



## Chris Cole: Volatility and the Alchemy of Risk January 25, 2018

**Erik:** Joining me next on the program is [Artemis Capital](#) founder, Chris Cole. Chris is an expert on volatility in equity markets. We're going to focus the interview primarily on that subject.

Chris has written an excellent article called "Volatility and the Alchemy of Risk," which is available in the public domain. But, for your convenience, we've also linked it in your Research Roundup email.

Also linked in your Research Roundup email is a slide presentation (which is not public domain), and Artemis has asked us to remind you to please observe their request on the first page that this is intended only for MacroVoices listeners. Please don't post it on the internet, forward it, or otherwise redistribute it.

Chris, in the beginning of the presentation you start with this ouroboros, I believe it's called, which is the symbol of the snake eating itself. Tell us why you start the presentation with that particular graphic and how it relates to the market.

**Chris:** The ouroboros is a Greek word meaning "tail devour," and this is one of the oldest symbols in civilization. It essentially shows a snake consuming its own body in perfect symmetry. This is actually based on a real phenomenon. In nature, when a snake becomes overheated and is unable to regulate its body temperature, it will have a spike in metabolism leading to a state of mania.

And in this state of mania, the snake will look at its own tail and see it as prey. And the snake will begin to self-cannibalize itself until it dies. To me, the ouroboros as a symbol is a metaphor for the financial alchemy driving this modern bull market.

Volatility across asset classes is at multi-generational lows. But there is now a dangerous feedback loop that exists between ultra-low interest rates, data expansion, central bank stimulus, and asset volatility. And then financial engineering that's allocating risk based on that volatility.

This is leading into a self-reflexive loop where lower volatility feeds into lower vol. But, in the event that we have the wrong type of shock to the system, I believe this can reverse violently where higher volatility then reinforces higher vol.

This is a much bigger risk in today's market environment, and it's one that is not being correctly discounted.

**Erik:** On Page 3, it looks like you're essentially using the snake to describe a vicious cycle of factors that feed one another. Give us the quick run-through of what that cycle is and how it works, before we move on to some of your more specific slides.

**Chris:** I think if we look at the global short volatility trades – and I take a very wide description of what I call short vol – but this now represents an estimated \$2 trillion in financial engineering strategies that are exerting influence and are simultaneously influenced by stock market volatility.

And this is just an equity vol. This phenomenon exists in other forms of volatility. I focus on equity volatility.

But it really begins with central bank stimulus. You have central banks that have created this preemptive strike on risk. There is this view that they will always be there to support markets. They've lowered interest rates to the lowest levels in human civilization (with data going back to the 1200s). In some cases, even negative rates. There's almost \$10 trillion of negative rates out there.

This has led to a dynamic where there's a glut of savings and it's very difficult to get value. And corporations are finding that it's not very efficient to reinvest in human capital, or CAPEX. So instead of doing that they are literally eating themselves. They are buying back their shares.

Leveraging – using debt to leverage, and then using that debt cash to buy back their shares – this has resulted in the price-insensitive buyer that's always there to buy back the market. Which has destroyed realized volatility.

This has led to the outperformance of short volatility trades. It's led to the outperformance of passive funds and indexation. And it's led to the outperformance of various strategies that use financial engineering in some way to bet on market stability, introducing kind of a short Gamma effect into the market.

These could be strategies ranging from everything from risk parity to vol-rebalancing funds.

This is all great as long as volatility is low or dropping, as long as markets are stable. But, in the event that we have a reversal in this, there's two trillion dollars of equity exposure that self-reflexive-driving lower vol can reverse in a quite violent way.

And I think this graphic – the concept and the execution were done by Brenda Wyatt, but the concept that I came up with here, I think shows this in a visual way.

**Erik:** Now, corporate buybacks particularly interested me when I read your paper, because I'm very familiar with the idea that corporate buybacks are fuelling this stock market rally. But there were a couple of points that you made there that I thought were very interesting.

One is that equity investors just have it programmed into their minds that if you've got a trend of improving earnings per share, if EPS is on a growth trend, that can only mean that a company is making money and its profits are improving over time.

