

## Global Technology Index Futures Have A Future

While the primary purposes of stock markets are raising equity capital for firms, distributing the risks and rewards of ownership and signaling both new and existing corporations where to deploy their capital investments, they inevitably hold a mirror to societies and their economies. As a case in point, six of the top ten stocks in the S&P 500<sup>®</sup> in 1980 were petroleum firms and a seventh was oilfield services giant Schlumberger<sup>®</sup>. The original AT&T<sup>®</sup>, IBM<sup>®</sup> and General Electric<sup>®</sup> were the other three firms. Today, petroleum is seen as a mature industry trying to diversify away from hydrocarbon production, IBM<sup>®</sup> no longer dominates computer hardware and the telecommunication industry has advanced beyond the imaginations of 1980.

The technology industry has undergone even greater and more dynamic changes to the point where the lines between it and other sectors such as media & communications and consumer discretionary have become blurred. Indeed, the somewhat grandiose statement all firms are technology firms is not as facile as it may seem: How would you have explained to an auto industry executive in 1971 one of the industry's leading problems 50 years later would be a shortage of semiconductor chips and the leading producer of these chips would be Taiwan Semiconductor<sup>®</sup>? Amazon.com<sup>®</sup> may be classified as a consumer discretionary stock, but its Amazon Web Services division has a decidedly "tech" feel to it. The same can be said for media & communications firms such as Facebook<sup>®</sup>, Alphabet<sup>®</sup> and Comcast<sup>®</sup>.

Just as firms and industries change dramatically over time, so too do their domiciles. The largest technology firms globally include China's Tencent Holdings<sup>®</sup> and Alibaba Group<sup>®</sup>, South Korea's Samsung Electronics<sup>®</sup>, Japan's Sony<sup>®</sup> and Taiwan's Hon Hai Precision Industry<sup>®</sup>. All we need to know can be summed up by stating no one today finds this Asian concentration remarkable. Taken in combination with several significant macroeconomic and investment themes discussed below make a new benchmark and trading instrument, the ICE Asia Tech 30<sup>™</sup> index and a futures contract thereon a powerful and necessary tool for traders and asset managers alike, both by itself and as we shall see below in relation to other technology-based indexes such as the NYSE<sup>®</sup> FANG+<sup>™</sup> index.

### An Industry Like No Other

A little perspective is in order. First, the pace with which the technology sector, however broadly defined, has been changing life globally has been accelerating for so long we forget how young many of its leading firms are. Leading U.S. and Chinese social media firms Facebook<sup>®</sup> and Tencent Holdings<sup>®</sup> were founded in 2004 and 1998, respectively. Similarly, online e-commerce giants Amazon.com<sup>®</sup> and Alibaba Group<sup>®</sup> date back to 1994 and 1999, respectively. While some of these new corporate success stories such as Twitter<sup>®</sup> created their own industries, others such as Netflix<sup>®</sup> displaced established firms. Creative destruction may be the driving engine of a market economy, but as economists note drily, it is not without frictional costs and negative externalities.

Second, these frictions combined with the speed of technological penetration have been stressing sociopolitical systems. What we recognize as "mass culture" created by radio and movies is scarcely a century old. It retained a business model of a small number of people controlling the publication of information for consumption by a large number of people. Today's technologies allow everyone to publish on a largely unfiltered basis and what had been a largely unified mass culture has been fragmenting into an aggregation of self-reinforcing opinion clusters often derided as "echo chambers." Political structures are trying to adapt on the fly to corporations whose business models depend on the rapid and unfettered flow of information. This has affected the operating environments for technology firms on both sides of the Pacific Ocean.

Third, the technology industry broadly defined has and hopefully will continue to enable the greatest expansion of wealth, defined here as the capacity to consume, ever. If humans as economic animals began their existence as hunter-gatherers, their capacity to consume literally was limited by their capacity to eat more and maybe climb the dietary curve a little. By the time a global industrial economy rose in the late Nineteenth Century, consumers could be sold on the concept of buying more than the necessities of life and on replacing those goods as they become obsolescent. Still, this process was limited by physical constraints even allowing for conspicuous consumption.

