



Chris Cole: The 'BIG ONE' (Vol event) hasn't happened yet

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Erik: Joining me next on the program is [Artemis Capital](#) founder and CIO, [Chris Cole](#).

Chris, thanks so much for joining us on the program. Listeners, I really want to encourage you to listen to Chris's interview from January 2018 on the alchemy of risk because we're going to be assuming your knowledge of the short-vol trade, both implicit and explicit, as was described in great detail in that interview. You'll find the link to play that interview in your Research Roundup email or on our home page next to Chris's picture at [macrovoices.com](#).

Chris, welcome back. When we had you on before, you explained the short-vol trade and where the risks were in both the explicit and implicit short-vol trade. That was before the February event.

So why don't we start with what happened in February? What broke and what didn't break? And, perhaps, if it's applicable, what is still left that might break in the future?

Chris: Certainly. It's a pleasure to be back on the show and I think the timing in February was perfect for the last interview. I'm happy to be back. I'm also interested in clearing up some of the misconceptions about volatility.

Last year I wrote a paper called "[Volatility and the Alchemy of Risk](#)." It talked about \$2 trillion of implicit and explicit short volatility exposure in the market. I used a metaphor to describe it: I said it was sort of like an Ouroboros, which is a Greek word meaning "tail devourer." This is an ancient symbol of a snake consuming its own tail.

And, effectively, we have about \$2 trillion worth of global financial strategies, institutional asset strategies that are either explicitly shorting volatility by shorting options or implicitly shorting volatility through a combination of financial engineering strategies.

And in these types of strategies, volatility is both a source of return and an input for taking risk. So the more volatility goes down, the more risk is put on. The more volatility goes up, the more risk is taken off. And this creates a tremendous self-reflexivity and potential systemic risk.

I think what we saw last February actually just was the weak hand of the table being taken out by the short-vol trade. A lot of people read my paper. They came to me, and they said congratulations on getting it so right because there is this blowup of the short VIX ETP products

that occurred, actually, literally within a couple of days after the interview.

And I said, you know what, that's not what I was referring to. Those short-vol products, those VIX ETPs, the weak hands of the table, that was just the first phase of what is going to be a multi-year cycle and rebalance in the vol regime as many of these institutional short volatility strategies come unwound.

Let me ask you a question. Let's just take a little pop quiz. When do you think volatility rose more? In February of last year? Or in January?

Erik: Sounds like a trick question to me, but I'll go with the dummy answer because everybody else would have said February.

Chris: Yeah, I think 99% of the people would say February volatility rose more. Actually, if you look at the absolute move in implied vol, fixed strike vols of the S&P 500, vol actually moved more in January than it moved in February of last year.

A lot of that was actually right-tail movement in volatility. I think that is quite shocking to most people. The bond spike in February was widely misunderstood. The media talked about this as a volatility event.

But this was not a true vol event. It was a liquidity crisis as a result of a rapid repricing and tail risk. You had a lot of very weak hands at the table that were shorting volatility in the form of these VIX ETPs on the expectation of continued stability.

And it was, put quite simply, there was a point where many of these strategies had never been tested in a true volatile environment. And when we had a revaluation, volatility higher. These weak hands at the table were taken out.

And what we saw, actually, was not a fundamental repricing in vol driven by the credit cycle or fundamentals as much as it was the weakest hands at the table scrambling to buy tail risk insurance. Not to hedge their portfolios. To hedge their careers. They were forced to buy tail risk insurance or face insolvency.

This is analogous to some of the subprime lenders that blew out in the late 2006–2007, the dumb, dumb, dumb money that was over-levered and was out of control and got taken out early.

Of course that dumb money gets taken out first. There is an initial panic. And then we begin to see a fundamental regime shift in volatility that comes later, after that dumb money is taken out. This is what we've begun to see in the fourth quarter of 2018 heading into this year.

And my point here is that, in February, traders were not buying options because they thought volatility would increase. They were buying options because they were facing insolvency. And

that bid on tail risk insurance is what caused the vol in the VIX to shoot up so dramatically.

And it was a blowout of this teeny portion of the global short vol trade. I talk about this Ouroborus, \$2 trillion worth of short-vol exposure. These VIX ETPs were only about \$5 billion – \$5 billion of \$2 trillion. We still have the much larger \$2 trillion unwind in the global short-vol trade that has just begun to start.

And this is a fundamental regime shift in volatility that, if history is any guide, will last anywhere between one to three years and presents tremendous opportunity for different strategies that profit from change and coincides with not only quantitative tightening but also the evolution of the debt and leverage cycle.

