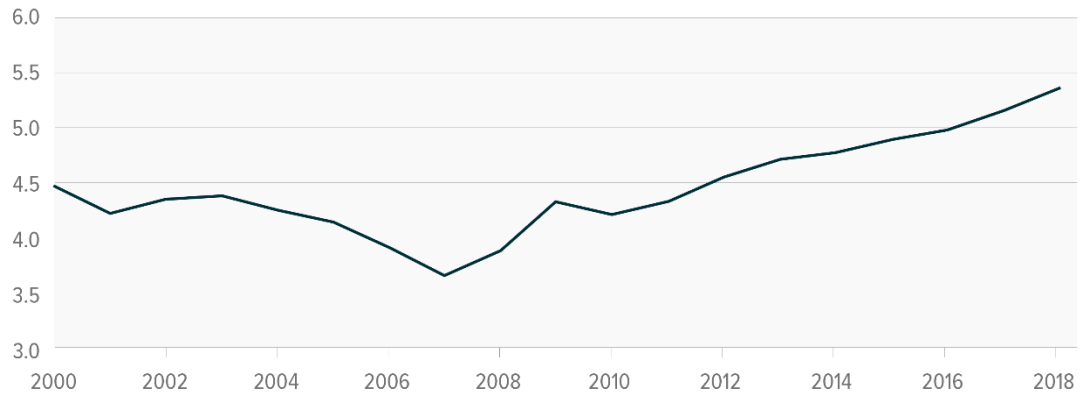
Note: Forecast for China is 2020, for U.S. is 2021.

- **Healthcare Innovation:** China's health care system, which only began privatizing in the 1990s, has transformed China into the world's second largest pharmaceutical market. To harness the potential of growth for the sector, companies like Alibaba, Tencent, and Sinopharm, are applying

their technological expertise to Health Care by providing services like WeDoctor to optimize hospital management and device distribution and maintenance. While this was happening before COVID, the pandemic accelerated AI-based health tech to take advantage of China's deep data pool with 1.4+ billion people and its laxer regulatory environment that encourages the advancements in AI.

Focusing the country's increasing technological prowess on the Health Care sector could unlock greater efficiencies, spark stronger demand, and reduce costs. Despite growing at double-digit rates for nearly two decades, health care expenditures in China still represent just 6% of GDP versus 17% in the US or 11% in Germany and France.[10] As China's population ages, wages rise, demand for private health care services multiply, and technology advances, the growth trajectory of China's health care sector is likely to surge.

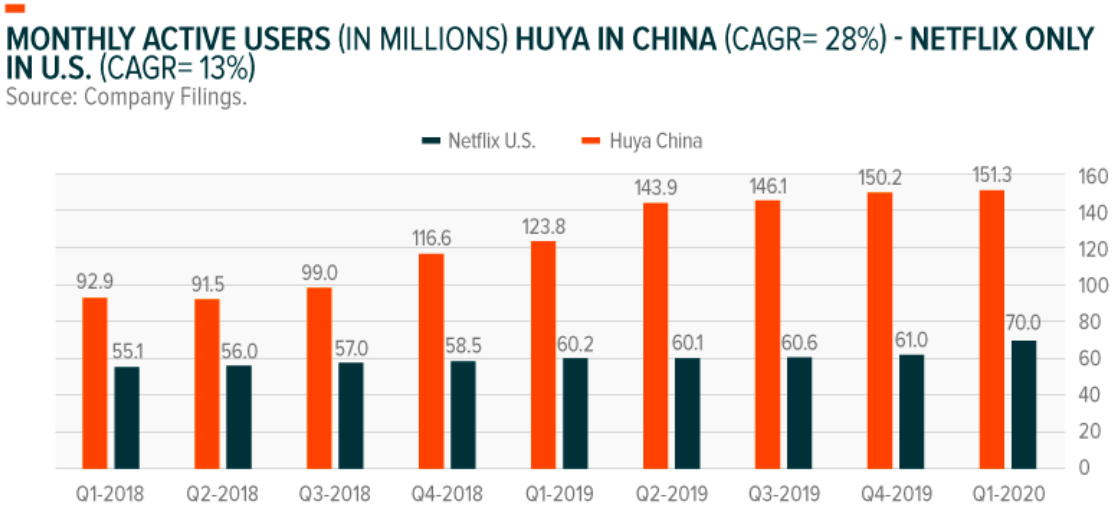
CURRENT HEALTH EXPENDITURE (% OF GDP) - CHINA
Source: World Health Organization (WHO) and the World Bank as of Feb 22, 2021.