The current technology economy has removed many of those physical constraints. The demand for access to information, for social connection and for improved efficiency is relatively unbounded and is available to nearly all at a low fixed cost and very low marginal costs. In addition, information technologies are highly scalable and have a much lower set of production costs than do industrial processes. While an automobile manufacturer required large supply chain investments in steel, rubber, glass, carpeting and the like, the value-added in Microsoft®'s software or Apple®'s phones is skewed toward design as opposed to manufacturing. If we combine this with network effects, we find firms capable of extraordinary profitability and concentrated market share. As modern societies seem to have an innate aversion toward size and concentration, we find yet another source of political stress globally even as many are loathe to damage what are both the crown jewels of the economy and the cornerstone of investment portfolios.

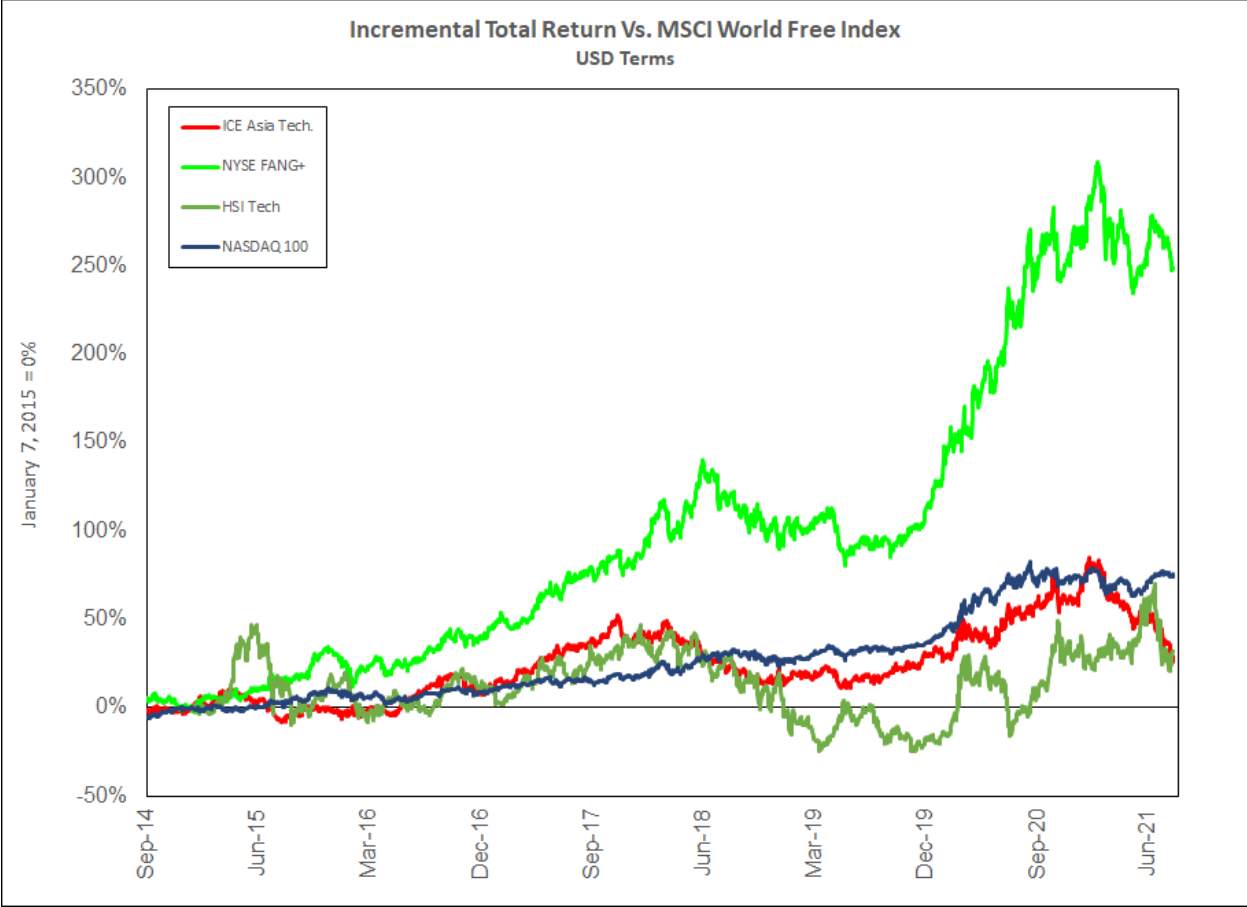
Fourth and finally for this purpose, the issues of size and concentration have an interesting corollary. Industrial economies are replete with naturally substituting competitors. Very simply, if you buy an airliner from Boeing®, you are not buying an airliner from Airbus® and vice-versa. With notable exceptions such as Apple®, Samsung Electronics® and Xiaomi® in the telephone handset business, the technology industry has far fewer of these natural substitutions and is laden with network effects that drive buyers toward single suppliers. If that supplier falls out of favor as Myspace® did relative to Facebook®, it heads toward oblivion. High levels of volatility are simply part of the investing landscape in this sector.