Erik: So if this unwind that has just begun has essentially most of \$2 trillion left to unwind, does it happen in extraordinary events like we saw last February where all of a sudden there is a spike and things blow up? Or is it a slow gradual churn where we're seeing unwinding of certain trades? And, in either case, what are the effects of it? Where do we look to see that show up in markets?

Chris: Well, the answer could be both, actually. In my paper last year I talked about 1987 as an interesting allegory for the potential unwind of different systematic strategies.

Indeed, Black Monday 1987, most people think about the one day where the stock market dropped 20%. They don't think about the fact that in early 1987 inflation was actually lower than where it is today and how rates shot up 300 basis points.

And that caused liquidity seize-up that initially started to show through in interbank lending and higher credit spread, then spread to a 20% drawdown in equity markets, all before Black Monday occurred.

So I like to sort of point out this idea that these short-vol strategies and these institutional strategies – many institutions seeking to use financial engineering to apply leverage to get extra yield because they're not getting it on their fixed income portfolio – these strategies are a little like a barrel of nitroglycerine sitting in the office.

I could go to your offices – I don't know where you guys are located – but I could sit there and say, oh, what's in that barrel? These are beautiful office, but what's in that barrel?

And you're like, oh, it's it a barrel of nitroglycerine.

I'm like, oh my god, what's it doing there? That could blow up three city blocks!

And you'd be like, oh, it's no big deal. The bank pays me to keep it here.

And I'm like, that's terrifying. All it takes is a small fire for that thing to explode.

And you'd be like, oh, it's no big deal. We've been adding to the stockpile of nitroglycerine for five years. It's never gone off. What's the big deal?

It takes a fire. It takes a fire. And when that fire starts, something else starts that fire. And when that fire spreads, it then spreads to the barrel of nitroglycerine. And then the nitroglycerine explodes, blowing up three city blocks.

So in this analogy, if we go back to 1987, naturally the fire starts in credits and rates. In 1987 inflation is lower than where it is today. Inflation shoots up 350 basis points. Rates shoot up an equal amount. And all of a sudden you have a liquidity crisis. That causes markets to sell off, which then causes the self-reflexive strategy of portfolio insurance to unwind all at once.

The fire is very slow. The fire takes place over a period of one to three months before it reaches the barrel of nitroglycerine.

We saw the same thing in 2007 to 2008. The weak players got taken out of the market in late '06-'07. By the summer of 2008, we had people going around saying, oh, the global economy is fine. Financial stocks are cheap. We had various sovereign wealth funds buying into different financial companies and saying, oh, the worst is over, subprime is contained, no big deal.

And then the spark hit the barrel of nitroglycerine called Lehman Brothers and the whole economy went into a tailspin.

Today the question is, what is going to start the fire? And we have seen the fire start this quarter. The beginning of the fire has already started.

What we've seen is quantitative tightening by central banks. There has been a withdrawal of – everyone talks about rate increases. And there's so much attention. And nobody pays attention to the fact that global central bank balance sheets are gradually shrinking.

By the Atlanta Fed funds shadow fed funds model, approximately every hundred billion dollars' worth of withdrawal of central bank balance sheet equals about 10 basis points. We've already had \$500 billion of quantitative tightening in the reduction of central bank balance sheets. We're going to have another \$600 billion of reduction in balance sheets this year.

So, regardless of whether the Fed raises rates or not, there is a rate increase by the reduction of liquidity. This is happening globally.

We're seeing this with the United States. And Europe and the Bank of Japan are just getting started. This reduction is causing tighter liquidity conditions in credit. So, as we see as the global central bank balance sheets begin to decline, we see credit spreads begin to increase.

Lo and behold, what do we see but high-yield OAS spreads. The borrowing cost on high-yield

bonds is now at levels that we last saw in 2007 or in 1998 – heading into both of those recessions.

If that trend continues, it will be more and more difficult for lower-credit-quality companies to be able to access credit markets.

This is coming at a point in time where there have never been a greater amount of companies that are at the lowest leg of their investment grade. 49% of US corporates are at the lowest tier of the investment credit-rating spectrum. These are companies that may face significant pressure and downgrades. If they get downgraded, they will crowd out some of the high-yield issuers.

On top of that, we have over a trillion dollars' worth of high-yield loans that need to be refinanced over the next four years. The level of high-yield issuances going to be required doubles next year and doubles again and then doubles again, according to Bank of America estimates.

