

# Capturing China's 5G & Semiconductor Opportunities

An Overview of the KraneShares CICC China 5G & Semiconductor ETF (Ticker: KFVG)



**KFVG** 



# Introduction to KraneShares

#### **About KraneShares**

Krane Funds Advisors, LLC is the investment manager for KraneShares ETFs. Our suite of China focused ETFs provides investors with solutions to capture China's importance as an essential element of a well-designed investment portfolio. We strive to provide innovative, first to market strategies that have been developed based on our strong partnerships and our deep knowledge of investing. We help investors stay current on global market trends and aim to provide meaningful diversification. Krane Funds Advisors, LLC is majority owned by China International Capital Corporation (CICC).







## KraneShares CICC China 5G & Semiconductor ETF

#### **Investment Strategy:**

KFVG seeks to measure the performance of the CICC China 5G and Semiconductor Leaders Index. The Index is designed to track the performance of companies engaged in the 5G and semiconductor related businesses, including 5G equipment, semiconductors, electronic components and data centers.

#### China 5G & Semiconductor Highlights:

- The integration of 5G with other next generation technologies will further enhance efficiency, quality, and safety of products/experiences across a range of industries
- China is a world leader in 5G spending and adoption. By 2025, China is projected to have over 400 million 5G users, accounting for 40% of total global use.<sup>1</sup>
- Advantages unique to China may help accelerate 5G adoption in the country. 5G expenditure per capita in China is on average \$92 per person, comparatively lower than other global peers, and 5G enabled smart phones and 5G plans are more affordable relative to market rates globally.<sup>1</sup>
- China is becoming more self-sufficient in semiconductor development largely due to government policies and funding specifically for the industry. As part of the "Made in China 2025" initiative, China aims to produce 70% of the semiconductors used domestically by 2025 and have complete import substitution by 2030.<sup>2</sup>

#### **KFVG Features:**

- Access to China's 5G and semiconductor companies that offer a potential source of uncorrelated, long-term growth.
- Exposure to Chinese technology companies listed in Mainland China, Hong Kong, and the United States.
- Tracks an index developed by China International Capital Corporation (CICC) Research. CICC is a leading, publicly traded, Chinese financial services company with expertise in research, asset management, investment banking, private equity and wealth management. In 2019, the CICC Research Team ranked #1 in Institutional Investor's All-China Research Category for the eighth year in a row.
- 1. UBS, "The China 5G Opportunity", retrieved 9/30/2020
- 2. US Chamber of Commerce, "Made in China 2025: Global Ambitions Built on Local Protections", 2017.



#### What is 5G?

- 5G is the fifth-generation wireless technology standard that introduces faster broadband speeds, ultra low latency rates, and greater network connectivity capacity.
- The integration of 5G with other next generation technologies will further enhance the efficiency, quality, and safety of products/experiences across a range industries.

#### **5G Snapshot**

**Speed**: 1-10 Gb/s; 1000x faster than LTE

Latency & Reliability: 1ms, up from 20ms & 99%

reliability

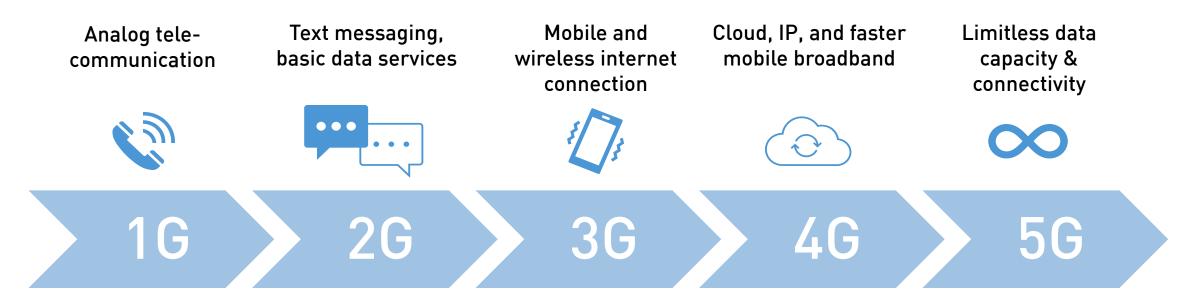
**Connectivity:** 10-100x increase of supported

devices

**Energy Efficiency:** 90% reduction in power

consumption

# The Evolution of Wireless Technologies





# 5G integration may contribute to significant value creation across several industries

#### Autonomous Vehicles

• Faster vehicle-to-cloud communication through 5G technology will improve detection of potential surrounding hazards for autonomous driving enabled vehicles.