The implications of this for investors are simple and clear: You may know a business sector will be successful but you did not know which firm will emerge as dominant, therefore it is incumbent upon you to diversify widely and allow the eventual winner to produce long-term gains regardless of how many non-winners you hold. Indexes such as the ICE Asia Tech 30™ and the NYSE® FANG+™ facilitate this portfolio-based strategy.

### **The ICE Asia Tech 30 Index**

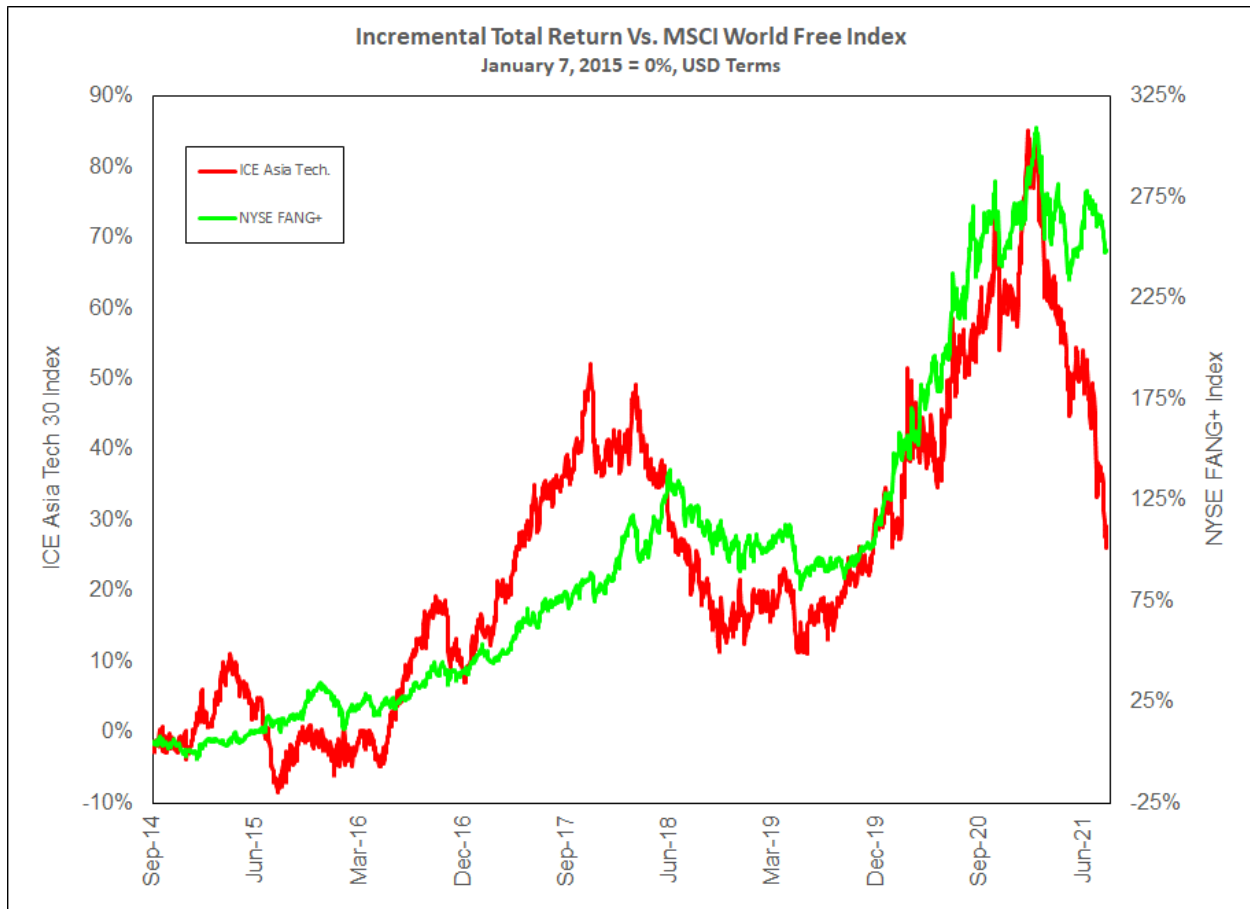
Just as the NYSE FANG+™ index futures contract allows investors and traders simple access to a portfolio of ten technology giants through futures contracts, ICE Asia Tech 30™ index futures allow for simple access to thirty technology firms domiciled in China, Japan, Taiwan and South Korea. A discussion of the two indexes' composition and specifications for their respective futures contracts is included as an Appendix.

