GLOBAL X ETFs RESEARCH

China Sector Analysis: Materials

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Date: June 5, 2021
Topic: China Sectors

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CHIM – Global X MSCI China Materials ETF

Due to the massive size and growth of China's economy, the country ranks near the top for production and consumption of many raw materials. Therefore, understanding China's Materials sector is crucial to understanding Materials globally. China's Materials sector has had to evolve to suit the needs of a rapidly changing and growing country. Between the 1980's and now, the state-owned enterprises (SOEs) that dominated Chinese materials were reformed, stringent price controls were incrementally relaxed and private enterprises were introduced into the mix. In the year 2021, debates about the Chinese Materials sector revolve around meeting the challenges of emission reduction, resolving lingering issues of overcapacity, continuing the reformation of SOEs, and how unique advantages in materials like rare earths affect China's influence over the world economy.

As the next installment in our ongoing series on the 11 major economic sectors of China, this piece dives into the key stats, industry groups, tailwinds and headwinds that define China's Materials sector, tracked by the Global X MSCI China Materials ETF (CHIM).

KEY STATS

Source: Bloomberg, as of May 26, 2021

Materials Sector China vs. US	MSCI China Materials 10/50 Index	MSCI USA Materials Index
Market Cap (Millions USD)	$802,503	$1,065,811
Price to Earnings	13.63	28.95
Forward Price to Earnings	17.68	22.52
Price to Book	1.66	3.52
Forward Price to Book	1.44	3.16
Enterprise Value (EV)/Sales	1.22	3.15
Fwd EV/Sales	9.26	11.45
Dividend Yield	2.19	1.57

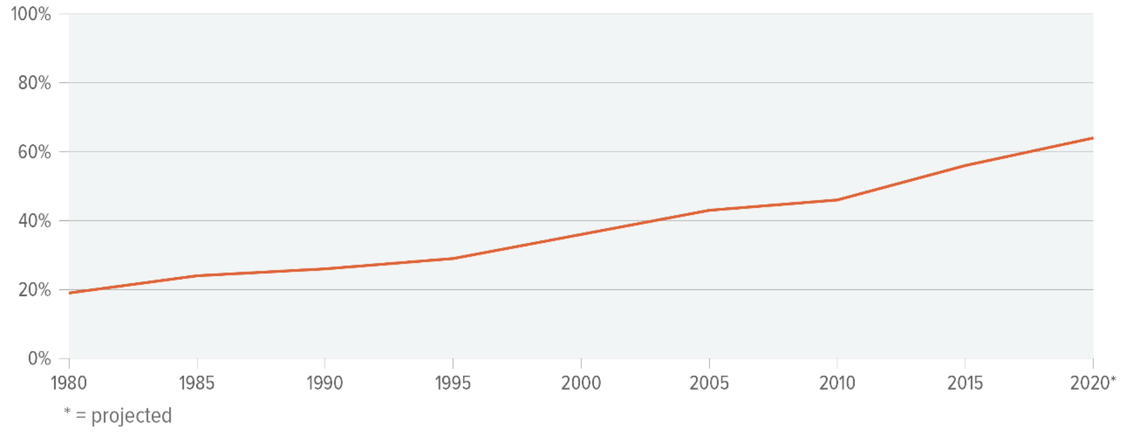
Background on Materials in China

The Materials sector includes companies that specialize in obtaining and processing raw materials such as metals, minerals, paper, stone, chemicals and more. These companies provide the ingredients needed for several other sectors to operate, particularly Industrials that produced finished goods. Because of this, Materials tends to have a significant correlation with the broader economy.

China's Materials sector was propelled upwards by the country's rapid urbanization, the associated need for infrastructure and the quick ascent of manufacturing. As China's economy grew post-reform, workers migrated from rural areas to urban centers in search of opportunity. Between 1980 and 2020, the population living in urban areas increased from 19.4% to 63.9%, turning cities into megacities, like Shanghai which saw its population explode from 5.9m to 26.3m over the same period.[1,2] This migration also laid a foundation for China's rise as a manufacturing powerhouse. Between 2004 and 2018, China's global share of manufacturing rose from 8.7% to 28.4%, overtaking the US for the top spot. Meanwhile, the government invested heavily in the infrastructure needed to support an urban population and companies focused on manufacturing and exports. The enormous task of building up an industrial economic powerhouse from a formerly agrarian society required glass, chemicals, cement, stone, wood and metals. Simply put, it needed to develop a massive materials supply chain.