#### Remote Surgeries

• The current valuation of the robotic surgery market is approximately \$3 billion, but projected to grow beyond \$7 billion in 2025.1

#### Smart Cities & Homes

• By 2025, the global market size of smart city—powered by 5G connectivity—is expected to reach \$252.56 billion.<sup>2</sup>

#### • Ecommerce & Supply Chain

- 5G introduces automated delivery network capability and integration of artificial intelligence/virtual reality to better personalize users' online shopping experience.
- According to Gartner, 100 million consumers are expected to shop using augmented reality technology in 2020.<sup>3</sup>



<sup>1.</sup> Fierce Healthcare, "Report: 5G has the potential to revolutionize robotic-assisted surgery, improve availability of healthcare", June 26, 2019.

<sup>2.</sup> Bloomberg, "Expected to Reach 252.56 Billion US\$ by the End of 2025, With a CAGR of 16.53% Between 2019", November 11. 2019.

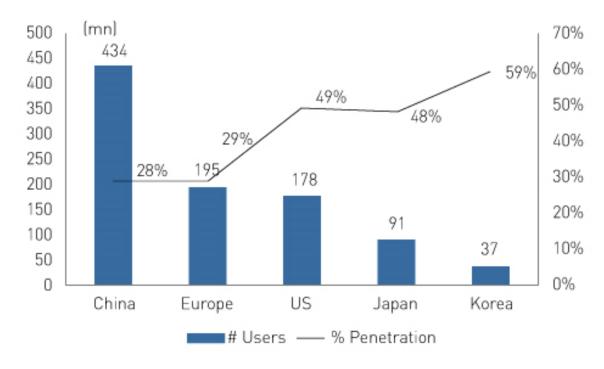
<sup>3.</sup> Market Watch, "Analysts Say 100 Million Consumers Will Shop Using Augmented Reality this Year", August 26, 2020.



#### China is the world leader in 5G investment

- By 2025, China is projected to invest \$184 billion on 5G infrastructure and 28% of the country's mobile connections are forecast to run on 5G networks.<sup>1</sup>
- China has announced plans to spend \$1.2 trillion yuan (\$180 billion USD) to establish over 5 million 5G base stations throughout the country over the course of 2020-2025.<sup>4</sup>
- Over the next five years, China's telecom industry will spend at least \$130 B on 5G, roughly representing a third of total global capital expenditures.<sup>2</sup>
- By 2025, China is projected to have over 400 million 5G users, accounting for 40% of total global use.<sup>3</sup>

#### Forecast of 5G Mobile User and Penetration in 2025



Data from CICC Research, "5G -- Opportunities and Challenges", last updated October 2019.

<sup>1.</sup> Yang Yang, "China to invest over 1T yuan in 5G tech by 2025," China Daily, July 31, 2019

<sup>2.</sup> China Briefing, "China's 5G Roll-Out: What Should Foreign Investors Expect", July 16, 2019

<sup>3.</sup> UBS, "The China 5G Opportunity", retrieved 9/30/2020.

<sup>4.</sup> Nikkei Asia, "China's digital plan will help it leapfrog US as tech leader", June 11, 2020.

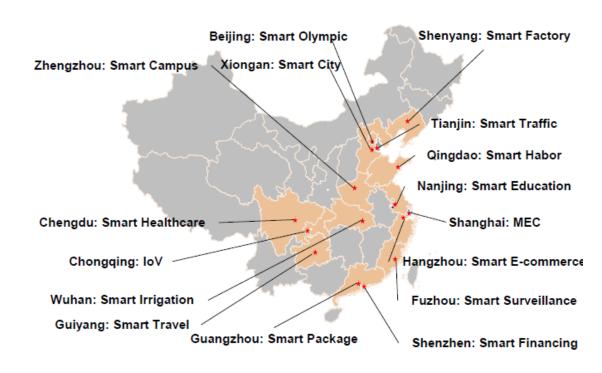


# 5G is a national strategic priority for China

- The Chinese Government announced that 5G would be a national strategic priority in its March 2017 National Congress Report.
- China's Ministry of Industry and Information Technology (MIIT) published a 5G development guideline in March 2018.<sup>1</sup>
- China has established many Public-Private Partnership (PPP) funds for 5G investment such as the National Integrated Circuit Industry Investment Fund (target size CNY 200B) and 5G Innovation Industrial Fund (target size CNY 30B). <sup>1</sup>
- China MIIT issues a 5G license for commercial use to all major operators in China in June 2019.

