Demetri Kofinas: What's up everybody? Welcome to another episode of Hidden Forces, with me, Demetri Kofinas. Today, we speak with Christopher Cole.

Christopher is the founder of Artemis Capital, and the portfolio manager of the Artemis Vega Fund, which seeks a profit from periods of volatility, dislocation, and systemic crisis in financial [00:00:30] markets. His core focus is systemic, quantitative, and behavioral based trading of volatility derivatives. Sounds complicated. It is.

You're going to hear a lot of wild terminology during this interview. Everything from mean reversion to volatility persistence, spot vol versus implied vol, vol of col, system CTA, system rebalancing strategies, enterprise EBITDA, Case-Shiller, PE, price to book, price to sales, left tail, right tail. But don't worry, [00:01:00] it's all noise.

What you need to remember is that volatility is change. Volatility is uncertainty and we live in uncertain times. Time to get used to it. This episode is about exposing you to ideas and ways of thinking and investing that fall far outside the mainstream. It's about looking at risk as opportunity and understanding that markets are inherently uncertain.

As always, you can gain access [00:01:30] to reading lists put together by me, ahead of every episode, by visiting the show's website at hiddenforcespod.com, where I will also have a special list of items referenced during the show for anyone interested in digging deeper.

Lastly, if you are listening to the show on iTunes or Android make sure to subscribe. If you like the show, write us a review. If you want a sneak peek into how the sausage is made or for special storylines told through pictures and questions, like us on Facebook [00:02:00] and follow us on Twitter and Instagram @hiddenforcespod.

And now, time for this week's conversation.

All right, so Chris it's great having you in the studio, man.

Christopher Cole: It's a pleasure to be here.

Demetri Kofinas: I was just saying before we started recording, that you had been on my show in 2012, you do remember that.

Christopher Cole: I do remember that.

Demetri Kofinas: Do you remember where we met?

Christopher Cole: I think it was a Jim Grant's Conference.

Demetri Kofinas: It was, you were speaking at Grant's Conference, talking about volatility and that was when you had just released that paper, [00:02:30] Volatility at World's End, I think.

Christopher Cole: That's right, Volatility at World's End in 2012, the first part of that year.

Demetri Kofinas: Yes, so had you done any papers like that beforehand? Anything kind of colorful?

Christopher Cole: Yeah, I had written some papers prior. I think in general, there had been sort of a following, but I think Vol at World's End was sort of a unique paper in the sense that that paper actually had an impact on moving the markets. And I think in retrospect, I think the main argument turned out to be quite [00:03:00] correct, that the left tail was particularly overvalued and that the right tail was undervalued.

Ironically, I kind of feel differently today, but I've since released ... there's a paper I did in 2015 called Allegory of the Prisoner's Dilemma.

Demetri Kofinas: Right, we're going to talk about that.

Christopher Cole: So, I had been doing some papers up to that point.

Demetri Kofinas: All right, many in our audience may not know you, one of the things I tell people is when I ran that show, when I ran Capital Account, there were [00:03:30] always three types of guests and I always made room for one of the three types who was always someone I didn't necessarily recognize or it wasn't someone who did a lot of media, but whose stuff I thought was brilliant and I thought your stuff was brilliant, your stuff still is brilliant.

And in fact, I'm going to post this on our website in the show notes, anyone who wants to hear a really dope house music track, you can hear Chris overlaid with market volatility from what, 1990? 1991, volatility through 2011?

Christopher Cole: There was a visual animation.

Demetri Kofinas: [00:04:00] Beautiful. So, we're in a music studio, we record this, this is actually ... there are a lot of hip-hop stars that come in here all the time, so I had played it for all the guys here, they loved it. Did you have somebody make that for you, specifically?

Christopher Cole: That was a unique project because for a long time, actually I was in Costa Rica and I was watching the waves come on in from Costa Rica on the ocean. I thought, the ocean looks like volatility waves, but no one never looks at market [00:04:30] data that way, they don't see the kind of beauty of it in a visual sense. I'm like, well, I could show that if I animated it.

So, I worked with a special type of animator out of Perth, from Perth, Australia, and it was a truly global project and then collaborated with a then unknown DJ out of Paris named Monsieur Adi. Adi has gone on to go open up for Beyoncé.

Demetri Kofinas: That was a long convexity play on your part.

Christopher Cole: That's right, so I think everyone's done really well. [00:05:00] Artemis has grown a lot since 2012, Monsieur Adi has done very well. I think everyone associated with that project has gone on to do sort of interesting things in their respective field, but it was really about taking some interesting music, taking some very real data and then finding a way to visualize it in a way that I think people aren't used to looking at, in a very artistic way.

And so that video actually is a visual animation of [00:05:30] the volatility term structure from 1990 to about 2012 and it looks like beautiful waves in the ocean, but all of that's actual, very real stock market data.

Demetri Kofinas: And terrifying if you're in the middle of a tsunami. Let's do a recap, this is how I want to start and I really want to give a strong context for our audience and I think that really starts with taking a look at pre-2008. So pre-2008 was [00:06:00] a period of great monetary expansion and fiscal expansion, not just in the United States, but globally. And of course, in the U.S., it was the period largely referred to as the Great Moderation.

This was where Alan Greenspan had effectively done what few considered possible, which was to maintain low interest rates while at the same time, having low inflation or certainly low interest rates by the standpoint of his predecessor, Paul Volcker, who had jacked [00:06:30] up rates during the 1980s, in order to beat back the inflation of the 1970s that had so devastated Carter, the Carter Administration, caused largely by spending on the Vietnam War, the Great Society of Lyndon Johnson, exiting Bretton Woods, of course, which let that inflation seep out into the economy, it sort of blew the lid on that, as well as the oil embargo and what was going on in the Middle East.