- **E-commerce:** China has become the largest and fastest-growing e-commerce market globally with a market worth $862.6 billion in 2019 and revenues expected to grow at a 12.5% CAGR over the coming four years.[11] This is more than double the size of the US market, which generated roughly $343.1 billion in revenues in 2019 and has an estimated 8.8% growth rate over the same time frame.[12] With a population roughly four times the US's, increasing internet and smartphone penetration, and a rapidly expanding middle class, e-commerce appears well positioned to enjoy continued strong growth.

- **5G & the Internet of Things:** 5G represents the latest wireless standard, featuring a notable increase in data speeds and capacity of mobile networks, alongside reduced latency. Between 2015-2019, China outspent the US by $24 billion on 5G technology, deploying 350,000 new cell sites compared to less than a tenth of that in the US.[13] Over the last year, China announced that it would invest a whopping $1.4 trillion to roll out its 5G network domestically before 2025.[14] And this year, China seems set on taking additional action, with Beijing announcing that it would double its 5G wireless capacity, led by companies including China Mobile and China Telecom, which plan to build over 600,000 new base stations in addition to the existing 780,000 sites that are currently transmitting and amplifying mobile signals.[15] This commitment to 5G research and development, as well as infrastructure buildout, has vaulted China to a leadership position in 5G globally. And the fast growth of this wireless infrastructure should further accelerate the trend of connecting 'smart' devices like wearables, cars, and appliances to the internet, as Chinese consumers and businesses take advantage of readily available high speed internet connections.

- **Video Games & Esports:** China is home to the largest video game market globally with over 600 million gamers. And as our research pointed out earlier this year, "Chinese streaming platforms have a distinct advantage: US streaming platforms like Twitch and YouTube are banned by the great firewall."[16] Gaming is booming in China, and with gamers looking to improve their skills and play alongside professional gamers, video game streaming companies like Huya are looking beyond China's borders, towards India, Southeast Asia, and Brazil, to further increase their scale and continue their rapid growth.



Source: Global X ETFs. CAGR refers to Compound Annual Growth Rate.

Multiple Tailwinds Support These Themes

The themes discussed above are not just emerging from a vacuum or by happenstance. There are a handful of major macro tailwinds, ranging from economic shifts, to changing demographics, to new government policies, that have served to accelerate the emergence of these trends specifically within China and could potentially support further such disruptions for decades to come.