# 5G Application Across China (China Uniona Trials)

(China Unicom Trials)



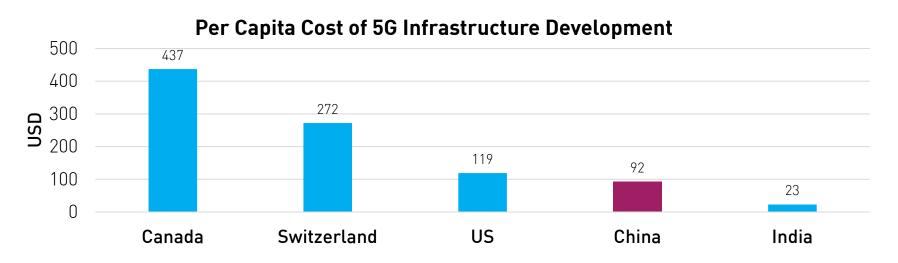
CICC Research, "5G Opportunities & Challenges", Oct. 2019

. Data from MIIT, retrieved 9/30/2020.



# China possesses unique advantages in developing 5G infrastructure.

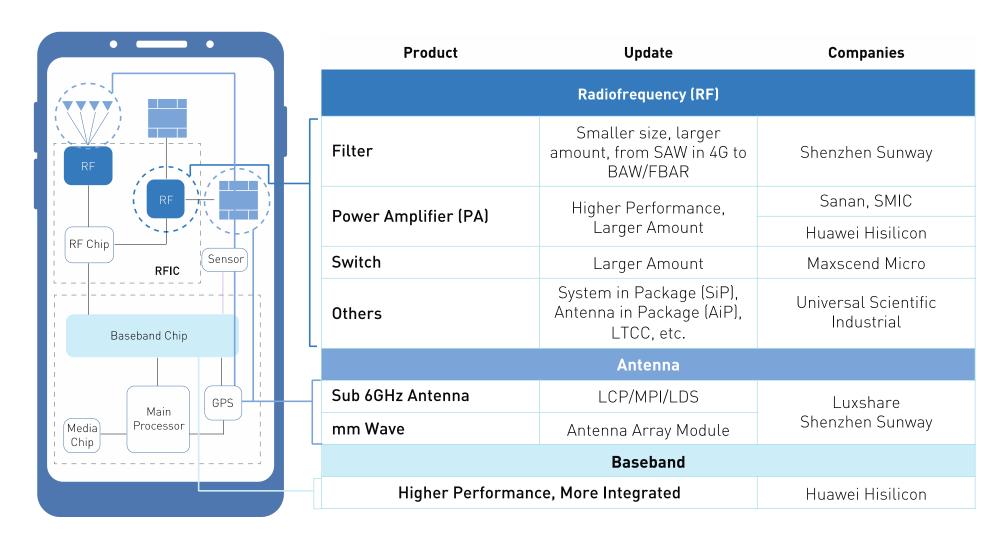
- While the benefits of 5G to the economy as a whole are clear, whether carriers will be able to raise rates and therefore revenues after rolling out the technology is often less certain. The high initial investment required to roll out 5G infrastructure coupled with the uncertainty of returns has hindered 5G development in much of the world.
- However, in China the cost of building and maintaining 5G infrastructure is lower than in many markets thanks to homegrown equipment providers.
- Furthermore, national policy coordination around 5G and a willingness to subsidize its development are likely to keep costs low for firms building 5G infrastructure in China.



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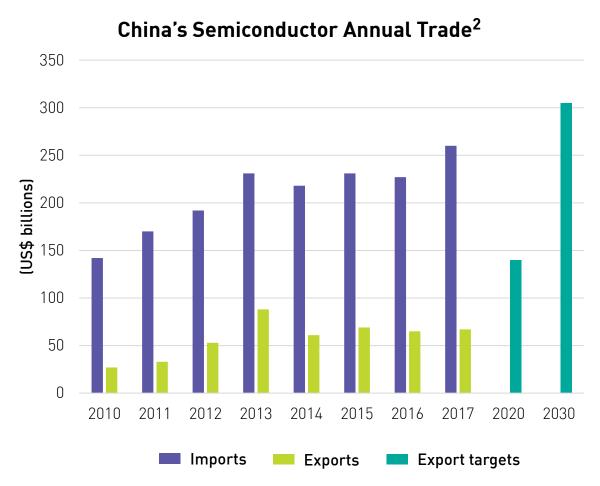
# Chinese chip and electronic component companies may benefit from 5G phone upgrades