But perhaps even more significant than this was the so- [00:07:00] called savings glut, as it was referred to by Greenspan and others, which referred to this notion and it was really a dynamic that was driven by the opening up of China and some of these other Asian economies, the Asian Tigers, as they were known, which essentially referred to them becoming developed economies or moving towards becoming developed economies. They were exporting more and they were taking the money they were earning from exports to the United States to the developed world and they were recycling them [00:07:30] into U.S. treasuries.

And what that was actually doing was it was driving down interest rates in the United States, it was driving down the yield curve, it was driving down borrowing costs for Americans and consumers who were then taking that money and recycling it back into the Chinese economy by purchasing those goods. And the Chinese were doing the U.S. a favor by basically exporting deflation to the U.S. They were keeping prices low in the U.S. because U.S. consumers were buying goods that were being manufactured outside.

Those [00:08:00] Asians were taking that money they were earning on those goods, they were investing it in the local banking system, which was then transferring it to the U.S.

through the bond market, suppressing rates and sort of keeping that cycle going, allowing us to have low interest rates and low inflation and that was the Great Moderation.

And of course, that cycle because it perpetuated itself for such a long period of time, it had a devastating effect on national and private debt levels and it also of course analogously, had an effect on the national savings [00:08:30] rate, which declined. So, debt rose, national savings declined. And of course, debt is always written in nominal terms and your ability to carry it, is based on your income, based on your revenue or based on your gross domestic product, if we're looking at it on a national level.

And so, as debt levels rise - and you can ask Greece, you can look at a lot of countries that are in trouble as a result of debt or that have had issues like this, like Argentina. When you have a large debt, but that seems sustainable during periods of [00:09:00] high economic growth, that debt can quickly become unserviceable during periods of economic contraction.

And so along comes 2008 and we get the panic, we get the crisis, we have a massive contraction in GDP, not just in the U.S., but globally. The Fed, the ECB, the BOJ, the PBC, etc., they slash rates, lower reserve requirements, massive bailouts, QE, liquidity facilities, restructuring in Europe through ESM, EFSF, OMT, [00:09:30] China, massive fiscal stimulus, public works, etc., pull all the stops.

And for a while, it wasn't clear if that was going to work. I'll acknowledge, I was one of those people who did not believe that the Fed and the central bank, the global central banks would have the firepower to hold back the forces of deflation. And so, 2012, I think was a really important turning point because that's where I found out that I was [00:10:00] wrong. Now in retrospect, I didn't know I was wrong exactly at 2012, but in looking back, that was really the period where I was proven wrong, that was of course ... and that was shortly after, or that was around the time that you wrote the paper, Volatility at World's End.

And it was not long after that, that Mario Draghi said quote, we will do whatever it takes, that speech, where he basically said, we're going to throw everything at this, bazookas, [00:10:30] missiles, nuclear weapons, whatever it takes, we're going to keep deflation at bay. We're not going to allow prices to decline, we're not going to allow for a financial market collapse.

And I think that experts see that kind of as the turning point, that speech, but certainly that was the moment, that was the period in time where markets sort of changed, where volatility, I think, began to quell and we started seeing this new paradigm [00:11:00] of complacency that seems to have dominated the market since 2013, in terms of volatility.

So, I guess, what are you seeing since then, what are seeing since you wrote that paper in 2012, which was five years ago?

Christopher Cole: 2012 was a really interesting turning point and I think it informs what's happening now and I go into this in detail in my latest paper called Volatility and the Allegory of the Prisoner's Dilemma. But in 2012, coming off a great financial crisis and this huge [00:11:30] wave of volatility, we saw this tremendous interest in tail rescheduling, at that point in time.

And as a result, the left tail of the return distribution, the extreme tail events became very overpriced, and I think my paper at that point in time, argued that the left tail was dramatically overpriced, that extreme deflationary percent decline in markets was overpriced, as on the left tail. And at [00:12:00] the right tail, meaning the rapid increase in markets, was actually underpriced.

So that actually turned out to be quite a correct statement at that point in time, but something really unique happened in 2012 and starting really in the summer of 2012, when the market had already recovered, volatility was at five-year lows. Central banks began to employ what I call preemptive strikes on risk, so it used to be that central banks responded to economic [00:12:30] conditions. You would have jobs turned down, you'd have GDP growth turned down, and they would then apply stimulus.

Central banks in 2012 began to preemptively move to strike financial risk by responding to market conditions. This really happened beginning with Mario Draghi's whatever it takes speech, and then also with QE3 at that point in time. So instead of responding to economic conditions, they [00:13:00] started responding to market conditions and this created a kind of moral hazard and reflexive process in markets that I think has resulted in a tremendous kind of, the risk is still there. They thought they're destroying risk, but they've actually just transmuted risk, they've brought asset prices from the future into the present and they pushed tail risk from the present into the future, while transmuting risks but [00:13:30] not destroying it.

And we're at a very precarious point right now where that has continued for many years, creating a number of unique situations in the market that I don't believe are healthy.

Demetri Kofinas: After 2011, the Fed was no longer responding to the crisis of 2008, they were preempting future volatility future crises. And in fact, you're quoting Mario Draghi and that was also around the time of Operation Twist on the curve.

Christopher Cole: And then [00:14:00] QE3 was the big ... QE3 was applied, there used to be a dynamic to apply extraordinary stimulus during extraordinary times, well, they just started applying extraordinary stimulus regularly and that has resulted in a transmutation of risk. And I don't think it's destroyed risk, it's actually presented new risks that I think will emerge and will become major themes.