So we have this perfect storm of quantitative tightening, tremendous amount of supply that's going to be required, in addition to really poor credit quality among corporate America. And, lo and behold, what do we see? Right now, the amount of corporate debt to GDP is at the highest level in history – 47% corporate debt to GDP.

Now that alone doesn't necessitate a crisis. But when you have that level of leverage coupled with rising interest rates, with rising credit spreads, with quantitative tightening globally, you've got a problem.

This all coincides with the volatility regime, because volatility is the brother of credit. If you want to look to see what happens to equity vol, when do we see rising periods of equity volatility? It coincides with changes in the credit cycle. It just makes natural sense.

So what we're going to see coming forward is, should this trajectory continue – and it is always possible they go back to QE 4-5-6-7-8-9. And if they do that, risk will be transmuted in other ways – we're going to see a populist uprising. I'm quite, quite afraid if they do that, but we'll see other risks.

But should this continue, the piper has to be paid at some point. And there will be a natural transmutation of that risk through a higher-vol regime. And it's not going to be a one-day event. It's not going to be, oh, yeah, hey, vol shot up to 40 and now it's back down.

No, what we're looking at is something very, very different. It's going to be a new golden regime for strategies in hedge funds that profit from change. These are vol traders, global macro traders, CTAs – all the strategies people hate right now are going to be well-suited to this regime.

I think there is a fundamental misunderstanding about what volatility investing is and what volatility is. Most people think it's about waiting for this singular crash. That's what people are expecting and wanting.

But it's better to think about an investment in volatility as profiting from a period of change. And that change can happen on the left tail and the right tail. These regime shifts in vol markets and credit markets, they don't occur over a weekend or a day or a week. They take months and years.

And if history is any guide, this is the type of regime we saw leading in the late '90s into 2000. It's the type of regime change we saw in the period of 2006 leading into 2008–2009. It's the type of regime shift we saw leading into the Great Depression.

These are regimes. They are phases through time. And we are in the first inning of this. We are at the very beginning of this.

So what we saw in February of last year, what we saw in the fourth quarter of last year, is just an appetizer for a much bigger main course in vol and deleveraging.

Erik: Chris, that brings to mind a narrative that I feel has brought a tremendous amount of complacency to institutional finance. You'll hear this from so many people.

It's like, look, I get it, I get the logic for why quantitative tightening could be really disastrous for markets. But, you know what, I'm not going to worry about it because if things start to go south in a big way, the Fed's going to come to the rescue. They always do. Politically they need to. I know they're going to bail us out.

What could happen with the unwind of this short vol complex that might make it impossible for the Fed to actually save the day after all?

Chris: I think that's easy, actually. If you look back in 1987, inflation is the obvious answer to that. In '87 one of the things that drove the Black Monday crash was that you actually had an increase in CPI. It was a huge run-up in inflation, so they weren't able to cut. That could be one reason.

So you could have a crisis where there is an increase in inflation prior to the crisis, an increase in rates, and that becomes the source of the crisis. And then they're not able to cut into that.

But there is this concept all the time about the central bank "put." I don't need to buy protection, I don't need to have exposure (anything other than index funds) because of the central bank "put" option.

And, actually, what's really interesting is that the decline in markets this fourth quarter, the rise in volatility, was one of the lowest increases in vol – given the decline in markets – that we've

ever seen in history.

Actually, the steepness of fixed strike vols, the reaction to volatility, was incredibly numb to the move in markets. And one of the theoretical reasons for that is that investors just don't feel the need to hedge, because they say, oh, whatever, why would I bid up portfolio insurance? Why would I bid up the cost of fear and buy into volatility when I know that the Fed just may not increase interest rates or even cut?

But, the media doesn't make a big deal about it, but there was rioting in Paris. There's absolutely rioting in Paris.

So this belief system that they can always cut interest rates, that they can always do another round of QE – well, at a certain point if you have a stock portfolio it's going to double. If you have a bond portfolio it's going to do okay. And if you have real estate it's going to double and triple.

But when you're already seeing this rise in populism, when you're already seeing the president of the United States tweet that the Fed Chief should be fired, I think it really lends into question the efficacy socially of being able to do QE 4-5-6-7-8-9. Will our institutions be able to handle –

Because you can't destroy risk. You can only redistribute risk through time and form, and transmute it through form. So if they want to remove the market price risk, they can do that. But it's going to come at the cost of the risk of rising populism. I think that's something that's really interesting.