If we compare the incremental total returns in USD terms of the ICE Asia Tech 30™, NYSE® FANG+™, NASDAQ 100™ and Hang Seng Technology™ indexes to the MSCI World™ index since the September 2014 initiation of the NYSE® FANG+™ index' reconstructed history, we see just how strong the performance of the NYSE® FANG+™ index has been. As a note, the chart's incremental history starts with the January 2015 starting date of the Hang Seng Technology™ index.



Source: Bloomberg Financial

An initial glance at this picture might suggest the NYSE® FANG+™ and ICE Asia Tech 30™ indexes move on such a different scale they should not be considered in any sort of trading relationship. However, if we strip out the NASDAQ 100™ and Hang Seng Technology™ indexes and plot the NYSE® FANG+™ and ICE Asia Tech 30™ indexes on separate scales, a more intriguing picture emerges.



Source: Bloomberg Financial

Here we see sustained periods of both relatively strong and weak performance by the ICE Asia Tech 30™ index. As discussed above, the nature of technology issues increases their stock-specific risk relative to their market beta risk. For example, much of the variation in the ICE Asia Tech 30 index™ performance has been driven by Tencent Holding® and Alibaba Group® both to the upside in 2016-2017 and then to the downside in 2021. Or, the strong rally in Tesla® combined with a sharp decline in Meituan® widened the relative performance gap of the NYSE® FANG+™ index relative to the ICE Asia Tech 30™ index in 2021.

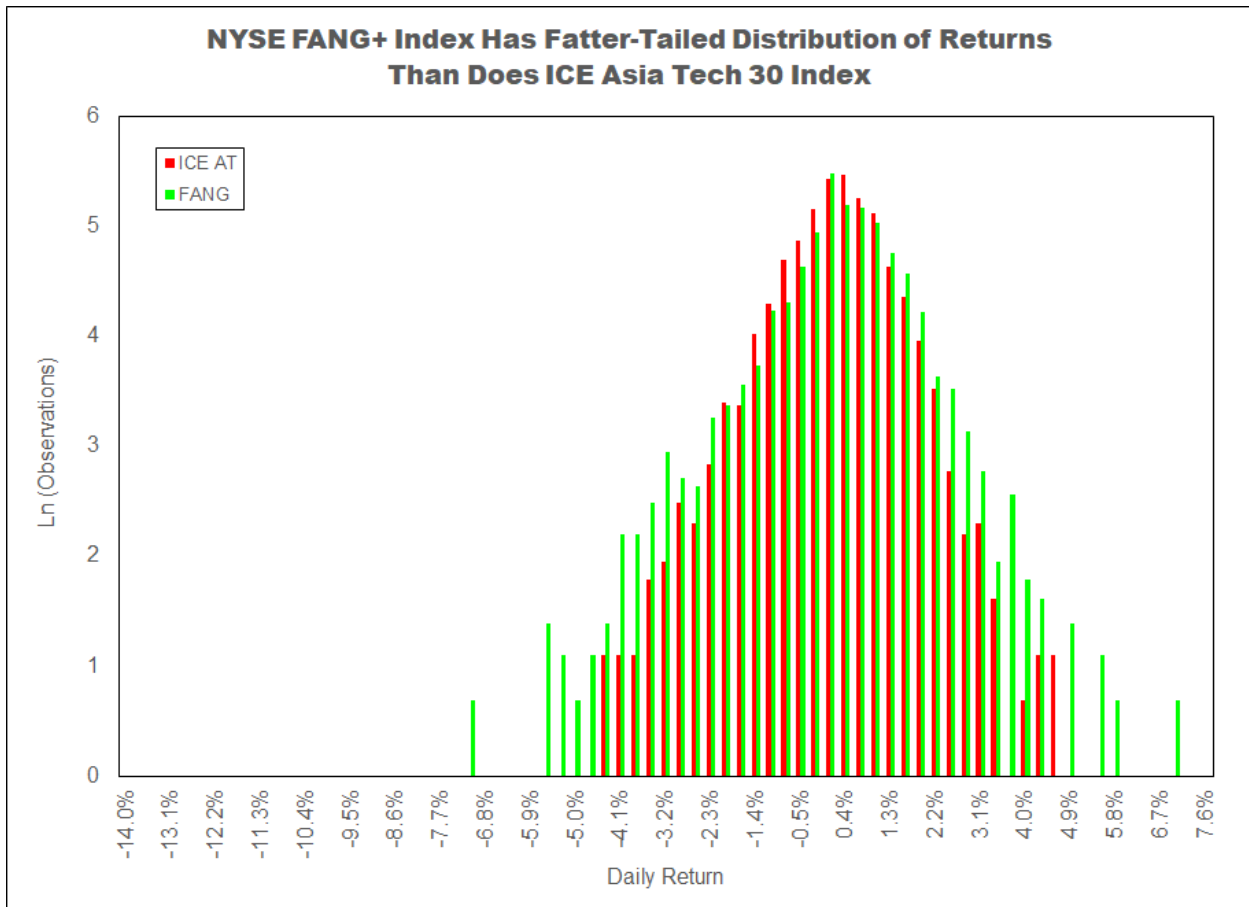
As technology stocks are inherently volatile for reasons discussed above, there is every reason to believe the spreads between technology-based indexes will continue to be driven by the idiosyncratic performance of their components. The growth of newer technology business such as 5G wireless networks, online education, remote office facilitation, online gaming, cloud computing and data centers, artificial intelligence, electric vehicles and renewable energy will create both winners and losers just as impossible to predict today as were the eventual winners and losers of the 1990s dotcom era.