Some of those risks are financial and some of them are political and that's [00:14:30] a whole other ...

Demetri Kofinas: Let's cover both of those, so financially the thing that liquidity does in the expansion of the Fed balance sheet is it quells markets, it also as you say, it embeds in the reaction function of market participants, this notion that bad news is good news, this notion that any time we see volatility, anytime we see an event that should be negatively impactful towards markets, it's actually positive because [00:15:00] we now no longer trade in a free market, we trade in a market that's heavily to the extent that ever was free, heavily manipulated market by central banks.

So that has created financial underlying risks, let's talk about those first and then let's talk about the political exogenous factors, and then I want to drill down after we kind of get that overview, we'll want to drill down into how you guys position yourselves, and then if we can, to what degree we can make sense of that for people that are listening that may not understand the derivatives market [00:15:30] and know how to use sort of options.

Because I'm curious how you guys actually do that. I'm also curious just to say this so I don't forget, I am curious what the term structure of volatility looks like past the VIX, further out and how it is that you guys trade that. Because I don't fully understand that at all, so those are a bunch of things I just threw them out there so I wouldn't forget.

Christopher Cole: So, let's take a look at this via an analogy, let's say that there's a cancer patient and that cancer patient has obviously, there is [00:16:00] a deep problem and a deep sickness and those cancer cells in that tumor is growing. Now that tumor is causing other problems, the patient not may not feel very healthy, the tumor represents the underlying fundamental problems. And then there are these symptoms of the problems, which reflects the fact that the patient feels ill, doesn't feel good.

So, imagine you had an irresponsible doctor that just gave a cancer patient and amphetamines every single time they came into the [00:16:30] emergency room and the patient gets all these amphetamines, like, I feel great, it's wonderful. And then they leave and then they're never actually treating the underlying tumor, they're just treating the symptoms of the tumor.

This is what's happened in markets today, so that cancer is a cancer of debt, deflation and demographics and it's not an easy one to cure and the central banks have applied a stimulus [00:17:00] of just amphetamines. They just are giving ... they're responding to market-

Demetri Kofinas: Quadruple, quintuple the balance sheet practically.

Christopher Cole: Exactly, so they're just giving ... instead of actually treating the underlying problem, they're treating the symptom of degrading markets. Now the problem is that markets now have embedded a moral hazard expectation of central bank reaction function, and this has numerous kinds of follow-on effects.

So, the first follow-on effect is this idea that markets [00:17:30] are buying the dip at every opportunity mean reversion in the S&P 500 ... there's one metric called volatility persistence, which you can back out statistically using something of a GARCH model, I won't go into that, but that vol persistence has been at 88-year lows.

Demetri Kofinas: And by volatility persistence, you mean that you can make very good predictions about future volatility from historic volatility or today's volatility that predictions about volatility [00:18:00] itself are non-volatile. And that it reverts back to the mean very quickly.

Christopher Cole: Any volatility reverts back very quickly, the market has embedded this automatic expectation, so today every single time there is a sell-off, people are waiting to buy. That's a moral hazard, that's embedded moral hazard.

The other follow-on effect is that you end up lowering rates dramatically and you have a dynamic where companies [00:18:30] that can't ... they're not growing their top-of-the-line sales. In order to meet their earnings per share growth, they're embarking in share buybacks, so we have the highest number of share buybacks, we've eclipsed the level since 2007, the entire net operating earnings of the S&P 500 have gone into share buybacks.

Let's think about what share buybacks are doing. It's an implicit short volatility strategy, so every single time markets sell-off, [00:19:00] you have companies buying back their shares, but these share buybacks are a manipulation, it's a financial engineering tool that's being used to in essence, rob Peter to pay Paul. You're reducing the number of shares, increasing the EPS growth, but you're not doing anything to enact fundamental growth of the business.

Steve Jobs once said that [00:19:30] when asked about share buybacks says, well, I don't want to do share buybacks, because if we're doing share buybacks it means Apple has run out of ideas. Apple has now done $87 billion worth of share buybacks. I think that says it all, but what we're seeing is an entire leveraged buyout of the entire stock market, this is the only bull market in history. Go back, look across, the only bull market in history where there's lower and lower volume [00:20:00] and this is because there's less and less shares.

Demetri Kofinas: And that of course means you are transferring volatility from the present into the future, because there's an interested party in the market who won't necessarily be there in the future to support the very prices that he's been juicing, if and when they start to collapse.

Christopher Cole: It's artificially dampening the vol, if you're removing liquidity out of the system but it's also literally artificially dampening the vol because every single time a stock, every single [00:20:30] time a stock drops, you have a price insensitive buyer, the company itself buying back its shares.

So, in some aspects, 50% of the earnings growth, this has been some estimates by different banking studies, 50% of the earnings growth last year and a half has been from 50% of the EPS growth over the last year and a half and 25% before has been entirely driven by the share buybacks, which is not a fundamental economic [00:21:00] or healthy corporate dynamic. And these buybacks aren't creating jobs, so companies take debt, they issue debt and they buy back their shares, they're not creating jobs, they're not creating opportunity, they're not innovating, it's just an accounting gimmick. But this is artificially dampening volatility today.

The third factor that drives this is now you actually have a tremendous number of strategies, systematic rebalancing strategies. [00:21:30] These are strategies that use a volatility as an input, so these are things like risk parity and VAR rebalancing and some systematic CTAs, machine learning, but all of these different strategies have one thing in common, which is they're based on modern portfolio theory and they're usually based on some sort of rolling period of vol. So, they're using volatility as a metric to allocate risk. If volatility is lower, they're able to size more risk.

