The Big Read **Chicago Board Options Exchange Inc**

The fearless market ignores perils ahead

The volatility index has become the basis for aggressive products that create their own risks

Robin Wigglesworth

Published APR 18 2017

In 1992, a Bob Dylan-loving finance professor called Robert Whaley uprooted his family from the US and moved to a tiny hamlet in bucolic Burgundy. There he spent six months laying the groundwork for the finance industry's most popular representation of terror.

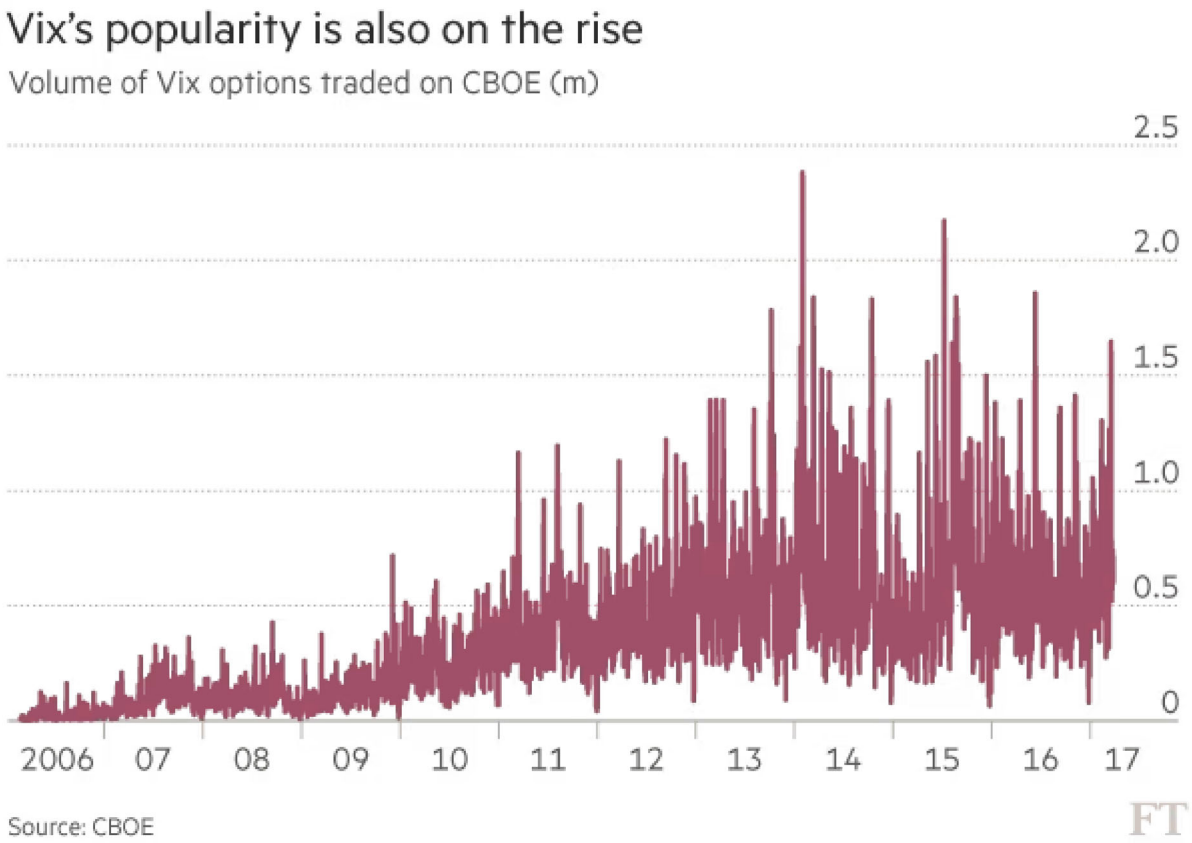
Its formal name is the Chicago Board Options Exchange Volatility Index, or Vix for short. But for thousands of traders, investors and financiers it eventually became known as Wall Street's "fear gauge", a clean numeric representation of how relaxed or horrified financial markets are.

Volatility was once merely a mathematical measure for investors of how sharply markets moved. Today, volatility is a complex multibillion-dollar market in its own right, played by everyone from sophisticated hedge funds to gum-chewing day traders. And Vix has become a rock star index, even inspiring a best-selling thriller about an artificial intelligence-powered hedge fund called Vixal-4 that runs amok.

But Vix is also one of the finance industry's biggest enigmas. This should be a moment of potential peril for markets, with US interest rates rising, heightened geopolitical tension and a populist outsider in the White House. Yet Vix has remained largely tranquil . Despite nudging higher last week, if the current performance is sustained, the gauge's average level this year would be the lowest in its 24-year history.

"The big mystery of the year has been the disconnect between the chaos in Washington and the calmness in markets," says Adam Sender, head of Sender Company and Partners, a hedge fund.