% OF POPULATION LIVING IN URBAN AREAS 1980-2020

Source: China National Bureau of Statistics, as of May 11, 2021.



Prior to the reforms of the 1980's, materials companies in China were mostly state-owned enterprises that followed a centralized pricing system. While the materials landscape today is more complex and market-driven, many of the sector's leaders are still state-owned enterprises. Whereas China once suffered from a lack of access to raw materials, resulting in the "Building Materials for All" initiative in 1985, several subsectors in the Chinese Materials space have been substantially built out and may look outwards towards foreign markets to fuel additional growth in the future. But for now, many of the major Chinese materials companies are still focused on the domestic market. As an example, Anhui Conch and China National Building Materials compromise 17.8% and 25.7% of the global building materials market in terms of revenue, yet both derive over 97% of their revenue from the domestic market as of Fiscal Year 2020.[3]

Chinese regulators still exert some controls over Materials companies. Under the guidance of the National Food and Strategic Reserves Administration, China maintains a stockpile of key resources that includes materials like coal, rare earths, aluminum, copper and more. Due to the highly secretive nature of these reserves, the exact composition is not clear. But it is clear that these reserves can influence commodity markets as a tool to curb rising prices or alleviate shortages. As an example, reports that China was considering selling 500,000 tons of aluminum from its reserves contributed to a plunge in the metal's price in March 2021.[4] The 14th Five-Year Plan (FYP) released in March 2021 includes plans to boost state commodity reserves, and in May 2021 the National Development and Reform Council (NDRC) announced its plans to add more commodity price controls to the 14th FYP.[5] The decision is a direct response to the soaring commodity prices throughout 2021.

Materials Industry Groups in China

The Materials sector is not as cohesive as some other sectors. Companies that deal in chemicals, construction materials, paper and forestry, containers and packaging, and metals and mining all fall under the umbrella of Materials.

- **CHEMICALS**

  Chemical companies produce a wide range of goods, both intermediary and final. These goods can be anything from rubber for industrial equipment, pesticides for farming, plastics for packaging all the way to paint and varnish. The growth of China's chemical industry has been outpacing the rest of the world, with a Compound Annual Growth Rate (CAGR) of 5.5% between 2013 and 2018, and contributing half of the growth in the global chemical market over the last two decades.[6,7] Going forward, China's chemical industry is expected to continue growing at a fast pace relative to the rest of the world, even if absolute growth slows down in step with the slowdown of the broader Chinese economy. In order to promote the growth of the chemical industry, the government embraced the construction of chemical industrial parks, which grew in number from about 20 in 2007 to 676 as of 2019.[8,9] However, in recent years regulation and safety have become significant concerns for companies in chemical industrial parks. At a national level, the government is working to shakeout parks with lax safety standards. Overall, current trends show that the Chinese chemical industry is moving towards consolidation, tighter regulation and increased specialization.