[00:22:00] If you have a Federal Reserve and global central banks preemptively issuing strikes on risk, then you have share buybacks driven by the same irresponsible central banking, buying back shares, all of these are suppressing vol, then these other strategies that use volatility as an input to their risk and their leverage-

Demetri Kofinas: And they're adding a whole other layer on top of that.

Christopher Cole: They're adding a layer on top of it, so we go back to this concept of reflexivity, you end up having this [00:22:30] self-reinforcing cycle of lower and lower volatility and it creates the illusion of the dissipation of financial risk when in actuality, all that's happening is that the cancer patient is being upped on amphetamines and they're not truly getting better. The fundamental problems have not been resolved.

So now today, you have the highest debt load in human civilization, the most expansive global central bank [00:23:00] balance sheets in human civilization, you have the lowest interest rates in the history of human civilization. We have data going all the way back to 1400, lowest-ever, and some of the most expensive-

Demetri Kofinas: It was financially impossible then to engineer rates this low. The technology has allowed us to get there.

Christopher Cole: On top of that, the most expensive equity markets [00:23:30] in history as measured by an enterprise value to EBITDA and measured by price to sales and price to book and Case-Shiller PE.

So, this creates a really unique ... I'm not saying the whole world will end tomorrow, in fact what might end up happening is we might have a situation where there's a race to the right tail where we might have high volatility and high asset returns in a one final blow off top, but either way, there's been an element to vol suppression and I think this is going to come back [00:24:00] with a fury in the next couple years. We haven't gotten talking about the populism aspect as well.

Demetri Kofinas: I do want to talk about that, the very frustrating aspect of this has been in making projections over timeframe, because first of all, this reflation has gone a lot longer than many of us expected possible, and there were a number of turning points including August of 2015, right before you published Allegory and the Prisoner's Dilemma [00:24:30] where we had the highest spike in volatility since 2011, only to see it revert right back to trend, which just gives further credence to your earlier point about volatility persistence.

But regardless of some of those moments, be they August of 2015 or September 2011 or May of 2012, the forces of inflation from governments and central banks managed to overwhelm markets, and yet, how are they going to unwind their portfolio without the market front running them? Because right now, all they're doing is raising the Fed [00:25:00] Funds rate but they aren't doing anything to address the large amount of liquidity that's just sitting as excess reserves on bank balance sheets from which if there were going to be inflation, that's where it would come from.

Christopher Cole: I don't claim to be an expert in how they're planning to do that.

Demetri Kofinas: You think they know how to do it?

Christopher Cole: I don't think they know how to do it.

Demetri Kofinas: I think it's all fake it till you make it.

Christopher Cole: In this situation, you can look at that and say, to me, my job is to [00:25:30] look at the suppression of risk and to look at the potential risk dynamics and to find inexpensive convexity. I feel like they have created a monster and that there's going to be numerous unknowns that come out from looking at trying to unwind this balance sheet. It's very, very easy to spike that punch bowl and spike that punch bowl and spike that punch bowl and now that everyone's drunk, to make sure everyone gets home safely, I think it's going to be very dangerous at this [00:26:00] point.

And to me, it's about trying to find ways to own opportunity in the event that there are policy failures, as opposed to continuing to find ways to ride the party. I think that's what people need to be looking at right now.

Demetri Kofinas: So, when you talk about owning convexity, going long volatility, what you're saying is going long change.

Christopher Cole: Yes.

Demetri Kofinas: Because short [00:26:30] convexity positions are positions that are all about doubling down on what's been working, if it ain't broke, don't fix it, which is how people have managed to make money the last number of years where that's been the primary driver and there's been all this mean reversion in the market.

So how do you guys execute on your strategy, which is active return, you're looking for positive alpha, positive return above the market and also talk to me about the term structure for volatility, because [00:27:00] when we're talking about the VIX, we're only describing one month's implied volatility. Looking out across the term structure for volatility, in other words, the yield curve for lack of a better word, for volatility insurance, is much longer and stretches out much further than just what the VIX captures.

And in fact, if we were going to look at the VIX, that would be like looking at just three month [00:27:30] treasuries as a gauge for borrowing capacity or solvency of the U.S. of the U.S. Treasury, when in fact the most important bonds are arguably the long-dated securities like a 10 or 30-year bond.

Christopher Cole: There's numerous ways to gauge vol and I specialize in equity volatility, but this morning I had a great breakfast with someone who specializes in fixed income volatility and it's very interesting to compare notes in that world. When you look [00:28:00] at short versus long vol and I think you said it right, short vol or short convexity as I kind of put it, is having exposure to status quo. You're positively exposed to the status quo, when you're long volatility, you're looking to have positive exposure to change.

Now keep in mind, change can occur to the upside or downside, the late '90s, which was a massive bull market was a period of extreme volatility in equity prices. You had right tail volatility, whereas the [00:28:30] 2008, was an example of left tail volatility, so most people think of vol as being just in a market crash, but you can have volatility in rising stock prices as well.

The regime that we've been in has been uncharacteristically low volatility and constrained. Most of the world is short volatility, most traders and most people don't even realize that they're short volatility. Value investing, Warren Buffett is an example of a short volatility [00:29:00] trader. The guy buys into dips, looks to find undervalued stocks, that's a short vol trade. It might be a smart shortfall trade, I'm not saying that can't be done correctly, but it's a bet on the status quo.