In part, Vix has been becalmed because the US stock market has been remarkably placid. The S&P 500 recently enjoyed its longest run of avoiding big drops of more than 1 per cent in over two decades. But the evaporation of volatility also reflects profound structural changes that have taken place since the financial crisis, such as the primacy of central banks and the big shift into exchange traded funds.



Yet this tranquillity is unnerving some analysts, who fear it has nurtured a panoply of trading strategies that could unravel if volatility returns to normal. Some analysts even fret that Vix, supposedly a helpful canary in the coal mine for investors, could contribute to market turmoil given an unfortunate confluence of circumstances.

"There is one thing that Wall Street does with uncanny frequency — it turns a good and profitable product into something dangerous as its life cycle goes on," said Peter Tchir, an analyst at Brean Capital, in a recent note. "I think selling volatility is becoming more commonplace and that poses a potential danger."

***

Christopher Cole was toiling away deep inside Merrill Lynch's New York office, arranging complicated debt structures for pension funds and insurers, when he fell in love with volatility.

————————————

Volatility and the markets

1. August 1998 Russia defaults on its sovereign debt.

2. March 2000 Dotcom bubble begins to burst

3. January 2006 Market euphoria starts to build

4. August 2007 Nascent credit crunch rattles markets

5. September 2008 Lehman Brothers implodes, triggering financial crisis

6. May 2010 Eurozone crisis begins to rumble

7. August 2011 Worries deepen over debt in eurozone countries

8. August 2015 China lets currency devalue, triggering market correction

————————————

His timing was fortuitous. In 2007 the US housing downturn began rattling markets, and by 2008 a financial crisis had erupted. For Mr Cole, astute bets on volatility paid off handsomely, allowing him in 2009 to quit his job to set up Artemis Capital Management, a volatility-focused hedge fund that says it manages $150m of assets.

“We were literally born out of the crisis,” he says. “It felt very good at a period like that to take chaos and turn it into something positive.”

Mr Cole’s exploits show how volatility has blossomed into a tradable asset. The derivatives he began trading in 2006 had only been around since 2004, and the first ETFs linked to Vix were introduced only in 2009-10. Today, volatility is a vibrant, complex asset class in its own right. “It is a pretty amazing ecosystem,” says Edward Tilly, chairman and chief executive of CBOE.

CBOE’s volatility index reflects the weighted average prices of “options” on the S&P 500 index, the biggest US equity gauge. Options are a type of derivative, which can either give buyers the right but not the obligation to buy an underlying index or individual stock at a certain price (a call), or to sell the asset at the pre-agreed price (a put).

Vix is calculated using the prices of S&P 500 puts and calls that mature in roughly the next 30 days. It is structured so that if investors expect S&P 500 fluctuations to average 1 per cent a day for the next month, the Vix level is about 20 — roughly its long-run average — while 40 implies 2 per cent moves. This year it has averaged a depressed 11.7.

No one can actually trade the "spot" or current level of Vix, as it merely reflects a bundle of underlying derivatives. But CBOE has nurtured a derivatives market based on the index itself. From 2004 investors could trade Vix "futures" — another popular derivative instrument — and from 2006 they could trade Vix options.

***

In practice, a futures contract is one of the oldest contracts in civilisation. It is merely an agreement between two parties to sell an asset at a pre-agreed price and time, whether it is a cow, a bale of hay or a financial instrument. Vix futures allow investors to bet on volatility with contracts that should rocket in value when the stock market tumbles.

Financial engineers have used Vix futures to develop a cornucopia of “exchange traded products” that allow investors to bet on or against the Vix. Their popularity has exploded in recent years. In fact, the VXX ETP was the fifth-most actively traded security in the US stock markets last year, and an even more leveraged cousin, the UVXY, was the 10th-most traded security, according to Credit Suisse.

But this is the development the index’s inventor is unhappy about, given structural flaws that make these products ill-suited for retail investors. Constantly buying new futures is costly, and Vix futures are typically in “contango”, when longer-term contracts are more expensive than near-term ones. In practice this means that Vix ETPs are most of the time slowly bleeding to death.

“The idea is a good one, but the issue I’m concerned about is the packaging of Vix derivatives into retail products. It’s a market integrity issue,” Prof Whaley says. “I worry about the social purpose of it. We’re just giving people something volatile to gamble on.”

Since 2010 about $16bn — mostly from retail investors — has flowed into various ETPs that bet on increases in Vix, according to Deutsche Bank. Only $2bn remains, the balance vapourised by the products’ complex structure. If you had invested $1m in the first one when it launched in 2009 you’d have less than $600 left today, says Pravit Chintawongvanich, a strategist at Macro Risk Advisors.