INDUSTRY LEADERS: Wanhua Chemical, Hengli Petrochemical, Rongsheng Petrochemical

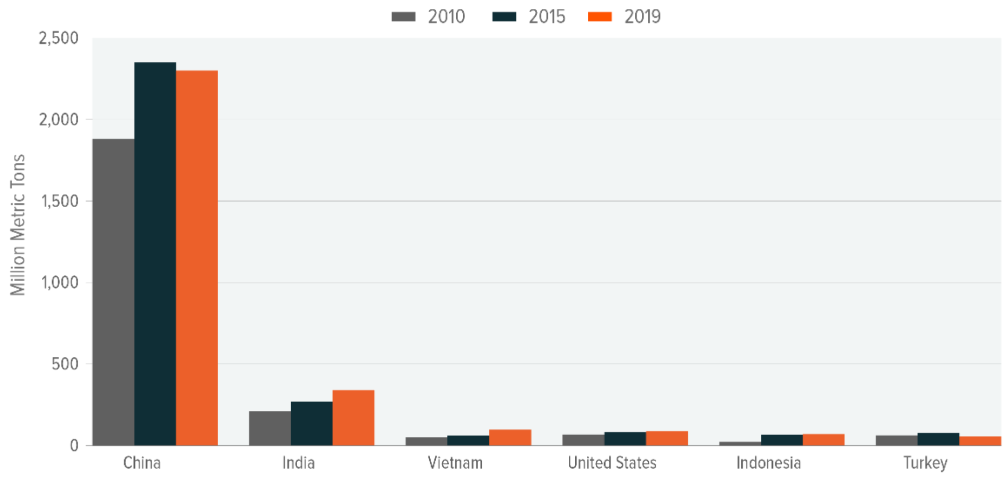
- **CONSTRUCTION MATERIALS**

China's rapid development necessitates massive real estate and infrastructure projects around the country. Infrastructure investment is also one of the government's go-to stimulus tools in times of economic pressure. In 2019, the industry generated sales of 272.1bn RMB from housing construction projects, almost triple that of power projects which came second with 94.51bn RMB of revenue, underscoring the importance of real estate to China's economy and the construction materials industry group.[10] China's production of cement dwarfs that of all other countries, with over half of global production. In fact, China's cement production is over six times that of the next largest producer, India.[11] Chinese cement makers are inwardly focused and derive the overwhelming majority of their revenue from the domestic market, as exemplified by cement exports declining nearly three-fold between 2009 and 2019.[12]

INDUSTRY LEADERS: Anhui Conch Cement, China National Building Materials, China Resources Cement

CEMENT PRODUCTION BY COUNTRY

Source: US Geological Survey



- **CONTAINERS AND PACKAGING**

As of 2019, China's share of global plastics material production stood at 31%.[13] The need for packaging rose quickly along with the expansion of China's middle class, further fueled by greater e-commerce and food delivery penetration. As the government attempts to limit wasteful packaging, like its 2020 decision to gradually cut usage of plastic bags and other single-use plastics, the industry is pivoting to develop and supply environmentally friendly packaging methods.[14]

INDUSTRY LEADERS: Yunnan Energy New Material

- **METALS AND MINING**

On the demand side, China's massive size and need for infrastructure gives it considerable sway over metals like copper. As an example, China's national lockdown in Q1 2020 contributed to copper prices tanking and China's subsequent recovery is seen as a driver of copper's 2021 rally. On the supply side, China is the world's largest producer of gold, rare earths, and coal.[15] China's dominance in rare earths receives extra attention in geopolitical analyses because it is seen as a unique strategic advantage. After all, rare earths are a crucial component in many high tech devices, like neodymium in computer hard drives, lanthanum in camera lenses, cerium in automobiles, yttrium in smartphones and more.[16] Many Chinese mining companies have established international presences, like Zijin Mining which operates mines in South America, Africa, Europe, Asia and Australia.

INDUSTRY LEADERS: Zijin Mining, Jiangxi Copper, China Hongqiao

Top Producers, 2020*	1	2	3	4	5
Copper (1000 metric tons)	Chile 5700	Peru 2200	China 1700	DR Congo 1300	USA 1200
Gold (metric tons)	China 380	Australia 320	Russia 300	USA 190	Canada 170
Bauxite (1000 metric tons)	Australia 110000	Guinea 82000	China 60000	Brazil 35000	Indonesia 23000
Aluminum Smelting (1000 metric tons)	China 37000	India 3600	Russia 3600	Canada 3100	UAE 2600
Zinc (1000 metric tons)	China 4200	Australia 1400	Peru 1200	India 720	USA 670
Rare Earth (1000 metric tons)	China 140	USA 38	Burma 30	Australia 17	Madagascar 8

*Source: US Geological Survey, *Forecasted*

- **PAPER AND FOREST PRODUCTS**

China is the world's top exporter of paper, with roughly 22% of the global share as of 2019, while only ranking at number nine for paper imports, with only 3.1% of the global share.[17,18] A breakdown of the revenue of the Paper and Forest Products companies in CHIM indicates that as of FY2020, all three derived over 98% of their revenue from the domestic market.

INDUSTRY LEADERS: Nine Dragons, Lee & Man, Shandong Sun

MSCI CHINA MATERIALS ETF (CHIM) – TOP 5 HOLDINGS, AS OF JUN 21, 2021.