The rise in Paris over a gas tax, this was in downtown Paris. This isn't the suburbs. This is where you take your wife and your kids. If that's not a wakeup call to where this income inequality problem is flowing to, then I don't know what is.

So, certainly they can do QE 4-5-6-7-8-9, whatever. My home price is going to double and triple. And all the hedge fund manager and bankers of the world will be fine. But there are going to be riots on every street if they continue that framework down the road.

I think our leaders – certainly Powell is someone who has spoken about the problems of moral hazard and I think that's something to keep in mind. It does not destroy risk. It transmutes the risk from asset prices into social risk.

And, look, let's just sit back and think about this logically too. Right now, trading volume in the S&P 500 is back to where it was in the late '90s. Wait a minute, how is that possible? How is it possible that we had this massive bull market and the trading volume is at lows of over a decade?

Well, it's easy. There's not as many shares out there. Why aren't there that many shares out there? Well, literally, the stock market is self-cannibalizing.

All of these companies, the same companies that are leveraging themselves to the tilt – it's why 49% of the companies are now one notch above junk and why there's \$9 trillion worth of corporate debt out there – it's because what we've done is we've had a system where companies using ultra-low interest rates to issue debt and buy back their shares.

And, by my estimates, approximately 40% of the price appreciation has come from share buybacks. Just last year there was a trillion dollars worth of share buybacks.

So these low interest rates and this money printing, it's not actually creating fundamental growth. This is a financial accounting illusion that is being used to create the illusion of earnings-per-share growth by reducing the number of shares.

Can we do that for another decade? Is that going to solve all the problems that we have? Is that a viable solution, to just engineer that type of growth *ad nauseam*?

Some people would say yes. And maybe they're right. But I think we're going to see other forms of risk emerge that could be far worse than a 20% or 30% decline in the stock market.

Erik: Let's talk about the risk parity trade, which is a really big component of the implied short-vol pyramid that you showed us in the January interview last year.

It seems to me that the whole theory here is people feel that there is this immutable inverse correlation between stock and bond prices. And that gives them the courage, if you will, to lever up their bond holdings in order to match the volatility in their stock holdings.

What would an unwind look like?

And, particularly, I think about that concept of reflexivity. If you've got stocks and bonds both selling off at the same time, it seems to me there is a reflexive self-reinforcing vicious cycle where what happens is they're both selling off. That means the correlation is gone. That causes more people to freak out and sell both. And that causes the problem to exacerbate more and more.

Am I right to be concerned that that's one of the ways this could blow up? And is that a realistic scenario for how we might see a major meltdown in both the stock market and the bond market at the same time?

Chris: It's completely a realistic scenario. If we go back to the VIX ETP meltdown, the reflexivity in that, Artemis wrote about that in 2012. We theorized that that was possible in 2012.

There was a paper I released in 2015 that came from client writings that I had done previously that talked about the performance of the potential performance of risk parity over 120 years. It looked at the stock bond correlation going over 120 years. Now, this is something people talk

about now, but I think if you go back it's not something people were really talking about much five or six years ago – that Artemis has highlighted.

If you go to your average financial advisor, people say what should I do with my money? And they'll say, oh, put it in a 60/40 stock-bond split.

You go to risk parity, of course. And risk parity is a little more expensive of a financial advisor. And they'll say, oh, well, what you've got to do is you're going to lever your bonds and you're going to use that to offset the exposure to equity.

And so we have this seemingly unchallenged, immutable law that is taught in every financial engineering program or MBA program that stocks and bonds have been anti-correlated with one another – when stocks go down, bonds go up, and vice versa.

Certainly, that has been true over my lifetime as we've seen interest rates decline from – the US Treasury rate declining from the mid-teens all the way down to 2% and lower. But if we look at 120 years, what has that stock-bond relationship done?

In our paper in 2015 we show this, and there has been a graph that has been replicated many, many times, stocks and bonds actually spent more time correlated with one another than they've spend anti-correlated. Stocks and bonds are actually correlated with one another about 30% of the time.

Now, correlated doesn't always mean that they both go down together. Correlated can mean that they both go up together.

But if we look at periods where they go down together at the same time, that has occurred about 2% of the time over the last 120 years. And these periods are actually – I'm not talking about a month, I'm talking about one to three years, where stocks and bonds decline at the same time. This has occurred in the early 1900s. It occurred for a period of time in the 1950s. It occurred in the late 1970s.

So if you look at where current pension systems are funded at, there's significant funding gaps, very scary funding gaps in many of these pension systems – in some of those high-tax states as well, you know states with the highest tax rates.