Macroeconomic factors intervene as well. Both markets' incremental performance peaked in mid-February 2021 when rising U.S. inflation raised speculation the Federal Reserve would start to raise short-term interest rates. Equity markets have rewarded fast-growing firms with higher multiples during periods when strong monetary accommodation is expected as it lengthens the effective duration of those equity investments.

A casual glance at the chart above may suggest the ICE Asia Tech 30 index is more volatile than the NYSE® FANG+™ index, but this is not the case when we examine the distribution of returns. Not only does the NYSE® FANG+™ index have a higher standard deviation of returns, 1.64 percent versus 1.21 percent, it has a far more pronounced negative

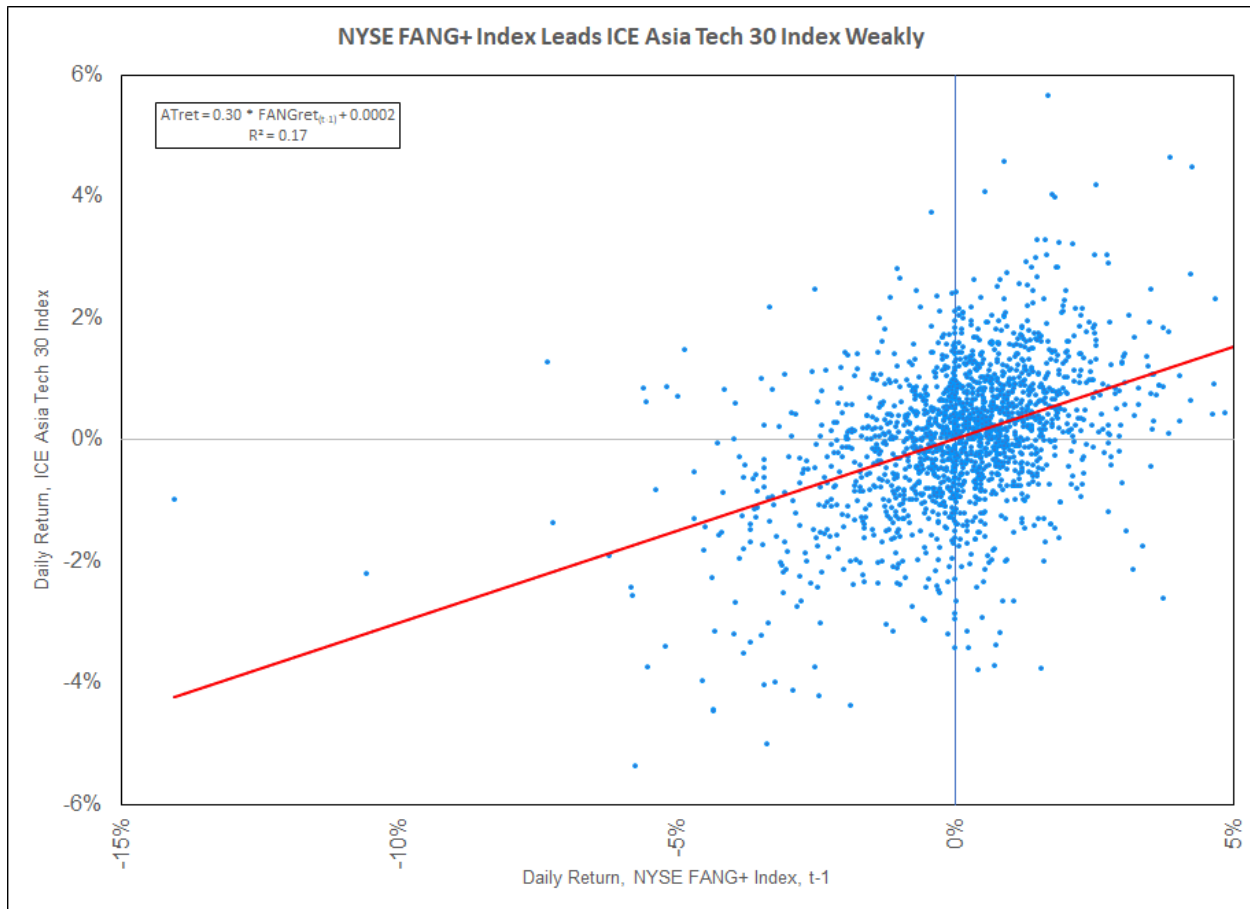
skew of those returns, -0.81 versus -0.25 and much fatter tails along the distribution of those returns with a coefficient of kurtosis at 6.02 versus 2.03.

	ICE Asia Tech 30	NYSE FANG+
Mean	0.05%	0.11%
Std. Dev.	1.21%	1.64%
Skew	(0.25)	(0.81)
Kurtosis	2.03	6.02



Source: ICE

The more volatile nature of the NYSE® FANG+™ index is consistent with investors’ anecdotal sense large moves made during U.S. trading hours reverberate globally far more than do large moves made during Asian trading hours. However, this leading relationship is not particularly strong when expressed on a daily percentage basis. If we map daily returns of the ICE Asia Tech 30™ index against the previous day’s returns, we get the following relationship:



Source: ICE

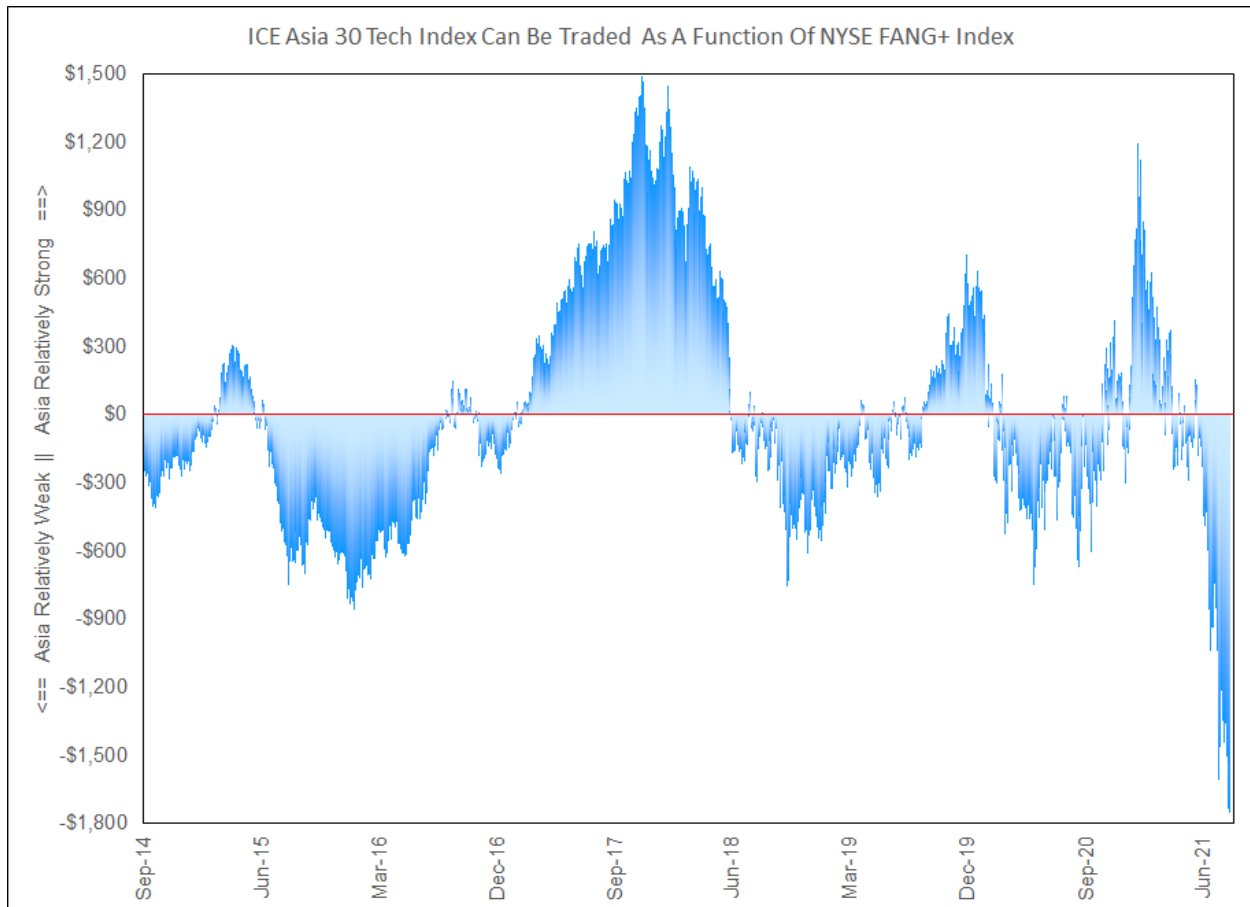
For the sake of completeness, a contemporaneous relationship produces a flatter slope coefficient of 0.17 and a lower r-squared of 0.05, while a reversed relationship of Asian markets leading the U.S. index produces a slope coefficient and an r-squared level of 0.03 and 0.002, respectively.

Now let's construct a simple linear model of trading the ICE Asia Tech 30™ index as a function of the NYSE® FANG+™ index lagged one day. Both contracts will be converted into their USD values for their futures contracts by multiplying them by \$2 and \$5.

We should expect this ordinal, dollar-value relationship to be strong, and it is:

$$AT30 = 0.22 * FANG_{t-1} + 2747.17, r^2 = 0.94$$

Critically for investing and trading purposes there is strong serial correlation in this model's residuals as evidenced by its low Durbin-Watson statistic of 0.02. Restated, this means divergences in the relationship between the ICE Asia Tech 30™ and the NYSE® FANG+™ index are persistent and trending, not fleeting and random. This is quite visible in the map of the model's residuals.



Source: ICE

Two straightforward trading approaches are suggested immediately:

- If a simple technical model of the NYSE® FANG+™ index shows an uptrend/downtrend and the residuals of the linear model above are rising/falling, then take a long/short position in the ICE Asia Tech 30™ index futures. This is a risk-augmentation strategy as it would leave you with two long or short positions simultaneously;
- Conversely, a risk-neutral strategy in such an environment would have you take opposite positions in a 9:2 ratio of ICE Asia Tech 30™ index futures relative to NYSE® FANG+™ index futures

The conclusion is neat, simple and inescapable: Business, indeed all aspects of life, is increasingly technology-based. Simple economics make it so as the productivity of technology as a production factor can be improved in a way the productivity of labor, capital and land cannot be. Second, because of advances in telecommunications the real domicile of technology does not lie in Asia, the United States or any other geographic designation but rather in the human mind. Asia's large population and reservoir of highly educated people give it all of the dynamism the United States has with its entrepreneurial culture and advanced capital markets.