And you point out that that's not really true. Because when companies are buying back their own shares it, effectively, has this artificial effect of increasing earnings per share because the denominator is being reduced. There's not as many shares.

But I think most people don't register that. They don't realize that when earnings per share is growing it really doesn't necessarily mean that the company is profitable.

In addition, though, you're describing that as a type of short-vol trade. So how should we be thinking about short-vol? We've done a lot of interviews on the program about the short-vol trade. But, frankly, we're only talking – if I move on to Slide 5 here in your presentation – about what you're calling the explicitly short-vol trade. The shorting of the VIX and so forth.

You're describing that that's only a small piece of a much larger trade, or a much larger trend, that involves short volatility. So give us the picture of what is the overall extent of this short-vol trade. And what does this pyramid show us on Page 5?

**Chris:** The short-vol trade – if you look at short volatility and you think about what volatility really is – it's a bet on stability. And when you're betting on stability, that's a myriad of different bets.

Part of that is the expectation that markets remain low volatility or low realized volatility. Part of that is short Gamma – so there is this implicit short Gamma exposure.

Part of that is a bet that correlations remain stable. Or that different market relationships remain anti-correlated with one another. Or that implied correlations are dropping. Or realized correlations are dropping.

And the other aspect of the short-volatility bet is that interest rates remain low or go lower.

So if we look at each of these different factors, these are the risk exposures that you will have when you own a portfolio of short options. And, if you own a portfolio of short options you are short Vega, you're short Gamma, you're short correlation, you're short interest rates.

What we've seen now with this short-vol trade, explicitly and implicitly, is that various financial engineering strategies out there that have become dominant in the marketplace – we're talking about the largest hedge funds in the world employ these strategies – that are just replicating the exposures of a short-options portfolio.

And of course the VIX trade gets a lot of attention, but it's the smallest portion of the short-vol

trade. This is what we call explicitly shorting volatility. This is where you're literally going out and you're shorting an option. Or you're shorting a volatility future.

But in the VIX space, that's only about \$5 billion worth of short exposure. You have about \$8 billion of vol-selling funds, according to Bloomberg. And then about \$45 billion (estimated) in pension over-writing strategies, these short-port or short-call strategies the pensions are doing.

So, in total, there's about \$60 billion of explicit short volatility. Which is big. But that's not the most concerning aspect.

The bigger aspect is this \$1.4 trillion in implicit short volatility strategies. These are replicating the exposures of a portfolio of short options, even though they may not be directly selling derivatives or directly selling optionality.

For example, we have about \$600 billion worth of risk parities out there. Equity exposure to risk parity. Risk parity is a strategy that's short Gamma and short correlations. We have about \$400 billion of vol-control funds out there. That's a short Gamma strategy. About \$250 billion of risk-premium strategies. And then there's the equity exposure of CTAs.

So, these are strategies that have elements of short-volatility trade embedded in their equity exposure.

And then at the bottom of the short-volatility trade is the \$3.8 trillion worth of share buybacks that have occurred since 2009. One might look at share buybacks – and we can talk about specifics of the buyback phenomenon. You say, wait a minute, that is not a financial engineering strategy. That's not a short-volatility strategy.

But let's think about what share buybacks do. If you're a corporate CEO, you don't have the ability to generate growth. You can't generate sales. And you want to get your bonus. So if you can't generate earnings, if you can't help your top of the line, what you can do is reduce the number of shares. And this will artificially increase the EPS so you can hit your bonus target.

You go out and you issue debt and you buy back your shares. You're leveraging the company up – which means that you're exposed to interest rates, you're exposed to market stability. And then you're buying back your shares, resulting in a price-insensitive buyer that is always underneath the market, resulting in this price-insensitive buyer always buying on market dips.

So, the result of this is that you're artificially reducing realized volatility. The strategy is always to buy on dips. That is part of the replication strategy of the short-variance swap. Literally it's part of the replication of shorting vol.