# Chinese government policies aim to make China more self-sufficient in the semiconductor industry

- China established a new national semiconductor fund worth \$28.9 billion in 2019, aimed at closing the technology gap with the US.<sup>1</sup>
- As part of the "Made in China 2025" initiative, China aims to produce 100% of the semiconductors used domestically by 2030.<sup>2</sup>
- The Chinese government has instated policies to further promote the semiconductor industry, such as providing tax exemptions for the next 10 years.<sup>2</sup>

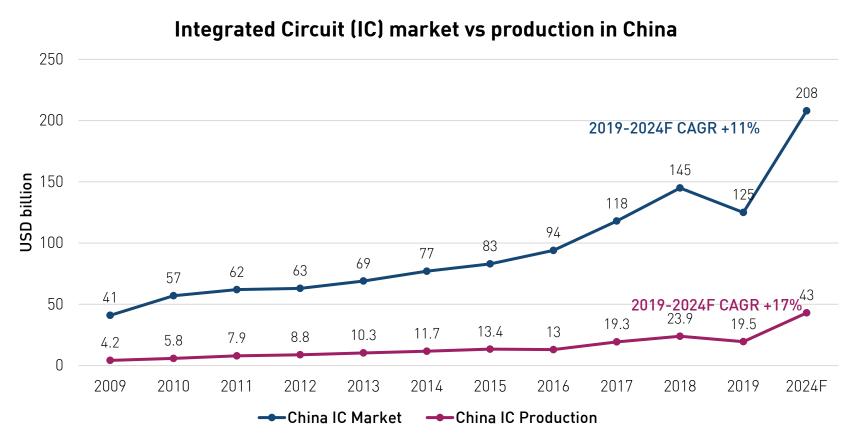


<sup>2.</sup> Source: SCMP," 'Made in China 2025': How Beijing is boosting its semiconductor industry", September 25, 2018. Data from China Semiconductor Industry Association.



# China Semiconductor – Capacity and Market

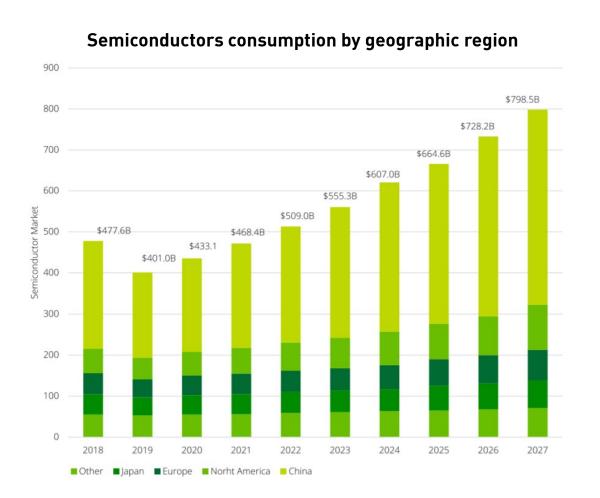
China's integrated circuit (IC) market is ripe for growth because production capacity currently does not meet its domestic market demand.

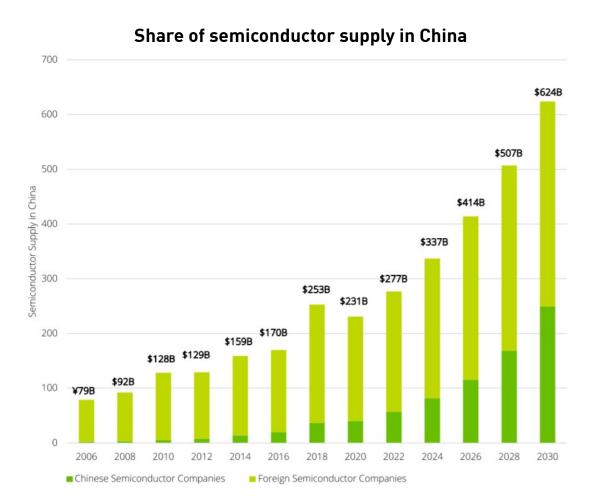




# China Semiconductor – Capacity and Market

China has the world largest market for semiconductors. Once the technology matures, Chinese semiconductor companies could rapidly grow their businesses domestically