Name/Ticker	Market Cap (USD)	Description
Zijin Mining	41.6bn	Originally founded as Shanghang Mineral Company in 1986, Zijin was listed on the Hong Kong Stock Exchange in 2003 and has since developed a global presence as a leading Metals and Mining firm. Most of Zijin's mines focus on copper and gold, though some mines also focus on zinc and other metals. Zijin's international investment projects are spread throughout Latin America, Australia, Europe, Africa and Asia. Zijin's goals for 2030 reveal that it is shifting towards a more global strategy. As of FY 2020, 84.7% of its revenue come from China compared to 15.3% from overseas
Conch Cement	38.3bn	Anhui Conch Cement is a massive Construction Materials company that specializes in cement. Out of all the cement producers in China, Conch is ranked number two in terms of capacity, second to China National Building Material and just ahead of BBMG. Most of Conch's revenue comes from projects within China.
China National Building Material	10.9bn	China National Building Material (CNBM) is the second largest manufacturer of Construction Materials in the world in terms of 2019 sales figures, second only to Saint-Gobain of France. As of FY2020, 50.0% of CNBM's revenue came from cement, 20.1% from concrete, 16.1% from new materials, and 13.3% from design and engineering services.
Wanhua Chemical	56.4bn	Wanhua Chemical is a Chemicals giant that excels as a B2B provider of polyurethane products, petrochemicals and performance chemicals. Wanhua's chemical sales were ranked at number 32 in the 2020 Chemical and Engineering News Global Top 50 list. Wanhua has been pushing to expand its presence abroad, with notable acquisitions and projects in Europe and North America between 2010 and 2020.
China Hongqiao Group	14.2bn	China Hongqiao is a Metals and Mining company that mines bauxite and produces aluminum. In 2019, Hongqiao's total output of aluminum products reached 6.2m tons. Hongqiao has a vertically integrated structure that covers mining bauxite, processing the bauxite into aluminum and creating products like aluminum foil. As of Fy2020, China Hongqiao derived 73.4% of its revenue from aluminum alloy products, 15.7% from alumina products, and 10.2% from aluminum fabrication products.

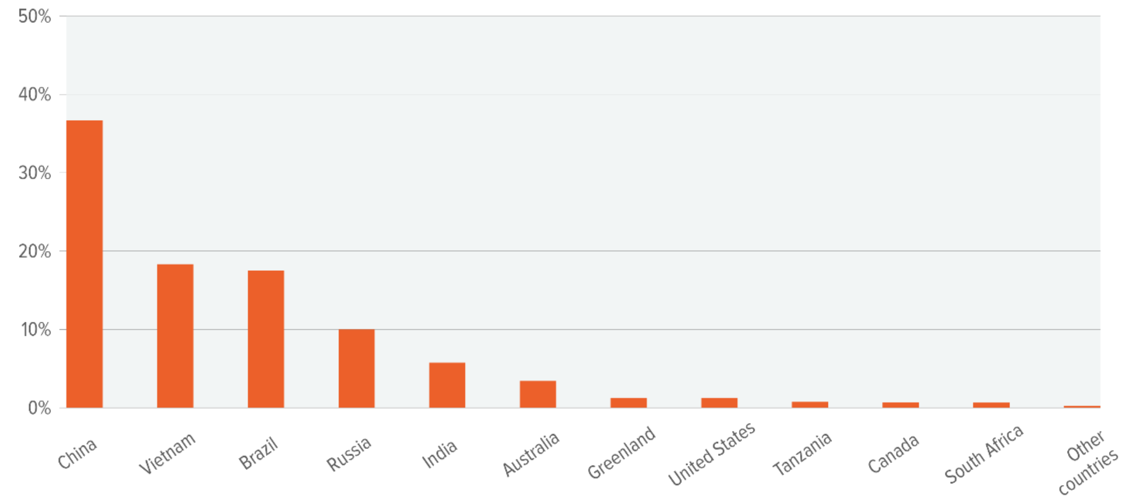
Tailwinds Supporting the Growth of Chinese Materials

The growth of China's Materials sector has been pushed not only by China's natural advantages in market size and mineral reserves, but also its strategy for development and outward-facing projects like the Belt and Road Initiative.