When you add all of this exposure together, we have this self-reflexive short straddle of financially-engineered strategies in the market. And this really comes out to about \$2 trillion worth of implicit and explicit short-volatility strategies. And then you can tack on the share

buybacks. To some effect that is resulting in this.

Leading into 1987. Portfolio insurance comprised about 2% of the market, leading to the Black Monday. And that was a reflexive strategy. Today anywhere between 6%–10% of the market is comprised of these self-reflexive implicit and explicit short vol strategies.

And this should be concerning.

**Erik:** There's a lot of people that are very concerned just about the explicit part of this. The people that are essentially profiting from the contango and the VIX term structure by either the XIV ETF or similar strategy implemented by rolling forward short futures contracts.

And a lot of people are very worried about the blowup of that trade. You know, I think the statistic is if the VIX doubles overnight that could completely wipe out the XIV ETF, or something like that.

You're saying that, really, that's the least of our problems. So, aside from the Target manager who's made a bunch of money by shorting the VIX, what is the full scope of what could go wrong here? And how would it likely go wrong?

Would it start with, say, a change where the share buybacks dry up because the interest rates no longer support them? Or what do you think the catalyst might be? And what could the potential blowback be if this were to start to unwind in the other direction?

**Chris:** There's a lot to talk about on that topic. First of all, on the short VIX trade, I think it's interesting, because now it's become very popular to talk about that. I think if you go back and read Artemis's research, dating back as far as 2014, we talked about how, really, just a 65% move in the VIX could be all that it would take to wipe out those products. We actually presented our numbers years ago on that. I think it's become a very popular thing to talk about today.

I think these short-vol products, these ETMs – you know, Artemis runs a hedge fund – the regulators are going to require you to be an accredited investor and pass all these tests to invest in a hedge fund that trades volatility in a risk-controlled and smart manner, and it's largely going long-vol in an intelligent way.

Meanwhile, anyone on the street can go out and buy a double-levered VIX ETN or a short-biased VIX ETN. So there's a great irony to this. And I think that these products are a class-action lawsuit waiting to happen. It's not a matter of "if" – it's a matter of "when."

But, are they a systemic risk to the system? Not so much, compared to the larger short-volatility trade.

To circle back to the effective share buybacks, based on our estimates in the paper "Volatility

and the Alchemy of Risk” we’ve estimated (I think quite conservatively) that 1/3 of gains, or about 30% of the share price gains, since 2009 have come from the share buyback phenomenon.

And that’s pretty amazing. If you think about it, we would already be in an earnings recession if it was not for share buybacks.

So the stock market is cannibalizing itself quite literally, and this is having a pronounced effect on lowering vol. I think we’ve had some of the most mean-reverted markets in history – the idea that vol is low is not surprising. That’s happened before.

But one of the things we’ve been seeing is that every single time volatility jumps it mean reverts immediately. And that’s actually quite unusual. Because volatility tends to cluster. This has been driven by some of the share buyback effects.

So, beyond the blatant overvaluation of the market, and the fact that price multiples that are not affected by the buybacks, that are not – The price-earnings ratio is something that people oftentimes put out there and say, oh, the stocks are not that expensive on a price-earnings ratio or P/E growth ratio –

If you look a market capitalization to GDP ratio, if you look at an enterprise value EBITA ratio, if you look at price-sales ratio, ratios that are affected by the buyback phenomenon, P/E ratios are manipulated by the buyback phenomenon. But the buybacks will funnel through to something like enterprise value EBITA ratio. We are seeing across all these multiples some of the highest overvaluations since 1928, 2007, and the late ‘90s.

So, really, the buyback phenomenon leads to a situation of a greater fool where the market keeps going up and up and up, quashing volatility.

If we end up seeing a collapse in buybacks – either due to rising interest rates, which would make it unprofitable for companies to continue to do this phenomenon – if we see a situation where there is some shock to the system and/or credit ratings of companies begin to come into peril as a result of rising interest rates and are not willing to continue to issue shares to buy back their debt – then the buyback dynamic may die down.

With the tax reform that’s happening, it’s unlikely to happen this year.