Demetri Kofinas: Because it requires a reversion to the conditions that existed prior to the value opportunity, prior to the price decline, so basically a reversion to trend.

Christopher Cole: On a reversion of the mean, exactly, and I think Buffett has a very long expectation of mean reversion. [00:29:30] Most people make leveraged bets on short-term mean reversion and that's where like LTCM, for example, Long-Term Capital Management in 1998 went so wrong. They made leveraged bets on relatively short-term mean reversion, and then you ended up having a blow up.

I think there's a lot of people and a lot of different strategies that have leverage in short-term volatility strategies and they might not think of them as being short-term vol. [00:30:00] Credit is an example of, if you're buying a fixed income instrument at a negative yield or at a 1%, you are implicitly short a massive amount of volatility. You don't think of yourself as being short volatility, but you're getting paid a very small amount of money to take massive risk in the event that the world shifts dramatically.

Demetri Kofinas: A dramatic shift would be a change in interest rate policy, so in that sense the entire market is short convexity.

Christopher Cole: [00:30:30] That's right, so to go back to your original question about different dimensions of vol, I play in the equity vol space and I think particularly in the last year, we've seen a unique regime emerge, where there has been exceptionally low vol. Vol has been incredibly low, spot vol is very low, as measured by the VIX or measured by realized volatility, but uncertainty has been very high.

So, I use this analogy [00:31:00] in one my papers. I say, imagine this, you have a coworker at the office and that guy is ... he's sitting at his computer calmly and he doesn't look like he's panicked. He's not moving, he doesn't seem agitated, he just stares at his computer screen, he's very low volatility. But if you went in and you measured his-

Demetri Kofinas: I know guys like that.

Christopher Cole: But you go measure the cortisol level of that guy, and you'll see his stress [00:31:30] hormones are off the charts. So, his stress hormones are off the charts because A, he just got a performance review and he thinks that he's going to get fired and he's thinking about the enormous mortgage he has and he's incredibly over levered and his wife is cheating on him and is going to leave him. So, you don't see all this, but under the surface, he's got a tremendous amount of stress.

So, he's low vol with tremendous uncertainty. That is like the market today because we have very [00:32:00] low spot volatility, the market is not doing much, not a lot of activity, but if you look at the internal stress hormones of the market, and these are things like volatility term structure. We had one of the steepest expectations of forward vol in history, the past year, on average.

Demetri Kofinas: Explain that a little bit. How do you see that, what does it look like, how does that curve look? How do you measure that steepness and how far out are you going?

Christopher Cole: So, you [00:32:30] can measure that steepness, you can actually measure forward volatility going out 10 years.

Demetri Kofinas: What do you do that off of?

Christopher Cole: That's done through a market called variant swaps, but most people are more familiar with the forward term structure in VIX futures, which is predominantly out about one year, but when you're buying VIX, for example, you can't buy the VIX as a statistic. So, you can't buy it, but you can buy a future on volatility and that future will trade at some premium or discount to spot [00:33:00] volatility based on the expectations.

So even though vol might be relatively low, it might be at 11, buying the forward expectation of volatility might be at 18, it can be quite expensive, and most people don't realize this, and that's why there's been a lot of talk about VXX and how in an ETF like that-

Demetri Kofinas: Which has an element of volatility of volatility.

Christopher Cole: There is an element of volatility of volatility built into that estimate, yeah, and so vol term structure is one way of measuring the stress [00:33:30] hormones of the market, just like the guy who's sitting there and you wouldn't see that he's stressed out by his behavior, but if you look under the surface, there's a tremendous amount of stress.

And so, the last year or so, we've seen very expensive vol term premium. Another one is skew you can actually look at the pricing of implied volatility at different strike points and skew has been at some of the most elevated levels in history. Another stress hormone might be something called implied correlation and [00:34:00] then there's the implied vol premium.

So if you take all of these uncertainty metrics, they're all very expensive and what this means is that if you're somebody who's just going to buy volatility as a hedge, the problem is that most people say, I want to buy vol, vol is low, well, you're not buying vol, you're buying that uncertainty and as a result, in an environment where vol is low and uncertainty is quite high, the value proposition you get from buying vol is not that effective. And so what ends [00:34:30] up happening is that traditional hedging and tail risk hedging becomes very expensive.

So, whereas an active long vol manager like Artemis, we're finding ways to use arbitrage techniques and to buy and carry vol inexpensively. And there's a variety of ways that we do that, ranging from, we might sell vol where it's expensive and recycle it to where it's inexpensive within a long vol bias. We may use opportunistic timing or we may look to find positions [00:35:00] where we can own volatility and get paid to do it.

But all that requires a tremendous amount of active trading and quantitative evaluation of markets.

Demetri Kofinas: So essentially, the way you're going at this is that you're looking to arbitrage volatility. You sell it where it's expensive and you recycle the profits by buying it where it's cheap and an example of that would be selling the first order movement in order to buy exposure [00:35:30] to second or third order movements, which is something I've heard you say before.

But I think it's also interesting what you're saying about the uncertainty being high and being chronically high, because it speaks to the fact that central bank's interventions into markets have done nothing to address the underlying problems. In fact, they've made them worse and investors know that and they've known that all along and that's where that constant [00:36:00] unease and fear and uncertainty come from.

It's like seagulls or any bird that fishes in waters inhabited by sharks, those birds still have to eat regardless of the enormous tail risk posed to them by doing that, and so they're forced along the risk curve and they know that it could be over at any moment. And that's where that great unease and disturbance comes from and that tension and in that [00:36:30] sense, they are analogous to the investors and to the fund managers who are still held accountable based on their returns, relative to the market in order to justify their fees.