# The reshaping of world landscape in the semiconductor industry

Although China's market share in the global semiconductor industry is still relatively small, its share is quickly rising while US market share has been on the decline

	Global market shares (2019A)								
	Segments	Market concentration		US	South Korea	Japan	Europe	Chinese Taiwan	Chinese mainland
	EDA software	***		75%	0%	0%	25%	0%	0%
	Equipment	**		<b>↓</b> 40%	2%	<b>↑</b> 29%	<b>↑</b> 22%	0%	1%
Value chain	Materials	**		15%	0%	52%	15%	0%	0%
	Foundry	***		11%	8%	1%	0%	70%	10%
	OSAT	*	<b>↓</b>	15%	5%	0%	12%	<b>1</b> 44%	<b>↑</b> 20%
	MCU	***		98%	0%	0%	1%	0%	<b>1</b> 0%
	Memory	***	ŧ.	29%	<b>1</b> 59%	8%	0%	4%	<b>1</b> %
	Logic IC	***		<b>↓</b> 54%	<b>↑</b> 17%	3%	5%	<b>↑</b> 21%	2%
Chips	Analog IC	***		<b>↓</b> 60%	2%	<b>↑</b> 11%	<b>1</b> 9%	4%	<b>↑</b> 3%
	Wireless comm	***		<b>4</b> 69%	2%	11%	13%	3%	<b>↑</b> 5%
	MCU	*	<b>+</b>	30%	2%	22%	<b>1</b> 44%	1%	<b>↑</b> 3%
	Sensors	*		19%	0%	25%	<b>↑</b> 48%	0%	↑ 8%

Note: The \* indicate the level of concentration rate: arrows indicate expected market share changes during the next decade Source: Gartner, WSTS, Omdia, CICC Research



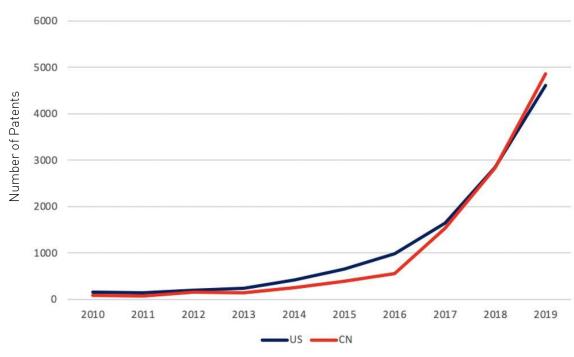
# Acceleration of AI chip development could help China become a global semiconductor leader

- China surpassed the U.S. in terms of Al chip patent innovations for the first time in 2019.
- China holds a competitive edge, in part, because of its huge population size and ability to do large-scale tests of its AI technology in everything from pharmaceutical research and development to meal delivery.<sup>1</sup>



Photo from Cambricon.

#### Al hardware patenting from the US and China



Data form Clarivate Analytics as of 12/31/2019.

<sup>1.</sup> SCMP, "Lagging in semiconductors, China sees a chance to overtake the US with Al chips as 5G ushers in new era", Sept. 18, 2020



# **China 5G and Semiconductor Eco-system**

Theme		Example	% Weight as of 9/30/2020	Service
<i>((c)</i>	5G Equipment	ZTE		ZTE is a leading 5G base equipment provider for major Chinese telecom carriers like China Mobile. ZTE has seen rapid revenue growth from the massive 5G investment in China
	Semiconductor	SMIC		SMIC is China's largest semiconductor company. SMIC is leading China's effort in chips with 7nm development underway.
		GigaDevice		GigaDevice is a memory device manufacturer in China. It sells flash chips including NOR, NAND and other integrated circuit products around the world.
	Electronic Component	Luxshare		Luxshare is the largest connector company in China. It is a connector supplier of Apple and Huawei.
$\Psi$		Sunny Optical		Sunny Optical Technology designs and manufactures optical and optical related products. The Company's products include glass/plastic lenses, prisms, mobile phone camera modules, microscopes, surveying instruments, and other analytical instruments.
		Shengyi		Shengyi is a China-based company, principally engaged in the manufacture and distribution of copper clad laminates (CCLs), bonding sheets and printed circuit boards (PCBs).
	Data Center	GDS		GDS Holdings Limited operates as a leading developer and operator of data centers. The Company offers colocation and managed services, including direct private connection to major public cloud platforms.