To your original question – the original question was “What would lead to this unraveling in a very nasty way?” And we can walk through a specific example in 1987 that led into Black Monday, which I think could be a template for how this could unravel in a very violent way, if you have a situation where the market drops 10% in a short period of time.

A short period of time could be anywhere from a day to a week. That blows through some of the short-vol players. Those players will take losses, but they might establish new – the explicit

short-vol players may establish new positions into that equity market weakness.

But if you found that continued to a 10%–15% decline in markets, and that is coupled with a volatility rise, and the central bank does not save the day or is unable to save the day – by the time you hit a 10-15% decline in markets then you have the ecosystem of the short-vol players like the risk parity funds, like the VAR-control (value at risk) funds, that actually will begin selling their positions in equities. Based on the Gamma effect of accumulation of volatility.

The first wave of selling might be driven by technical factors. The second wave of selling, then, is driven by algorithmic frameworks of these larger implicit vol funds, selling based on VAR accumulation and correlation breakdowns.

That will lead to the explicit short-vol players having to cover positions that they established back when the market was down just a little bit, the last position. And this can cascade into a very violent cycle.

**Erik:** I want to push back on that for a second, because it seems to me that, in the case of this explicit short vol, if you had a really big move – and you said earlier in this interview there have been cases in history where we went to 60 or 70 on the VIX – that wouldn't just wipe out the XIV. It would put it at a massive negative equity position.

So who gets caught holding the bag for that? You can't claw back the investors in the XIV. So does the manager have to pay whatever the marching call is, so to speak, in order to close that position down?

**Chris:** That's what would happen in that scenario. Let's just imagine – and it wouldn't take VIX moving to 80 overnight – it could be a 65% move in the VIX – which, by the way, occurred in February of 2007 – this was before the market began selling off in a big way – when the VIX went from about 11 to about 18.

So imagine a situation where the VIX is down at 11 today, and it goes from 11 to 20 overnight. At that point, this results in a trigger. And most of these short-vol strategies – of course, if you're selling optionality on something like TVIX, one of the double-lever products, you've got a margin call at that point.

And it sounds like, based on what we've looked at, the guys who are making \$12 million over the past couple of years are literally selling levered optionality, making optionality on two-times-levered products. And, of course, if you're doing that you're going to be in a negative equity position.

If you're an investor in something like XIV, then there is a trigger clause in that. Those are ETNs, there's a trigger clause in that. The issuer can force redeem at an 80% loss. So overnight someone would have an 80% impairment on all their capital.

In that instance, depending on the way some of those documents are written, the loss could be a total loss to investors. The issuer has this 20% wiggle room to give them room so that they don't take losses.

So, in this sense, would this be cataclysmic? I think it would be terrible. You'd have a lot of small retail investors, maybe some hedge funds, that would have complete impairment overnight.

I don't think it's a systemic risk. I think the much bigger risk comes when that shock leads into an out-of-control spiral where the implicit short-vol sellers begin to – the guys who are using accumulation variants to size their equity exposure then have to deleverage their books in a very fast way.

This is a situation where the market drops 12% in two days, which seems like it's crazy. But it's not at all, historically, when you look at the range of different possible movements in a crisis.

And then, as a result of that, we see many of these large implicit short-vol traders who are sizing based on accumulation of vol having to deleverage their risk parity books, their VAR control books, their risk premium books. And then that begins to take out margin calls on people who have used the higher vol to establish new short-vol positions. And then you're in a violent cycle.

I think that's a bigger concern to me than just where the short-VIX complex is at.

**Erik:** Now, there are a lot of notable bond managers, Bill Gross, Jeff Gundlach, and so forth – and I think Ray Dalio most recently – who have come out and said, hey, the jig is up and it looks like the bond market is going to roll over in price, up in yield.

Does the increase in cost of borrowing that presumably is going to have a major interruptive effect in share buybacks, is that potentially the catalyst that could start this whole unwind happening?

**Chris:** Yeah, mark my word on this. Back in the day, everyone sat back and said, oh, the knowledge at the time leading into the last crisis was that – the knowledge that was wrong was that all real estate prices nation-wide couldn't decline at once. That was the view at the time.