And you look, and many of these systems have heavy exposure to the expectation of stock-bond anti-correlation.

What is going to be worse? The equity market dropping 40%? Or a situation where stocks and bonds are down 20% at the same time?

This could be disastrous for the pension complex. It could create a dangerous cycle where you have pension funding gaps and then higher and higher taxes and then people leaving and

businesses leaving those types of states.

It is a death spiral.

In addition to that, it could produce significant volatility that causes a massive unwind. Risk parity is a strategy that relies on vol exposure to size. And it could trigger many other types of financial engineering strategies that also rely on volatility as input to increase and decrease their exposure.

So I think that this is one of those things – you know, people sit back and they say what are the fallacies of finance? And not too long ago we sat back and said, oh, well, why in the world did we think that real estate couldn't decline all across the United States at the same time? How stupid were we? Especially when there is historical evidence of that. There was.

Well, I think, maybe in 10–20 years, we could look back and say how did we design a system that was levered to the expectation of this anti-correlation between these two asset classes when there is plenty of evidence – *plenty* of evidence – that shows across history that there are many times where both stocks and bonds have declined at the same time together? Particularly after long bull markets in bonds that have resulted in near zero interest rates?

Erik: Let me just interject and ask you to explain – am I correct in my understanding of this? It seems to me like you don't need years of this. You need about one solid quarter of stocks and bonds declining markedly – double-digit decline, say, over the course of one quarter – at which point institutions are forced to say our primary investment strategy doesn't work.

On its face, the assumptions it's based on are broken. We have to abandon it. We don't have any choice. And at that point it seems to me you have a forced unwind of a trade that's the biggest thing in finance for the last 20 years. That can't be a pretty picture.

Chris: I will say one thing about a lot of risk parity funds – and there's a lot of different ways that you can structure risk parity – but of all of the vol ecosystem, they are among the slowest to rebalance.

If you look at many of these self-reflexive Ouroboros-style vol strategies, the ones that are fastest to rebalance are the guys – like, the explicit short volatility players are some of the fastest to rebalance. The vol rebalancing funds, the strategies that actually focus on volatility rebalance of equity exposure. CTAs rebalance relatively quickly.

The risk parity guys are actually some of the slowest to rebalance.

That aside, it could take a month. But let me tell you, if you look across history, this type of stuff can happen for two to three years. So it's not just a taper tantrum 2013 scenario where a couple of risk parity funds have a bad month. I'm talking about two to three years of this type of middling performance or disastrous performance that could cause this kind of continuous

unwind.

You can imagine types of scenarios, but that scenario that I'm describing, the two to three year period of losses in both stocks and bonds, that is not a theoretical. I am not describing a theoretical scenario. This has happened. It's happened many times across history. It will happen again.

So this is not a theoretical – this is not me sitting around and imagining some disaster scenario. I am just simply explaining something to you, something that has occurred historically. Particularly coming off a period where rates are this low.

So if you're an individual investor or you're an institutional investor and you are not thinking about that, you're just not doing your job.

Here is the other element of it too: There are different types of strategies out there that profit from change and turbulence. And these are the true diversifiers. These are the true diversifiers.

Things like long volatility exposure. Things like certain types of CTAs. Global macro managers. Managers that profit from change are your diversifiers in this disastrous scenario.

Naturally, Artemis is part of that group. But it's very unpopular right now. That type of focus is very unpopular right now as everyone wants to move to indexation, and everyone believes in risk premia and these financial engineering strategies coming off of the regime where you're looking to leverage yield instead of looking to provide opportunity from change.

That change can happen on either tail. It can happen on either tail.

This is another hypothetical. What's another scenario? Let's just imagine a scenario where stocks and bonds do nothing for 10 years if we're going to talk about disaster scenarios, a high-volatility environment where stocks and bonds whipsaw back and forth and do nothing for 10 years.

Boy, I mean not everything has to be this apocalypse left-tail environment. What happens if a decade from now we've experienced high volatility, high whipsaw, and completely low returns out of every asset class? And that 8% pension return assumption that all of these institutions have, you're not getting anywhere close to that?

I think we are entering into – at a point where it's least popular, I think we might be entering into a golden era for active management and strategies that can benefit from these types of high-vol regime-switching worlds.

Erik: I couldn't agree with you more on that.