STRUCTURAL ECONOMIC SHIFTS

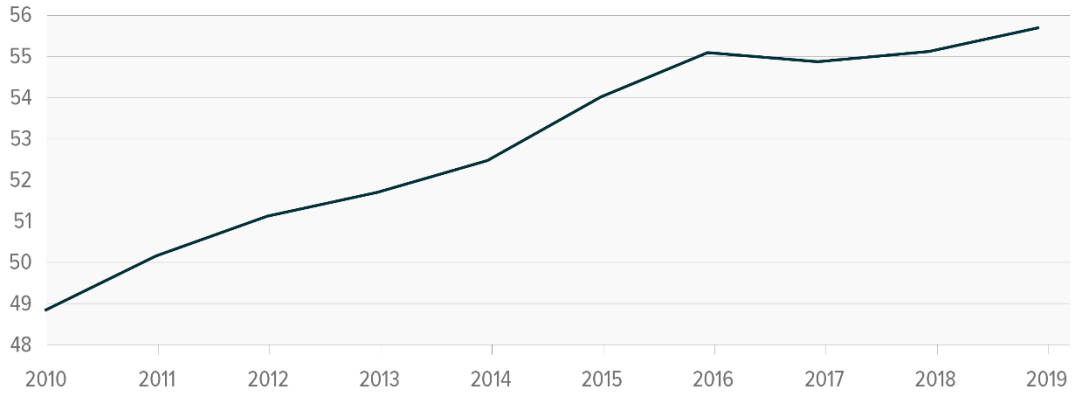
After years of establishing itself as a low-cost manufacturing hub, China is increasingly and intentionally diversifying its economy into one led by services and consumption. As a result of these shifts, China's population is rapidly urbanizing as workers pursue higher paying jobs in cities in these fast-growing segments. Over the last decade, the percentage of the population living in cities has increased by nearly 3% annually while the disposable income of urban households has increased by nearly 10% per year.[17]

RISING CONSUMPTION AND INCOME

Greater wage growth typically translates into higher spending on consumer goods, which is increasingly reflected in China's macroeconomic data.[18] Household consumption accounted for 36% of GDP in 2010 but is forecasted to reach 47% by 2030. At a broader level, Chinese consumption expenditures overall have grown steadily and now account for roughly 56% of GDP. Rising income levels and consumption have fueled the growth of "new economy" sectors and industries in China such as e-commerce, autos, education,

travel and luxury goods. In 2020 alone, China's online retail sales grew almost 11% despite overall retail sales contracting slightly because of a sharp pullback in spending early on in the COVID-19 outbreak.

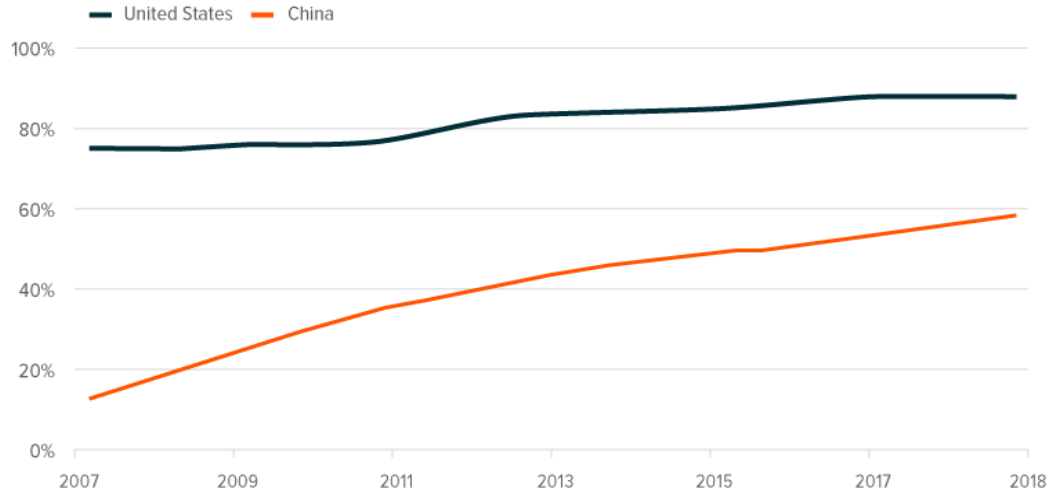
FINAL CONSUMPTION EXPENDITURE (% OF GDP) - CHINA
Source: Global X ETFs. IEA, Global EV Outlook 2019. Columbia SIPA Center on Global Energy Policy.