And then, of course, now we know that it's possible for all of these real estate markets to be correlated with one another and to drop. Of course, we know that now.

Well, what common knowledge today will be proven wrong in the future? We only need to look into the past actually, empirically, to understand what that is going to be. It's going to be the fact that stocks and bonds are anti-correlated with one another.

In my entire life and trading career, and the trading career of almost anyone who is managing money today, stocks and bonds have experienced incredible anti-correlation. And when stocks

sell off, central banks ease and bonds perform. And risk parity funds have found ways to short that correlation in order to generate excess returns.

That's all a risk parity strategy really is. A dispersion trading desk coupled with data exposure to the underlyings. It's not that complex. The excess Alpha comes from a short correlation bet.

Well, the problem – and that has been a very good return in an environment where interest rates have dropped and dropped and dropped and dropped.

But what's interesting is that, if you look at financial history – and I have a graph in “The Volatility and the Allegory of the Prisoner's Dilemma,” which is a paper from 2015 and we talk about this at length – and also in the latest paper, “Volatility and the Alchemy of Risk” – if you look at the relationship between stocks and bonds over the past 120 years, they've actually spent more time correlative with one another than they've spent anti-correlative with one another.

What's terrifying about this is that the entire modern asset management business is built on the short correlation trade of stocks and bonds. If I go to a financial advisor down the street in Austin, Texas, where my offices are, and say where should I put my money in stocks and bonds? 60/40 split.

And if you go to a risk parity guy, they're going to say go ahead and put your money in stocks and lever up the bonds.

Well, what happens when that trillions of dollars of financial engineering around this anti-correlation, when that 60/40 stock-bond split becomes 100% loser? And you say, wait, that's not going to happen, that's never happened. It absolutely has happened. It absolutely has happened.

It happened in the early 1900s. It happened in the late 1970s. There's numerous times where it's not been a month or two months; it's been three years where stocks and bonds have gone down together.

So we are painted into a unique corner right now. Because, can the global financial system handle a scenario where stocks and bonds drop all together at the same time? This is part of the short-vol trade. Because implicit in portfolio short options is a short correlation debt.

So there is a massive levered short correlation debt instability in this relationship that the world is not prepared for. And the thing that I don't understand is why – caveat here, I run a long volatility fund, in fairness that long volatility fund is about to close, but we run long-vol strategies – but I don't understand why every pension system and institution isn't running into finding ways to get long-vol exposure in some capacity.

Nowadays, everyone is running away from active management. They should be running

towards tail risk. They should be running towards long-volatility strategies. They should be running towards strategies that have shown an ability to have positive correlation and do well during periods of market turbulence, like global macro investors. Like certain types of CTAs. But instead everyone's doing the exact opposite.

The question that many of these institutions need to ask themselves is – you know, during the last recession their bond portfolio did really well. The pension systems up the street, their bond portfolios performed. What would happen if you had a 30% decrease in equities coupled with a 30% decrease in bonds?

And there's only one asset class that can perform – any asset class that has long-volatility exposure.

**Erik:** Now, let me just interject here. If I think about how this could all come unwound – Normally, if you have a short-covering rally in anything – in crude oil, in copper – when the price goes up the shorts get squeezed out. They're forced to buy, you've got uncontrolled buying, and it goes up rapidly.

What happens when this short-vol trade – both the explicit short vol as well as the implicit short vol – when something starts to unwind, and all of a sudden these strategies that have been working so well for so long stop working and everybody is bailing out of them all at once. That means everybody is buying vol.

Does the act of buying vol create volatility in markets? I would think that, suddenly, protection in the form of puts and calls is not available at the same price it was. Does that exacerbate and reinforce the cycle and create a crisis situation?

**Chris:** Absolutely. Because what we think we know about volatility is all wrong, based on the very things you're talking about. If you go to an MBA program or a financial engineering program, they are going to teach you something that is a highly flawed concept. And that's part of modern portfolio theory that conceives volatility as an external measurement of the intrinsic risk of an asset. There's this idea that volatility is a statistic that measures risk.