As the world continues to spin in a 24-hour cycle and as we continue to draw lines on maps and create different legal and regulatory environments for securities, it seems quite natural to aggregate technology-related issues into separate but strongly related indexes such as the ICE Asia Tech 30™ index and NYSE® FANG+™ index, even allowing for the inclusion of Alibaba Group® and Baidu® in both indexes. Index futures allow for positions to be emplaced quickly and with great capital efficiency in either direction for purposes of capital allocation, risk management and, yes, speculation.

## Appendix: Specifications Of ICE Asia Tech 30™ and NYSE® FANG+™ Indexes

Per comments made above, the thirty stocks are distributed across the technology, media & communications and consumer discretionary sectors as definitional overlap is unavoidable. As an important aside as we look at comparative performances, two of the NYSE® FANG+™ index' components, Alibaba® and Baidu®, are members of the ICE Asia Tech 30™ index as well. Complete discussions of the ICE Asia Tech 30™ and NYSE FANG+™ indexes' composition and construction methodology are available at <https://www.theice.com/equity-derivatives/ice-asia-tech-30-index> and <https://www.theice.com/fangplus>, respectively.

The table below presents the composition of the ICE Asia Tech 30 index as of its June 2021 reconstitution:

ICE Asia Tech 30 Index			
	Weight	ICE Sector	ICE Country of Risk
Taiwan Semiconductor	13.60%	Technology	Taiwan
Tencent Holdings	11.97%	Media & Communications	China
Alibaba Group	10.26%	Consumer Discretionary	China
Samsung Electronics	8.80%	Technology	South Korea
Meituan	4.99%	Consumer Discretionary	China
Sony Group	4.55%	Consumer Discretionary	Japan
Keyence	4.15%	Technology	Japan
Nintendo	3.17%	Consumer Discretionary	Japan
Tokyo Electron	2.91%	Technology	Japan
JD.com	2.90%	Consumer Discretionary	Hong Kong
SK Hynix	2.70%	Media & Communications	South Korea
Kuaishou Technology	2.56%	Media & Communications	China
Naver	2.47%	Media & Communications	South Korea
Baidu	2.25%	Technology	China
Murata Manufacturing	2.20%	Technology	Japan
Mediatek	2.17%	Technology	Taiwan
Xiaomi	2.12%	Technology	China
Hon Hai Precision Industry	2.08%	Technology	Taiwan
Netease	1.97%	Media & Communications	Hong Kong
Kakao	1.80%	Technology	South Korea
Fujitsu	1.44%	Technology	Japan
Bilibili	1.42%	Media & Communications	China
Samsung SDI	1.38%	Technology	South Korea
Canon	1.30%	Technology	Taiwan
FUJIFILM Holdings	1.01%	Technology	Japan
United Microelectronics	0.92%	Technology	Taiwan
Delta Electronics	0.89%	Technology	Taiwan
Sunny Optical Technology	0.85%	Technology	China
LG Electronics	0.64%	Consumer Discretionary	South Korea
Z Holdings	0.55%	Media & Communications	Japan

The number of constituents is fixed at 30 with a modified float-adjusted market-capitalization weighting scheme. The five largest components, Taiwan Semiconductor®, Tencent Holdings®, Alibaba Group®, Samsung Electronics® and Meituan® account for just under 50 percent of the index' weight giving the index large exposure the China's e-commerce sector. The index is reconstituted after the close of the second Friday on the March/June/September/December cycle.



The Micro Asia Tech 30 index™ futures contracts are based on a \$2 multiplier to the cash index and trade in half-point increments for a \$1 tick. Contracts are listed on the first and second contract months as well as the following two quarters. The last trading day is the business day preceding the last business day of the contract month; trading stops at 4:00 PM Singapore time. The contract is cash-settled to the nearest 0.5 index point.

The NYSE FANG+ index is comprised at present of Facebook®, Apple®, Alphabet®, Amazon.com, Alibaba Group®, Netflix®, NVIDIA®, Baidu®, Tesla® and Twitter®. It is an equal-weighted index reconstituted on the March/June/September/December quarterly expiration cycle. The NYSE® Micro FANG+ index futures contracts are based on a \$5 multiplier to the cash index and trade in index points to two decimal places for a 20 index points = \$1 tick size. The last trading day is the third Friday of the expiration month; trading stops at 9:30 AM Eastern time. Contracts are cash-settled and are listed on the March/June/September/December quarterly cycle.