And so, you have a lot of these guys knowingly going and picking up pennies in front of a bulldozer.

Christopher Cole: And it's not just the fund managers, but it's the pension fund system. You have a massive number of-

Demetri Kofinas: That's where structural demographics come in.

Christopher Cole: Exactly, baby boomers begin drawing down on their retirements this April, so the first wave of baby boomers.

Demetri Kofinas: That is [00:37:00] a huge thing that no one's really talking about. Why don't you talk about that a little bit?

Christopher Cole: If you look at it, there's this natural ... the last 30 years, we've had declining rates and higher equity prices, but there's been this massive tailwind with respect to demographics. So, baby boomers are going to their primary savings years and begin stocking a ton of money away into [00:37:30] equities and into fixed income. This has created a gigantic savings glut in excess of financial wealth.

That works both ways and starting this year, the baby boomers begin retiring, and all of a sudden, we're going to be coming up against this headwind, which is this wave of boomers that no longer are spending as much money. They're not looking to be risky with their money [00:38:00] and this is going to begin gaining steam in the next 10, 20 years, as these boomers begin to retire.

So, you move out of investments and they're going to draw down on those retirements and begin consuming the retirement income. This is pulling money out of the market.

Demetri Kofinas: And in fact, this isn't a theoretical thing, we've already begun to see this, the first country that was on this path was of course Japan, and they're in a devastating situation.

Christopher Cole: 20 [00:38:30] years of deflation. You could put money into the peak and people talk, oh, the stock market always comes back, well, no, look at Japan. It doesn't, you'll still be waiting to get your money back if you had put your money in the Nikkei at the peak. So, I think it's a perfect example of a system of deflation.

Now Japan has other elements that ... the U.S. is in much [00:39:00] better shape demographic wise than Europe is. I think in terms of ... the first world has terrible demographics overall, but if you look at demographics as an immigration-based country, our demographics look a lot better than many other countries. Europe has terrifying demographics, Japan obviously has terrible demographics, you look at Russia, for example, Russia is going to lose [00:39:30] half of its military in the next 15 years, because they're not replenishing their young soldiers. They don't have enough young men, so their military is literally going to collapse in half on demographics alone.

So, the U.S. fares better than many of these other countries, but nonetheless, there is going to be a push from putting money into investments to drawing down on those investments.

Demetri Kofinas: Listening [00:40:00] to you talk it makes me realize, those same conditions also exacerbate geopolitical tensions, because of course, the Japanese are in a vulnerable place right now, they have been for a while as China has been rising and they've depended on the strong partner with the United States. And the same is true of Russia, they've felt under threat and threatened and so to see ... so that's another huge, to me, [00:40:30] it's remarkable that we've had this buildup of risk without some type of steam, kind of letting off at some point. It feels like we've really gone on for many years now with this building up.

Christopher Cole: The risk will be ... people say, well, what's going to be the catalyst, Chris? The long vol explosion, what will be the catalyst? And the catalyst will be a policy failure, it will be a policy failure or-

Demetri Kofinas: A mistake, essentially.

Christopher Cole: Exactly and that policy failure could be driven [00:41:00] by populism. Now I'm not here to make political judgments on any one person or another, but I don't think there is a Donald Trump without a Ben Bernanke and Janet Yellen. And I don't think there is a Le Pen without a Draghi. I do believe that we've seen, as they have sought to financialize and reward and bail out certain institutions that has rewarded ... you [00:41:30] have seen a situation where if you've held assets, since the Great Recession, if you've held real estate, held stocks, you've done very well. If you're the middle class, you haven't seen your real adjusted income increase since the 1970s.

That's an unpalatable situation, the worst income deviation in history, so they've brought these asset returns from the future to the present, seeking to destroy risk, but what's actually happened is that it's only benefited a small percentage of [00:42:00] people. That's leading to political risk, and since 2011, go back to 2012 in my paper Volatility at World's End, but even before then, at the very end of those papers, I put a graphic from Liberally Leaving the People. It's not because I'm some sort of a socialist, but I put that to say that the real volatility is political volatility, and when economics fails us, we move into a realm of political risk [00:42:30] and then war. That's been evident in every fourth turning across history, if you sort of subscribe to Strauss, how generational theory. Whenever you have a failure of monetary policy and economics, it leads to political failure.

And this is I think where you see the greatest risk for a large policy shock. I think global central banks have proven that [00:43:00] they're willing to be as irresponsible as possible, in order to artificially sustain markets. But what we're beginning to see is a political push against that. And there may not be an EU in three years and that's-

Demetri Kofinas: Have you gamed that out in your head?

Christopher Cole: Absolutely.

Demetri Kofinas: So how do you see that happening? How do you envision that, what are some of the possible ways in which we could get there? And [00:43:30] what would that mean in your view? Would it mean a two tier, would it mean a complete breakup?

Christopher Cole: This becomes a dynamic where if you just use sort of Bayesian analytics and run through different Bayesian scenarios, even though the probability of a political movement in France might be ... although Le Pen is gaining steam and there's elements there, people didn't give Trump much benefit. But you look at Le Pen, that will lead to a referendum for France [00:44:00] to stay. You have Italian elections, Merkel's losing support, and then you have refugees.

So, if you just add these, each one event may not be that probable, but it takes one of those outcomes, the wrong referendum going the wrong way for Italy to leave, for Europe to leave or the wrong political party to gain power in any of these places and you will see an end to the European experiment. That then is a catalyst for global volatility, that is a catalyst.