I watch basketball. How many shots have you made? Or how many rebounds have you gotten? Or how many shots on goal, for soccer? Volatility is a statistic, a measuring statistic that is external to the game, measuring the game.

But this isn't true. Modern portfolio theory is wrong. Because, today, we have trillions of dollars of strategies where volatility is affecting the outcome and is an input into the strategies.

So volatility is not an external statistic measuring the game. Volatility is a player on the field. Modern portfolio theory has it wrong, and we're about to learn what that really means.

Now, it feels good when volatility is a player on the field as a result of these strategies allowing

more leverage into the system when volatility is dropping – so that reinforces lower vol. But anything that can shock volatility higher and cause a forced deleveraging, because of the higher vol leading to more higher vol, this produces a self-reflexivity.

And we got a taste of that in 1987. Portfolio insurance, which was blamed for the '87 collapse where in one day the market dropped 20%, portfolio insurance is a short Gamma strategy, very similar to risk parity, very similar to VAR control funds, has a short Gamma component.

So, at the time, portfolio insurance was 2% of the market capitalization. Today these self-reflexive strategies comprise potentially upwards of 10% of the market.

And I can tell you how we'll get there again. I can't *tell* you, but I have a theory of how we can get there again. And I think it's the very thing that central banks are trying to cause. Which is inflation. And I think something like '87 can certainly happen again, based on this.

Maybe I can explain that idea a little bit more.

**Erik:** Please do.

**Chris:** So, in 1987, we're coming in after a long bull market in equities. But inflation was really low. Actually, inflation was lower in January of 1987 than it is today. So the Fed had lowered interest rates in an attempt to get inflation up.

And then, in a short period of time, we saw inflation jump violently. Some graphs, actually, that show this show the jump in CPI in 1987 – a period between January into the summer – inflation jumped almost 300 basis points.

And what we saw at that point is that nominal rates jumped even higher. So a period of, really, five to six months you have inflation and nominal interest rates shooting up over 300 basis points.

Now, the market liked this. This was a bull market. People forget this. From January to August, the equity market in the US exploded, jumping up over 36%. We were in the middle of a bull market. The market's up 36% in the year.

And that's when the wheels fell off.

Because it was the very sharp increase in interest rates and the losses in the bond market that began to cause a liquidity squeeze. That liquidity squeeze started a fire. And all of a sudden inter-bank lending jumped. All of a sudden credit conditions began to tighten.

And this started a fire in equity markets. And equity markets dropped. They dropped a little over 10% between late August and October. And that was the first fire.

Now, portfolio insurance, similar to the short-vol trade today, was like a barrel of nitroglycerine sitting in the market portfolio. I can be sitting here and have a barrel of nitroglycerine in my office and it can be incredibly risky. But if nothing sets off that barrel of nitroglycerine it may just sit there for years.

Well, portfolio insurance had these short Gamma, short-vol characteristics to it. But nothing can trigger it. All of a sudden you had inflation, jumps to nominal interest rates, leading to a liquidity squeeze, and the losses on bonds. The Fed was not able to respond because inflation was jumping.

So the Fed couldn't come to the rescue. This caused a liquidity squeeze which started the fire. You had about a two-month decrease in equity prices. Which then led into the nitroglycerine of portfolio insurance leading to a down-20% day.

So the thing that could potentially cause this to unwind may be the thing that they're trying to spur on, which is actually inflation. And that could occur amidst a booming market. But if you have a fast increase in interest rates – too fast – right at the point in time where many companies are looking to roll their debt, this could cause a liquidity squeeze that could cause the short-vol trade to unwind quite violently.

**Erik:** Chris, institutional finance makes such heavy-duty use of over-the-counter derivatives. They've got a lot of big positions on. There's not enough liquidity in the underlying markets to move them quickly. So they deal with their risk by hedging it using OTC derivatives.

What happens one day when everybody who's calling up their banker in order to hedge a position is quoted an 80% implied vol on whatever option they need, and they suddenly cannot afford to use all of the instruments they're used to using in order to manage risk? It seems like that could be a recipe for an overnight disaster.