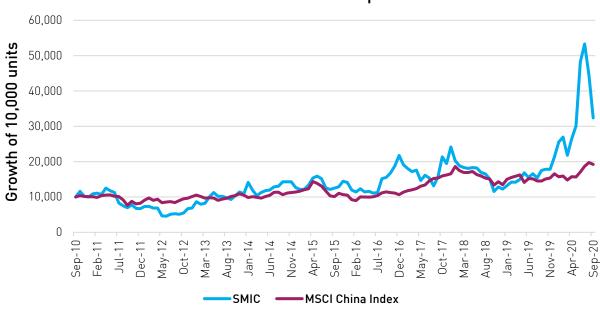


# **Company Introduction**



- Established in 2000, Semiconductor Manufacturing International Corporation ("SMIC") is China's most advanced and largest foundry. SMIC offers comprehensive semiconductor manufacturing services. The company provides integrated circuit (IC) foundry and technology services for a broad range of nodes from 0.35 micrometers (µm) to 14 nanometers (nm), with capabilities including logic, mixed signal/RF, CMOS, high voltage, SoC, flash, EEPROM, CIS, power management IC, MEMS and others.
- The company is leading in process node technology in Mainland China, with 14nm in mass production since Q419 and 7nm development underway. Backed by policy support and ample investment, SMIC continues to push ahead in advanced semis production and narrow the technology gap vs. its peers.
- SMIC plays a key role in China's semiconductor localization strategy.

### **SMIC vs Broad China** 10 Yr Performance Comparison



Name	10 Year Total Return	10 Year Annualized Return
SMIC	223.6%	12.5%
MSCI China Index	92.3%	6.8%

Data form Bloomberg (9/30/2010 - 9/30/2020)



# **Company Introduction**



- Founded in 2004, Luxshare products range from cables, connectors, haptics and wireless charging to antenna, acoustics, electronic modules and wearable device assembly.
- Air Pods and Apple Watch are to be major growth drivers.

  CICC expect Air Pods and Apple Watch to contribute 42%, 49% and 57% to total revenue over 2019–2021 (vs. 31% in 2018).
- Upbeat on opportunities presented by AloT devices in the 5G era. We are upbeat on opportunities presented by artificial intelligence and internet of things (AloT) devices in the 5G era. We believe that Luxshare will expand its presence in AloT devices (e.g., wearable and smart home devices), thanks to its strengths in components, modules and systems.
- **Promising outlook for telecom segment.** Luxshare has gradually improved its competitiveness in products such as antennas for base stations and electronic filters thanks to its strengths in precision manufacturing and automation.

# Luxshare vs Broad China 10 Yr Performance Comparison



Name	10 Year Total Return	10 Year Annualized Return		
Luxshare	4938.1%	47.9%		
MSCI China Index	92.3%	6.8%		

Data form Bloomberg (9/30/2010 - 9/30/2020)

# KraneShares CICC China 5G and Semiconductor Index ETF

#### Investment Strategy:

KFVG seeks to measure the performance of CICC China 5G and Semiconductor Leaders Index. The Index is designed to track the performance of companies engaged in the 5G and semiconductor related businesses including 5G equipment, semiconductors, electronic components and data centers.

Fund Details	Data as of 11/24/2020
Primary Exchange	NYSE
CUSIP	500767611
ISIN	US5007676118
Total Annual Fund Operating Expense (Gross)	0.79%
Total Annual Fund Operating Expense (Net)	0.65%*
Inception Date	11/24/2020
Distribution Frequency	Annual
Index Name	CICC China 5G and Semiconductor Leaders Index
Number of Holdings	30

<b>Top 10 Holdings</b> as of 9/30/2020 Holdings are subject to change.	Ticker	%
_	_	_
_	_	_
_	_	_
_	_	_
_	_	_
_	_	_
_	_	_
_	_	_
_	_	_
_	_	_

#### KFVG Performance History as of 9/30/2020:

	Cumulative %			Average Annualized %			
	3 Mo	6 Mo	Since Inception	1 Yr	3 Yr	5 Yr	Since Inception
Fund NAV	_	_	_	-	-	_	_
Closing Price	_	_	_	_	_	_	_
Index	_	_	_	_	_	_	_

The performance data quoted represents past performance. Past performance does not guarantee future results. The investment return and principal value of an investment will fluctuate so that an investors shares, when sold or redeemed, may be worth more or less than their original cost and current performance may be lower or higher than the performance quoted. For performance data current to the most recent month end, please visit <a href="https://www.kraneshares.com">www.kraneshares.com</a>.