An Abundance of Rare Earths: China has a natural advantage when it comes to the rare earth minerals. With 36.7% of global rare earth oxides reserves, China easily ranks number one. Its reserves exceed that of the next two countries, namely Vietnam and Brazil, combined.[19] Rare earths are a crucial component for many technologies used in products like computers, smartphones, automobiles, appliances, weapons, airplanes and more. Put simply, modern day technology needs rare earth and the world needs China for rare earths. For this exact reason, geopolitical tensions can sometimes spill over into the rare earths industry, like in 2010 when a maritime dispute between China and Japan resulted in China restricting rare earth exports.[20]

DISTRIBUTION OF GLOBAL RARE EARTH RESERVES 2020

Source: US Geological Survey, as of February 2021



Infrastructure Demand: Infrastructure relies heavily on basic materials like cement, steel, copper and more. For example, copper's electrical conductivity makes it widely used in wiring, while steel is a crucial component to make sturdy frames for buildings. China's immense infrastructure needs have been a boon for the Materials sector. After building out roads, bridges, tunnels, airports and more, China took on the enormous task of building high-speed railways across the country. To give an idea of how quickly that infrastructure was built out, the length of China's high-speed railway network went from a mere 1,000km in 2009 to 35,000km in 2019.[21] In times of economic pressure, infrastructure spending has been one of China's go-to tools to stimulate the economy, as evidenced by its infrastructure binges after the 1997 Asian financial crisis and 2008 global financial crisis. From 2017 to 2035, it is estimated that China's infrastructure needs will total $23.66tn, compared to $13.88tn in the US and $5.5tn in India.[22] China is working to transition towards higher quality growth and the returns to infrastructure projects are not as high as before, but the need for infrastructure is still there.

LENGTH OF HIGH-SPEED RAILWAY NETWORK IN CHINA

Source: ibaogao

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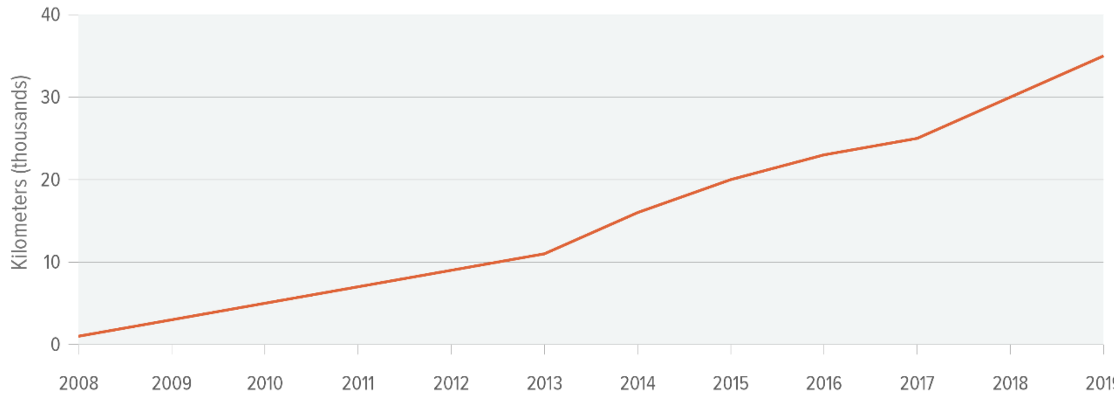


Belt and Road Initiative: Originally proposed in 2013, the Belt and Road Initiative (BRI) is an ambitious long-term plan to invest in infrastructure projects to connect China with countries in Asia, Africa and Europe. Between 2013 and 2020, funding for BRI projects has been about $50bn to $100bn per year.[23] The projects cover a wide range of sectors and purposes, such as a highway connecting China with Tajikistan and Uzbekistan, a railway between China and Nepal, a hydropower project in Nigeria, to name a few. Thus far the companies directly involved in the construction of BRI projects have tended to be state-owned giants like China Three Gorges or Shanghai Electric. Materials companies have a unique opportunity to act as suppliers to the companies that directly manage BRI projects. But of course, not all of these opportunities will go to domestic materials companies. As the BRI continues to gain traction, the government is trying to be more inclusive of local companies and suppliers to avoid giving the impression of being purely self-interested.