**Chris:** There's so many liquidity imbalances out there. I mean, you have daily liquidity in some of these ETFs on underlyings that don't settle daily. So the vanishing liquidity phenomenon is –

You know, in 1987, people just didn't pick up the phone. You couldn't reach your broker. Same thing with 2008. People forget this. And so I think that's – it's absolutely the point that during these shocks you can see liquidity vanish.

And now in a more algorithmic-driven market, the shocks and the moves can be even quicker than before.

We haven't even got started talking about passive investing. Nowadays everyone wants to do – All the institutions and the pension systems want to do what looks best on a rolling sharp-ratio basis. So, on a rolling sharp-ratio basis we've had some of the best performance of index funds in over 200 years. That's another chart that's in my paper. I don't make this stuff up. You can look at the data.

So, of course, after we've had a central-banking sugar high, which has resulted in low vol and high returns, now every institution wants to go fire all their active managers and they want to go passive. Well, that's great: Now Bernstein estimates over 52% of the market will be passive. So now everyone has moved to passive.

Well, the problem is, if you think about what passive investing does – if every market participant is passive, then each incremental buyer exacerbates right-tail vol and each incremental seller exacerbates left-tail vol. That's a mathematical relationship you can model.

And it just makes sense. I mean, active investors who buy when stocks get too low and sell when stocks get too high, are volatility buffers. They reduce vol. So in a market where everyone moves to passive, and they put all the active managers out of business, you have no volatility buffers and each incremental buyer and seller results in a massive explosion.

This is happening right during a period of time where the baby boomers are retiring and there's going to be forced liquidation of retirement plans. So your next incremental seller is starting now. And amplifying.

It's kind of this perfect storm where you have central banks removing stimulus, you have populism rising, and anger over central banks. So they're removing stimulus, they're having to normalize interest rates. There's reflationary pressures on the horizon.

Corporations over the next – between 2018 and 2020 – have to roll \$300 billion worth of high-yield debt. A lot of companies have to roll debt coming on up. They're going to be rolling debt into higher interest rate environments. Right at a point where baby boomers have forced liquidations into their retirement plans.

Now, that being said, I'm very pessimistic in the long run. But, with the tax plan that has just been passed, and markets going frothy like this, we could have a right-tail move before we have a left-tail move.

Keep in mind that in 1987 the market went up 36% before it ended up dropping 10%–14% over the next month and a half, and then dropped 20% in a single day. So you had this huge run-up before you had this massive collapse.

So, in this instance, I think the melt-up possibility is right there. But don't fool yourself into not seeing what this environment really is.

**Erik:** You described the mechanism of injury as to how inflation could be the catalyst to start the big unwind. Are there other catalysts that you have your eye on?

**Chris:** Certainly geopolitical risk is something that people should keep their eye on. I was just in Sweden. I was with some people from Norway. And you don't hear about this stuff, but in

Sweden they just began forced conscription again. Last year. So, first time since the cold war, and they're spending billions of dollars reinforcing their bunker systems.

And Norway has just completed a major, major, controversial multi-billion dollar purchase of fighter jets. And Sweden is preparing its citizens for the expectation of potential war with Russia. We don't hear about this in the West. You don't see it reported on CNN.

So, you look at the rising geopolitical tensions. Obviously, what's happening with North Korea. No one has a crystal ball, but there's plenty of catalysts out there.

And, you know, just the rise of populism in general. I have this firm belief that you cannot destroy risk. There's this view that central banks believe that they can destroy risk by setting the price of risk low.

But you don't destroy risk. You only transmute it. So you can take returns from the future and you can bring them to the present. You can take tail risk from the present and you can transmute it and push it into the future. But volatility cannot be destroyed. It can only be transmuted.

So if they refuse to allow volatility to transmute through the price mechanism, it will transmute through the social mechanism of populism. This is a very big risk. I can't foreshadow all the outcomes of what might be a catalyst. But if you just look across history, we've gone the longest ever without a 5% decline in markets. It's the longest bull market in history. Volatility is at multi-generational lows across asset classes.