GROWING INTERNET PENETRATION AND SMARTPHONE USAGE

Internet penetration is relatively high in China compared to other emerging markets, but there is still room for growth given the size of China's population and lagging in rural areas. And although internet penetration in China is nearly 60%, rising over 20% in a decade to reach 900 million users, it still has much more room to grow compared to the US, which stands at 87%. Higher internet penetration is a prerequisite for further digitalization as it enables consumers to use smartphones to engage with and integrate the latest mobile-enabled technologies including e-commerce, video games & esports, and FinTech.[19]

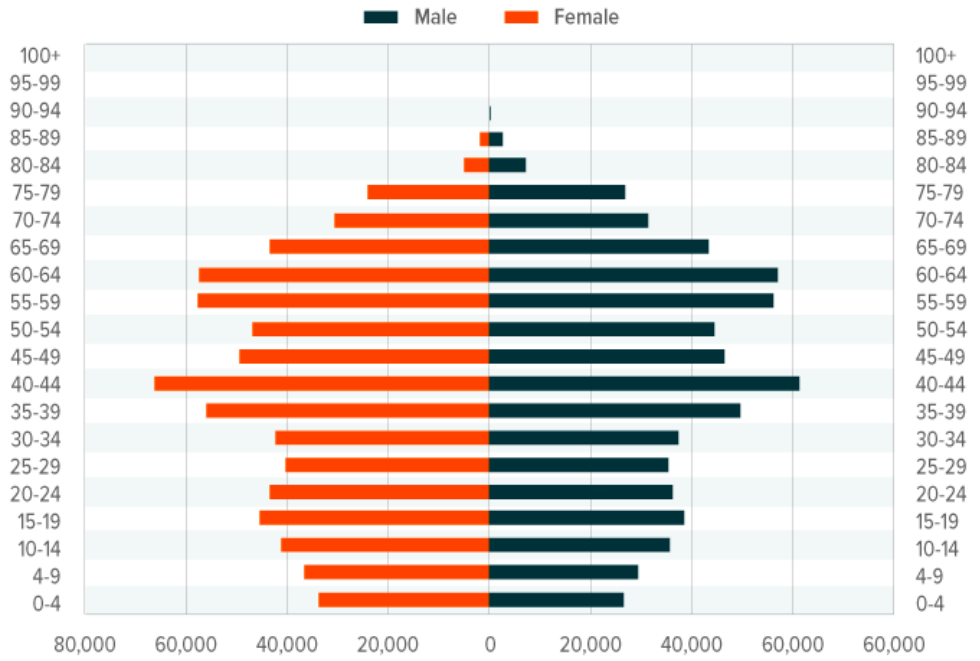
INTERNET PENETRATION CONVERGING
Source: CEIC Data as of 1/9/2019
Pew Research Center Data as of 1/2/2018



DEMOGRAPHIC SHIFTS

China's ageing population will increasingly rely on younger generations to cover health care costs. By 2027, China's senior citizen population will double, meaning 324 million Chinese will be over the age of 60. At the same time, China's younger populations now have deeper pockets to make more discretionary purchases and could cover rising health care costs for aging relatives

POPULATION HISTORY AND PROJECTIONS FOR CHINA 2027 (IN THOUSANDS)
Source: Global X Research, CSIS "Is China's health care meeting the needs of its people?" as of Mar 14, 2019.



GOVERNMENT PRIORITIES

A common thread that runs throughout high-growth segments in China is that the government helps accelerate expansion through a variety of supportive policies including direct spending, investment, and incentives. Key national strategies, including the Made in China 2025 (MIC), the Belt and Road Initiative (BRI), Broadband China, and the Internet Plus initiatives, all buttress growth across several disruptive segments identified by Beijing, with a particular focus on digitalization and consumption.