However, betting on falling volatility has trounced the returns of pretty much everything since the crisis. Hedge funds typically do this by selling longer-term Vix futures on the expectation that the spot price will usually end up being lower, allowing them to pocket the difference. The biggest “short” Vix ETP that mimics this has handed investors gains of almost 900 per cent since the end of 2011. Known by its ticker XIV, it is the world’s 34th most traded equity with a daily volume of $818m, according to Bloomberg, making it more actively traded than the stock of market stalwarts such as Chevron or Pfizer.

A shocked trader at the New York Stock Exchange as stocks slid in October 2008

But why is Vix so calm, and how can betting on tranquillity have been such a money-spinner in the turbulent post-crisis era? The reality is that Vix has not been out of kilter with actual, realised volatility, which has also been remarkably subdued since 2009 — for a series of reasons.

Most analysts attribute this to central banks spraying markets with monetary stimulus whenever turbulence threatens to return, backstopping investors and encouraging them to see every tumble as a buying opportunity.

“There is an entire generation of traders that have only known the ‘buy the dip’ era,” Mr Cole says. “This then becomes a self-reinforcing prophecy that we even embed into markets with automated trading algorithms.”

There have also been the torrential outflows from traditional fund managers into passive investment vehicles like index-trackers and ETFs, which means that the entire US stock market waxes and wanes in unison, subduing individual stock volatility. Indeed, this year’s somnolence has come as ETF inflows have kicked up another notch.

The post-crisis explosion of corporate buybacks has also damped volatility. Companies have repurchased more than $2tn of their own shares in the past five years, providing a vital pillar of support to the broader stock market. Finally, Vix is also subdued by technical factors. Hedge funds and, increasingly, institutional investors keen to juice up returns are consistently betting on the index staying somnolent over the long run. This becomes self-fulfilling, as their selling of Vix futures and options drives down the price of the contracts.

Traders celebrate as the Dow Jones Industrial Average passes the 20,000 mark in January © Reuters

"Vix isn't broken, it's the market that's broken," says Mr Cole. "Vix is like a guy who's getting divorced and losing his job, but is still coming in to work. He's sitting there seemingly calmly, doing his job, but beneath the surface the stress is there."

***

Many analysts are worried that markets are too sanguine about the prospect of renewed turbulence, and the damage that could wreak on complacent investors who have been betting on continued calmness.

Mr Cole compares the temptation of lucrative low-volatility bets with the sirens of Greek mythology, whose irresistible song lured sailors to their doom. “The siren call of risk is at its most powerful when we are at the point of maximum danger,” he says.

“We can probably get a little closer, but we’re a lot closer to that point than before.”

For people betting on tranquillity, the pain can be intense when turmoil erupts. For example, the XIV ETP may have been a money machine over the past five years, but it dived almost 50 per cent in just three torrid trading days in late August 2015. It lost almost 10 per cent last week, when volatility flickered back. Post-crisis bursts of turbulence have typically been shortlived. But if the pacific period ends, some analysts are concerned it could cause wider carnage.

Investors who bet on low volatility would suffer damaging losses and be forced to cover their exposure by shorting the broader market. That would in turn push stocks even lower and volatility higher again, sparking a negative feedback loop. This is beginning to unnerve some big investors, who might suffer collateral damage.

“It’s inevitable, we just don’t know the timing,” says Michael Roberge, the co-chief executive and chief investment officer of MFS, a $450bn investment group that invented the mutual fund nearly a century ago. “There are so many people selling volatility that when it turns, they will be hurt. Volatility is like a spring, the more compressed it becomes, the more energy it has when released.”

Vix alternatives: new gauges aim to price in uncertainty

The tranquillity of Wall Street’s pre-eminent fear gauge has led to a surge in interest in alternative measures of nervousness. One that has gained some currency is the Chicago Board Options Exchange’s “Skew” Index. Like the Vix index, it is based on the prices of options on the S&P 500, but Skew measures the difference between the cost of buying insurance against a market crash and the cost of buying the right to participate in a rally. It is therefore another reasonable approximation for the amount of fear in the financial system. Some banks have also devised their own measures that capture some of the same sentiment. Credit Suisse’s “Fear Barometer” uses equity options, like Vix and Skew, while Bank of America’s Global Financial Stress
Index includes bond yields, investment flows and other measures of risk. One of the more intriguing indicators is being developed by Menachem Brenner and Yehuda Izhakian of New

York University's Stern School and Baruch College respectively. They are working on an "ambiguity index" that captures not just volatility, but uncertainty. "Risk in equity markets means that future returns are realised with known probabilities, while ambiguity refers to situations where the probabilities associated with these realisations are not known or not uniquely assigned," the professors said in a recent paper. Mr Brenner, who did some of the foundational academic work on volatility and first proposed a volatility index in the 1980s, says the difference between measuring fear and uncertainty can be understood by flipping a manipulated coin. "A simple coin flip might be a 50-50 probability," he says. "But what if you know the coin is weighted to have a bias on one side, but you don't know which one? That's

Follow the topics in this article

Investing in funds

Market bubbles

US equities

Hedge funds

Equities