And [00:44:30] then if you look at it in our country, there is a question as to how, at one end, what are some of the political factors that could drive higher vol here? If we have a more tempered U.S. presidency that drives fiscal stimulus deregulation, you may have a rush to the right tail and we might have a repeat of 1998-99, huge vol. But if you have a very reckless trade policy [00:45:00] with China and that leads to, China's GDP is off the charts.

Demetri Kofinas: They're hiding a tremendous amount of malinvestment in that country.

Christopher Cole: Absolutely, so if you have a full-blown trade war with China, that could lead into a scenario where China goes into a banking crisis and they may begin to become militarized with Japan, in an attempt to sort of at least unify their country, if they can ... so you can start to just play out [00:45:30] over the next five years, a couple different scenarios, where the status quo as we know it, there's numerous catalysts that are on the surface that make it hard to believe that having a realized volatility of five on the S&P is going to be a realistic expectation going forward over the next five years.

Demetri Kofinas: And all these things are happening also, they're not happening at a market bottom, they're happening at seven years of reflation or eight years [00:46:00] of reflation.

Christopher Cole: It's not just equity markets. Equity markets, enterprise value to EBITDA, near all-time highs, at levels that have prefaced for other depressions, really, price-to-earnings don't look bad but the earnings are manipulated by the share repurchases. So, you've got to look at a metric that isn't being manipulated by repurchases. Price to sales, price to book, enterprise EBITDA.

Demetri Kofinas: [00:46:30] I should also mention that just because many of the listeners I know are going to struggle through this interview, but as far as share buybacks, the financial press and the press in general confuses the hell out of people. Because you'll hear a lot of people say, that well, it's great when companies are buying back their own shares, they'll justify it as saying they're confident, but that's divorced from taking a specific look at it. And it's like you said, the most significant thing is they don't have a better place to put that money, [00:47:00] other than to buy back their own shares.

Anyway, go ahead, I just wanted to clarify that.

Christopher Cole: There's nothing wrong with share buybacks, but if you're buying below intrinsic value. So, here's the question, these companies are buying back their shares at historic levels while there's also simultaneous insider selling. If you're buying back your share, supposedly below intrinsic value because you think there's value then why are you-

Demetri Kofinas: Just more reshuffling.

Christopher Cole: It's a financial reshuffling.

Demetri Kofinas: More redistribution.

Christopher Cole: This comes down to like I'm a corporate exec, [00:47:30] I need to hit my EPS target and I can't do it by growing my business-

Demetri Kofinas: Targets are connected directly to their bonuses.

Christopher Cole: Let's go ahead and issue debt and buy back our shares, and there's nothing illegal about it.

Demetri Kofinas: It should not be happening.

Christopher Cole: Yeah, but it's the reality, but at the end of the day, it's an accounting mechanism. But what's even scarier than the stock market is the bond market. [00:48:00] This is incredible.

Demetri Kofinas: It's freaking terrifying, man. What's funny is I'm like here struggling with this interview because I'm like, how do I talk ... I'm looking at your stuff before we do this interview, I have been out of this whole area of like really just taking a step away, in fact, my very first interview on this show was on tech, all on technology, and we covered a lot of different things, but I'm looking to kind of get my head around what's going [00:48:30] on in financial markets again and I've been looking at it because we had an interview right before you with Jim Rickards.

Christopher Cole: He's fantastic.

Demetri Kofinas: The interview has done really well. This podcast hit top charts on iTunes on the second week, it's done really well, but we'll see and I'm actually trying to figure out how do I really want to work these discussions, because the audience is pretty broad.

Christopher Cole: Rickards has hit on this concept about how they're going to freeze the system. You go back, everyone says, oh, the mortgage [00:49:00] crisis, that was so obvious. What's going to be obvious in maybe 10 or 20 years?

Demetri Kofinas: Sovereigns.

Christopher Cole: Exactly, this idea that right now, the entire financial world is built on this idea that you invest in stocks and bonds and they're anti-correlated with one another. So, this idea that I hold a set of treasury bonds or other sovereign debt or other corporates or liquid corporate bonds, [00:49:30] and that's an offset. When my stock portfolio does badly, those bonds do really well and vice versa.

So, if I go down to the average ... if I go down to an average financial advisor here in New York or where I'm from in Austin Texas, and I say, well, chart me a retirement plan. I'll put you 60/40, stock bond split, and then if you have a lot of money and you go down to Connecticut to certain hundred billion-dollar funds, they'll tell you, we're going to lever the bonds [00:50:00] and against the stocks. And that's what risk parity is.

And that is based on this evidence over the last 30 years, in the last 30 years, it's worked brilliantly, it's worked great, but it's worked great as interest rates have dropped and dropped and we're now at zero bound. So, for this to work, really well, stocks and bonds ... the yields have to go to like negative three, negative [00:50:30] five percent for this relationship to hold.

I will say this much, what's amazing if you look at the history of this stock bond correlation relationship, the anti-correlation has predominantly occurred in the last 30 years. So, if we look at the last 120 years, stocks and bonds have spent more time correlated with one another than anti-correlated with one another. It's only in the last [00:51:00] 30 years, my lifetime, that stocks and bonds have been anti-correlated.

So now that we're at the zero bound, if you're making a bet on this anti-correlation relationship, then you're implicitly saying that to get the same benefits you've got in 2008, yields have to go to negative three, negative four, negative five percent. Has that ever happened? No, could it happen, maybe. But I will say something that has happened, I can absolutely [00:51:30] show evidence of this happening where stocks and bonds decline together for a period of two to three to four years.

Demetri Kofinas: The panic of 1907 I think was one of those.