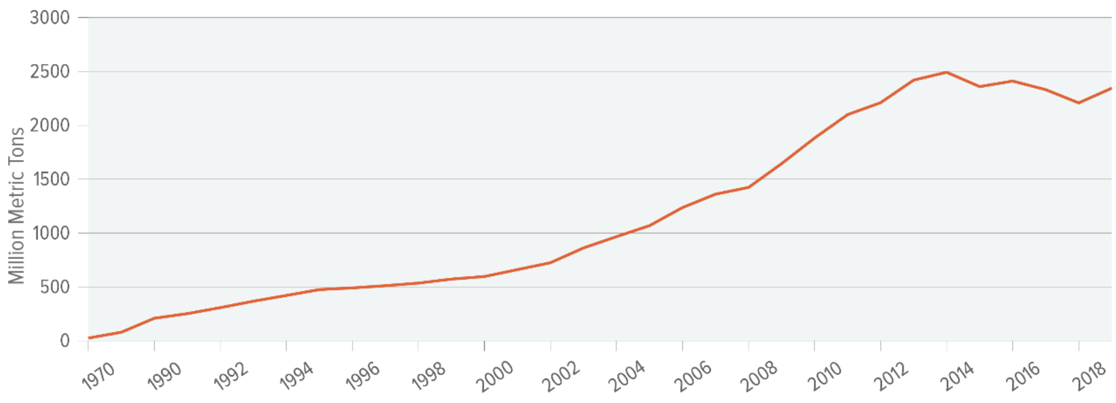
Headwinds

State-Owned Enterprise and Supply Side Reform: The reformation of China's state-owned enterprises (SOEs) is a major point of contention in discussions about the Chinese economy. This debate is particularly relevant to the Materials sector, since a high percentage of materials companies are state-owned. As of June 9th 2021, 36.9% of holdings in CHIM are state-owned. Since the 1980's, SOEs have transformed from state-controlled factories into more modern corporations, been consolidated through the "grasping the large, letting go of the small" (*Zhuada, Fangxiao*) policy, and put under the guidance of the State-Owned Assets Supervision and Administration Commission (SASAC).[24] Yet despite the progress in reformation, questions linger about SOE efficiency.

SOE incentive structures have contributed to overcapacity in some subsectors. Commentators in China often use the term 'zombie-enterprise' to describe loss-making SOE's that subsist off government financing and bank loans. In particular, the coal and steel subsectors are notorious for overcapacity issues. Despite taking measures to reduce capacity, the government often finds itself playing cat and mouse with illegal increases in capacity. In the construction materials industry group, there has been an overcapacity of cement. Rapid growth in the 2000's led to rapid growth in cement production, culminating in the State Council taking action to reduce cement capacity in 2013.[25] Both SOE efficiency and supply side reforms have important implications for Chinese Materials.

PRODUCTION OF CEMENT IN CHINA 1970-2019

Source: China National Bureau of Statistics



Cement is an example of a subsector dealing with overcapacity issues. The effect of government intervention to reduce overcapacity is very noticeable in the latter half of the 2010's.

Trade Disputes and Geopolitical Factors: Recent events have shown that the Materials sector is not immune to geopolitical tensions. After a year of deteriorating China-Australia relations and anti-dumping investigations in both directions, China began an unofficial ban on Australian coal in October 2020.[26] The effects of China shunning its biggest supplier of coal led to sudden fluctuations in the prices of coal in both China and Australia. Before tensions with Australia fermented trade disputes, in 2018 the US put tariffs on Chinese steel and aluminum, which the Trump administration alleged was being unfairly supported by government subsidies.

Conclusion

China's rise as an export-oriented economy and global economic power required several pieces to fall in place, including a large urbanized population and massive investment in infrastructure and manufacturing equipment. But often overlooked is the importance that raw materials played and continue to play in that equation. Dependable access to chemicals, construction materials, metals, paper and other materials is essential to export finished goods. Despite the tendency to focus on China's leaps and bounds in new fields like artificial intelligence and 5G, it is important to remember that the story for Materials has not ended. As

China and other emerging markets continue their rise, millions will be lifted into the middle class, placing greater demands for goods and materials. Chinese Materials companies are among the largest in the world and appear well-positioned to fulfill these new demands.

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3. Bloomberg, as of Jun 9, 2021.
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