But I want to come to a subject that I know is very much central to the way that you do business

at Artemis. On one hand, it certainly is true. We can talk about all kinds of exceptional tail-risk events that are going to happen someday. The thing is, in the meantime, you guys have to make returns for your clients every month, not just when the world is coming to an end.

It's counterintuitive to me because, obviously, the reason that it's been so intoxicating for so many people to get sucked into this short-vol trade is because there is so much carry on the short side of the VIX term structure.

Chris: There was. There used to be.

Erik: My point is you can't just be long VIX futures and roll them every month and make money that way because there is money to be made in long vol. It's got to be more sophisticated than that.

So give us a sense of what it takes to manage a long-vol strategy that has to be profitable – not just as a hedge when the world blows up, but needs to make money during the normal grind of business and maybe has an exceptional payback if the world starts to blow up.

How do you structure a portfolio to do that around the vol complex?

Chris: The first thing to understand is that volatility is not just the left tail. It's not just the world ending. One of the highest periods of volatility in history was during the Weimar Republic in Germany when they went into their hyperinflation. Vol went up to 2000%, all on the right tail. So you can have periods where there is a massive amount of volatility with higher asset prices.

A great example of that in recent history was during the Nasdaq bubble in the late 2000s. Volatility was actually averaging higher than where it is today and the market was going up and up and up. You had a 100% increase in the stock market during a period of plus-20% or more volatility. That's pretty amazing.

You can have right tail and left tail vol. You just need movement. You need change. Vol is the profiting from change.

It's difficult to explain our entire suite of what we do, but I can give some glimpses of the philosophy behind it. One aspect is you can never predict what spark will cause a forest fire but you can predict the underlying conditions that lead to a higher probability of a forest fire.

An example of that is that if you're looking to gauge whether or not a forest fire is going to start in California (and the forest service does do this), you look at things like buildup of dry chaparral, high wind conditions, dry weather conditions, lots of lightning strikes. These things, when put together incrementally, increase the probability of a fire breaking out.

On the same vein, we can scan thousands of cross-asset global macro conditions and use those to probabilistically build an expectation as to whether or not right- or left-tail volatility will be

realized in any given asset class. That produces an ability for us to dynamically size that exposure when the probability of a volatility wildfire is greatest. That's one of the most effective ways that we can do it.

Another thing to do is to use vol arb techniques. There's situations where you are paid to own volatility – usually you're just buying into a vol spike when term structures are inverted – is an example of that type of opportunity where you're actually paid to own that convexity exposure.

There's other situations where – I think in one of my papers I talked about this – the George Lucas trade where, when Lucas was making a space opera, which we now know as Star Wars, the studio came to him and he was given about a million dollar salary. And he said, well, you know, I don't want a million dollars. Give me \$150 thousand, but I want to own the merchandising and sequel rights to my new property.

Of course, we all know how that turned out. That \$850 thousand option that Lucas bought by giving up his carry turned into about \$46 billion. Not a bad trade. George Lucas was a very smart options trader.

In some aspects, when you have an opportunity to own some linear carry, you can recycle that carry into very powerful convexity exposure on either tail. And that convexity exposure, it usually takes a big move for that convexity exposure to pay out. But that's an example of when you can carry volatility in an efficient way.

So it's a combination of these types of strategies that enables you to own the optionality on change without the significant negative bleed.

Can you do this yourself? Boy, it's tough. I mean, I've got a whole team of PhD data scientists and experts – we even have an Olympic swimmer on staff – it takes an entire team scanning a lot of data and working very, very hard on this one specific task.

So, yeah, you know what? Will you lose money buying VIX futures? Yeah, of course. That's not a very smart way to do it. That's why it takes a lot of hard work and a lot of experts spending a lot of time and energy and effort and upfront money to be able to find smart ways to carry long-vol exposure.

Erik: Unfortunately, Artemis's product is a hedge fund which is not available to our retail audience. But for our very large institutional and accredited investor audience who might be interested in investing in letting you guys do this work, how do they find out more and contact you in order to get a pitch meeting set up to learn about your fund?

Chris: We are a private partnership in that sense. And most of our investors are, obviously, either accredited; most of our investors are institutional. But if someone does meet that qualification, certainly there is information on our [website](#) to that effect.

Erik: Okay, fantastic. Well, Chris, I can't thank you enough for another fantastic interview. I hope that last year was not an indication that we should expect five days from now that the world will come to an end because we had you on the program again.

But we'll see what happens in the vol complex. And we look forward to having you on the program again soon.

Patrick Ceresna and I will be back as MacroVoices continues right here at macrovoices.com.