In the next few weeks, Beijing will introduce both its 14th Five Year Plan (FYP), which is China's most comprehensive guide to China's national policy priorities, and its second 15-year plan or the "2035 Vision" plan. This past November, President Xi Jinping, alongside party leaders, gave a preview of what to expect, emphasizing the importance of certain initiatives, including modernization through innovation and technological advancement as well as promoting high-end and "intelligent" green production.[20]

Part of this drive to boost innovation and tech is China's dual circulation policy which aims to promote tech self-sufficiency and notably a buildout of its own chip-making supply chains and capabilities - priorities which have been reemphasized as a result of escalated trade tensions with the US. The FYP also is expected to introduce new green financing initiatives, reemphasize China's 5G priorities, especially as it impacts advanced manufacturing, and also reiterate the importance of the Healthy China 2030 Vision introduced in 2016 to improve public health. All of these initiatives are directly tied to the themes underlying China's

disruptive growth and help contextualize how critical these segments are to China's broader economic growth.

GLOBAL INFLUENCE

Part of the rapid growth within these themes is attributable to their expanding market potential beyond Chinese borders. As the biggest and fastest-growing market for 5G technology, e-commerce, and clean tech globally, China is an established leader on the global stage.

As we've seen throughout the course of the pandemic and the trade tensions with the US, China's extensive resources – including rare earth minerals, solar or wind power, an unrivaled labor force, and liberalizing market access – are aiding in its global expansion. While China aims to reduce its dependence on foreign technology, it also seems intent on becoming a major technology exporter in its own right. We see this through their efforts to expand 5G internationally under the Belt and Road Initiative (BRI), through Alibaba's acquisitions and partnerships across Southeast Asia, and through Huawei's leadership as a lower-cost alternative to the iPhone in Europe and across emerging and developed markets alike.

Chinese firms often benefit from protections against foreign competition, which can help to build their scale in China before competing internationally. Yet given that many have now built substantial domestic scale, they are increasingly eyeing international expansion. Over the last several years, Chinese game publishers have expanded abroad to fuel additional growth. Through partnerships and acquisitions, they have increased their international presence. Tencent has been especially aggressive, buying stakes in nearly 300 companies across developed and developing markets over the past 6 years,[21] including Indonesia's e-commerce giant, Shopee, and the US creator of 'Fortnite', Epic Games. Another firm expanding rapidly across markets is Baidu, which has partnered with Microsoft, Ford and Hyundai on its Apollo Project to develop autonomous driving and AI, as well as most recently with US retailer Walmart to test driverless delivery vans.

Merging Global X's Expertise in Thematic Investing with Mirae Asset's Extensive Experience in Chinese Equities

We believe China's rapidly changing economy and nuanced capital markets requires a more hands-on and dynamic approach to effectively capture the disruptive trends occurring within the country. As such, we designed KEJI as an actively managed ETF that brings together Global X's expertise in thematic investing with sub-adviser Mirae Asset Global Investments (Hong Kong) Limited's deep experience in Chinese equity analysis and security selection. Headquartered in South Korea, Mirae Asset is a leading financial institution with extensive experience in active management in China and emerging markets more broadly. With over $190B in assets under management, Mirae Asset has a strong presence across a host of fast-growing economies including China, India, Brazil, Vietnam, and Colombia.[22]

Constructing the KEJI's portfolio follows a top down, bottom up approach. From the top down, Global X leverages its thematic research capabilities to pinpoint long-term, structural themes that are expected to be the most impactful in China over the coming decades. Themes may be driven by advancements in disruptive technologies, changing demographics and consumer preferences, or adaptations to the physical environment.