Index returns are for illustrative purposes only. Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index.

<sup>\*</sup>Fee waivers are contractual and in effect until August 1, 2021



#### Conclusion

- 5G connectivity will have a significant influence on many facets of our daily life. Unlike previous wireless technology generations, 5G extends beyond a consumer-oriented focus to transform production and services across industries such as healthcare, manufacturing, gaming, retail, education, and transportation.
- Advantages unique to China have helped make the country at the forefront 5G development and a leader in widespread adoption.
- Self-sufficiency in semiconductor development is a key priority for China. Keeping up with its goals for this industry will be instrumental in making China a competitive global player.

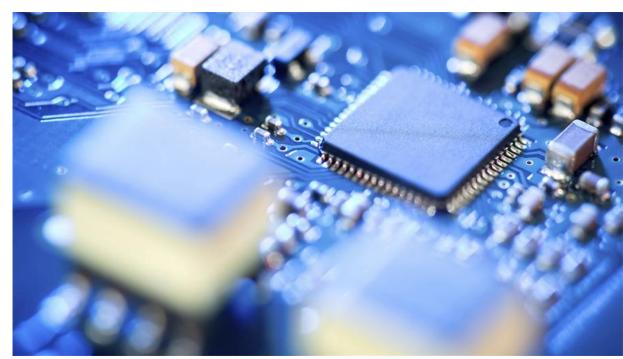


Photo from China Daily.



#### **Important Notes**

Carefully consider the Funds' investment objectives, risk factors, charges and expenses before investing. This and additional information can be found in the Funds' full & summary prospectus, which may be obtained by visiting www.kraneshares.com. Read the prospectus carefully before investing.

#### **Risk Disclosures**

Investing involves risk, including possible loss of principal. There can be no assurance that a Fund will achieve its stated objectives. The Fund is subject to political, social or economic instability within China which may cause decline in value. Fluctuations in currency of foreign countries may have an adverse effect to domestic currency values. Emerging markets involve heightened risk related to the same factors as well as increase volatility and lower trading volume Narrowly focused investments typically exhibit higher volatility.

Diversification does not ensure profit or guarantee against a loss.

In addition to the normal risks associated with investing, investments in smaller companies typically exhibit higher volatility.

The ability of the fund to achieve its objective is dependent, in part, on the continuous availability of A Shares and the ability to obtain, if necessary, additional A Shares quota. If a Fund is unable to obtain sufficient exposure to limited availability of A Share quota, the Fund could seek exposure to the component securities of the Underlying Index by investment in other types of securities. The Fund invests a significant portion of its assets insecurities issued by companies in the information technology sector in order to track the Underlying Index's allocation to that sector. The value of stocks of technology companies and companies that rely heavily on technology is particularly vulnerable to rapid changes in technology product cycles, rapid product obsolescence, government regulation and competition, both domestically and internationally, including competition from competitors with lower production costs. The fund may in invest in derivatives, which are often more volatile than other investments and may magnify the Funds' gains or losses. The fund is non-diversified.

ETF shares are not redeemable with the issuing fund other than in large Creation Unit aggregations. Instead, investors must buy or sell ETF Shares in the secondary market with the assistance of a stockbroker. In doing so, the investor may incur brokerage commissions and may pay more than net asset value when buying and receive less than net asset value when selling. The NAV of the Fund's shares is calculated each day the national securities exchanges are open for trading as of the close of regular trading on the New York Stock Exchange ("NYSE"), normally 4:00 p.m. Eastern time (the "NAV Calculation Time"). Shares are bought and sold at market price (closing price) not NAV. Market price returns are based on the midpoint of the bid/ask spread at 4:00 pm Eastern Time (when NAV is normally determined).

The KraneShares ETFs are distributed by SEI Investments Distribution Company (SIDCO), 1 Freedom Valley Drive, Oaks, PA 19456, which is not affiliated with Krane Funds Advisors, LLC, the Investment Adviser for the Fund.



#### Important Notes (continued)

MSCI China USD Net Index: captures large and mid cap representation across China H shares, B shares, Red chips and P chips.

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