One has to just look at this and say that what we've normalized to is not a reality that reflects – what markets have normalized and leveraged themselves into – 10 trillion of negative rates. I can go on and on and on. This is not a reality that has reflected the data we've seen in 100–200 years of financial history. And that we've applied more and more leverage to the assumption of a reality that is unusually stable. And we've become more and more anti-fragile doing it.

**Erik:** Chris, we only have a few minutes left. Unfortunately, we couldn't get to every single slide on the excellent deck that you sent us. I'm sure our listeners will enjoy going over those. But, as we have two or three minutes remaining here, please give us any closing thoughts that you have that are germane to this conversation.

**Chris:** I think this concept, at the end of the day, of – it's one of the things that I respect more, managing money as an adult, than I did when I was just trading for fun as a kid – there is a real business risk that people have in this industry.

And it's one of the reasons why there's opportunity. If you're someone in a pension system, or if you're a manager, and you're not fired for doing what worked for the last three years, and you are fired for underperforming in bull markets just a little bit –

So, the person who wins, it's the tortoise and the hare problem. The person who wins in the short term is the one who loses in the long term. But the problem is that, like the tortoise and the hare, the tortoise wins the race, but in our industry the tortoise gets fired midway through the race because he's underperforming the hare.

And institutions will jump into all of these products that worked yesterday rather than the ones that are likely to work tomorrow. And that is – in 2012 I came out and said – everyone wanted to get into tail risk, and I wrote a paper saying that tail risk was incredibly overvalued and overpriced. That the left tail was the wrong tail to focus on. That people should focus on the right tail. And I said that in 2012, that the left tail events were priced in.

Now, obviously, the reason why left-tail risk was so expensive was because people were suffering from post-traumatic deflation disorder, and strategies that were long vol had a positive return. Or positive sharp ratio.

Now fast forward to today, nobody wants to hedge anything. No one wants to think about the next ten years. Everyone wants to short volatility. Everyone's focused on index funds. Everyone's focused on the things that have a three-times sharp ratio over the last two to three years. And, as a result – and anyone who does something otherwise faces real business risk.

So the business risk is the thing that drives these large institutions to make the exact wrong moves. And not be forward-thinking. And I think that's something that's – I think there's just a fundamental flaw in the way that the world is aligned, that capitalism is aligned, in this short-termism. The thing that drives corporations to be issuing share buybacks when their shares are at historic high valuations.

With that in mind, I think this presents an opportunity for investors who are nimble and smart and forward-thinking. But, unfortunately, it really hurts the common guy on the street. And I think the real risk we face right now, at the end of the day, is not the market dropping 50%.

It's really rising populism, rising income disparity, resulting in a threat to the very fabric of democracy and the framework. And I think the next failure of our systems we are going to face that tail risk if we're not careful.

And I think the central bankers in power are quite numb or ignorant to this.

**Erik:** Extremely well-said. And, unfortunately, I couldn't agree with you more. Chris, I want to thank you for a really fantastic interview.

Before we go, I want to direct our listeners to the Research Roundup email. If you're not a registered user yet just go to [macrovoices.com](http://macrovoices.com). You can register and get the download information from the website next to Chris's picture.

In addition to your most recent article, "Volatility and the Alchemy of Risk," we have your slide

deck (I'm sorry we didn't get to all the slides today) as well as several other articles that are linked there.

Now, I know that because you run a hedge fund you're not at liberty to talk publicly about the fund and what it invests in, but we do have a large number of accredited investors in our audience. For those accredited investors who would like to contact you to find out more about your fund offerings, how can they do so?

**Chris:** We have a website <http://www.artemiscm.com>. Or one could just simply email [info@artemiscm.com](mailto:info@artemiscm.com) as well, for accredited investors who might have interest in what we're doing.

**Erik:** And, of course, I think all of our folks know the game, but you have to identify yourself as an accredited investor and request information from the fund. They can't offer it to you until you ask.

Chris, thank you again for a fantastic interview. Patrick Ceresna and I will be back as MacroVoices continues, right here at [macrovoices.com](http://macrovoices.com).