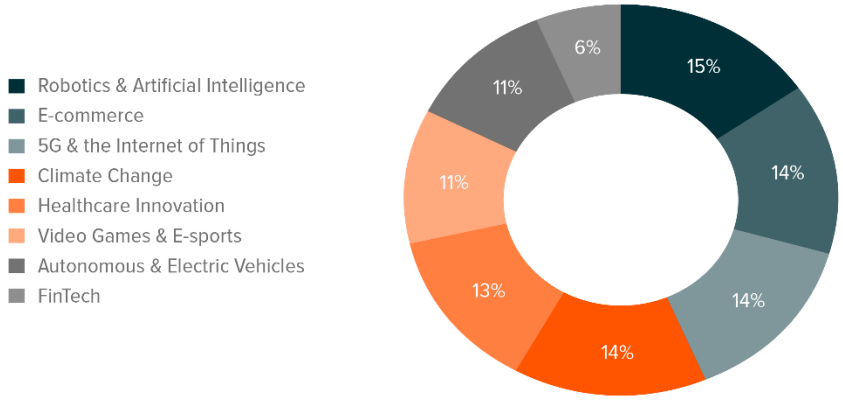
From the bottom up, Mirae Asset's portfolio managers based in Hong Kong dynamically select and weight the companies they believe are most likely to benefit from the materialization of each theme. The portfolio is expected to hold between 30-50 companies at any given time, with a maximum allocation of 10% to any one company and 35% to any individual theme. While KEJI exclusively invests in Chinese companies, it

accesses several share classes including A shares, B Chips, Red Chips, P Chips, H Shares, and US-listed ADRs.

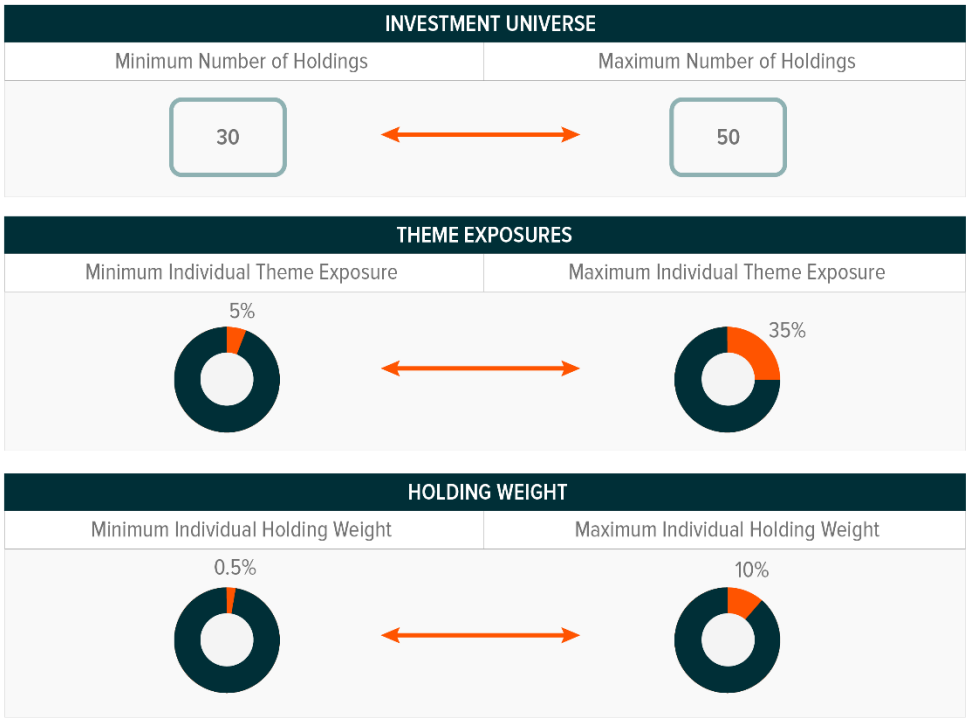
Currently, the portfolio has exposure to eight powerful themes in the weights depicted below. For a full list of KEJI's holdings, please click here.

GLOBAL X CHINA DISRUPTION ETF (KEJI) THEMATIC EXPOSURE

Source: Global X ETFs as of Feb 19, 2020.



Holdings are subject to change. Current and future holdings are subject risk.



Conclusion

China is rapidly emerging as a hotspot for disruption, which has substantial implications for its own domestic economy as well as the rest of the world's. It is leading in the development of several innovative technologies that are challenging the status quo or creating entirely new industries. At the same time, its large population is experiencing rising wealth and dramatically changing consumption patterns. Finally, the country's policy responses to climate change and investment in infrastructure is having a profound impact on the physical environment. We believe that certain companies leading in these disruptions could experience substantial growth over the coming decades. The Global X China Disruption ETF (KEJI) seeks to offer targeted and dynamic exposure to several of the most disruptive companies in one of the world's fastest-growing markets.

Theme Definitions:

- Robotics & Artificial Intelligence – Companies involved in the development of robotics and/or artificial intelligence, including companies involved in developing industrial robots and production systems, automated inventory management, unmanned vehicles, voice/image/text recognition, and medical robots or robotic instruments.

- Autonomous & Electric Vehicles – Companies involved in the development of electric vehicles and/or autonomous vehicles, including companies that produce electric vehicles, electric vehicle components and materials, autonomous driving technology, and network connected services for transportation.

- FinTech – Companies involved in mobile/digital payments and remittances, peer-to-peer ("P2P") and marketplace lending, online banking, digital and automated investing solutions, insurance technology, financial analytics software and alternative/digital currencies.

- 5G & the Internet of Things – Companies involved in wearable technology, home automation, connected automotive technology, industrial internet of things devices, remote health devices, digital sensors, wireless chipsets/semiconductors, mobile networking infrastructure/software, smart metering, and energy control devices.

- Healthcare Innovation – Companies that are furthering the health care sector through technological advancements, like telemedicine, digital health analytics, connected health devices, administrative digitalization, as well as those leading in the development, production and distribution of breakthrough new drugs and treatments, including those active in the study of genomics and personalized medicine.

- Climate Change – companies involved in the mitigation of climate change, including those that develop technology or equipment that enables the production of energy from renewable or alternative sources, efficient utilization of energy and reduction of and adaption to negative environmental influences, including water and air pollution, deforestation, rising sea levels, draught, flooding, and other climate-related events.

- E-commerce – Companies involved in operating e-commerce platforms, providing e-commerce software and services, and/or selling goods and services online. This includes social network companies that promote shopping via their content or in-app purchases as well as gaming companies offering in-game purchases.

SEI Investments Distribution Co. (1 Freedom Valley Drive, Oaks, PA, 19456) is the distributor for the Global X Funds.

Investing involves risk, including the possible loss of principal. The investable universe of companies in which KEJI may invest may be limited. In addition to the normal risks associated with investing, international investments may involve risk of capital loss from unfavorable fluctuation in currency values, from differences in generally accepted accounting principles or from social, economic or political instability in other nations. Emerging economic themed companies typically face intense competition and potentially rapid product obsolescence. Thematic companies may have limited product lines, markets, financial resources or personnel. They typically engage in significant amounts of spending on research and development, capital expenditures and mergers and acquisitions, and there is no guarantee that the products or services produced will be successful. International investments may involve risk of capital loss from unfavorable fluctuation in currency values, from differences in generally accepted accounting principles or from social, economic or political instability in other nations. KEJI is non-diversified.

As an actively managed Fund, KEJI does not seek to replicate a specific index. KEJI may invest in securities denominated in foreign currencies. Because the Fund's NAV is determined in U.S. dollars, the KEJI's NAV could decline if currencies of the underlying securities depreciate against the U.S. dollar or if there are delays or limits on repatriation of such currencies. Currency exchange rates can be very volatile and can change quickly and unpredictably. There is no guarantee the fund will achieve its stated objective.

Shares of ETFs are bought and sold at market price (not NAV) and are not individually redeemed from the Fund. Brokerage commissions will reduce returns.

Carefully consider the Fund's investment objectives, risks, and charges and expenses before investing. This and other information can be found in the Fund's summary or full prospectuses, which may be obtained by calling 1.888.493.8631, or by visiting globalxetfs.com. Please read the prospectus carefully before investing.

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