Christopher Cole: Exactly right, 1907, 1912. We saw it happen in the '70s to a certain degree. So, what happens to these underfunded pensions?

Demetri Kofinas: Like Carter, '78, '79, I think, and also right after the recession of 68, LBJ transition [00:52:00] to Nixon.

Christopher Cole: But during these periods of time, it was a much less leveraged system and we had the baby boomers coming into the dynamic and rates were arguably very high. In this dynamic, you could see a scenario where stocks and bonds for three years, four years, decline in tandem, that would be the ultimate bear market. Even if they decline for one year together, everyone freaked out when they [00:52:30] went down simultaneously in one month, during the taper tantrum. But if we had two years of underperformance, the type of chaos that could inflict. And the number of people who have some sort of hidden leveraged position to that relationship, it will be the ultimate kind of breakdown.

And so, we had this entire financial engineering, the entire system has been engineered-

Demetri Kofinas: To function in that manner. The dynamic describing you're describing that has [00:53:00] not held in history, in the majority of times.

Christopher Cole: And we take it for granted, but if you look historically, if that relationship doesn't hold, what is it going to mean, right at a point in time where everyone is retiring and everyone is following the same strategies that are applying these ideas?

Demetri Kofinas: You're touching on something which is that it's a critical event for the system itself to have that, a deviation from that correlation and yet that's what you're implying and again, [00:53:30] I've been surprised that we've managed to go this long with it. In that event, and again, that's the other problem and I think that's why gold has been a very effective long-term play because it's been a hedge against systemic risk and I think just a loss in confidence, overall, in the system itself.

Where does money go in that scenario? Let's say money leaves the bond market, it leaves the equity markets, demand goes somewhere else. If [00:54:00] it's leaving from there it's going ... where do you see that? How does that express itself in terms of rising prices elsewhere, rising real prices elsewhere, if not nominal real?

Christopher Cole: It's an interesting dynamic because I think that, I do agree with the thesis that they will seek ways to freeze the system to stop sort of an outflow, because if you have a loss of faith in the system, [00:54:30] people will seek alternatives. Right now, people are looking to get money out of China, so we're seeing ... it's fascinating to see the rise in the price of Bitcoin and it parallels the rise of China interbank lending. You look at Bitcoin's price and you look at China interbank lending and then I go to places, I just came back from Sydney.

Demetri Kofinas: As the interbank lending rate in China rises, the price of Bitcoin rises is what you're saying.

Christopher Cole: You're seeing loss [00:55:00] of trust and people looking to get the money out of the [crosstalk 00:55:03] system, and it is exactly why you go to Sydney and you go up in front of one of those restaurants, that's the rotating, sort of cheesy, rotating restaurants with a view, and you look around at all the apartment buildings and so many of them, there's no lights, because they're Chinese investors, have just bought all these properties in Australia and they're not even renting them out. They're just there's land begging them. It's a form of capital [00:55:30] flight from ...

Demetri Kofinas: It also reflects a real breakdown in the resource investment allocation dynamics of the global capitalist system, as a result of these policies. The inequality reflects that. If you're investing in building apartments where the demand is coming from people that do want to live in them, there's something grossly wrong with [00:56:00] the system.

Christopher Cole: This is what you're seeing in places like Vancouver, in Sydney, in Auckland, New Zealand. Actually, even as far as Austin, Texas, you see this effect. It's absurd to think that you have, but there's money flowing out and people are looking to allocate it and get it out of a system. So, the idea of freezing the system is a fascinating point, because I think that could be the next kind of, bail-ins might be the next step.

Demetri Kofinas: That's kind of the tension to sort of play off that parallel of the tension between inflation and [00:56:30] deflation, there's a tension between authoritarianism, authoritarian elements, central distribution, central control, versus this distributed system, freer sort of more chaotic and anarchic elements. And I think what you're talking about what the freezing is exactly that, which is the established institutions, corporations, etc., are looking to try and preserve the status quo with whatever means possible, and if they have to freeze the system ...

For you, freezing the system means a global bail-in engineered at the level of an [00:57:00] IMF or something like that is what you're describing. What Jim talks about.

Christopher Cole: Exactly, across correlation to avoid sort of massive selling. In some ways, you sort of saw a hint of that in China. It's fascinating to think that, we talked about preemptive strikes against financial risk. China spends an estimate 20% of their GDP supporting their stock market before a military parade. That's just a perfect example.

People forget about this, James Porter [00:57:30] going on TV and going on Bloomberg the market drops 5% in October 2014. He's on television saying, oh, let's do QE4, well, think about QE4. Just saying that. It's insane, it's unfathomable. Why are people not calling out the credibility here? And then six months later, he's talking about rate increases, it's hilarious.

I think in terms of where vol [00:58:00] as an asset class stands in this, you can't go hide under a rock in cash, because if you do that, you could see a scenario. There're different policy actions where if they deregulate the system, do massive fiscal stimulus, there's not a reckless type of trade war, you end up having all this ... and cut corporate taxes, you have all this money coming back onshore that goes back into share buybacks, [00:58:30] we could be in the 1998-99 style environment again. I think we might go right tail and then go left tail.

Demetri Kofinas: Does the right tail express itself in equities and in what else? Where do you see that inflation happening, if it happens on the right tail? When you're talking about right tail, you're talking about an inflationary scenario. Prices rise and the volatility comes from rapidly rising prices.

Christopher Cole: Or a reflexive dynamic where share prices rise, people begin chasing it because they have to, everyone's being evaluated [00:59:00] on it, every manager out there is being evaluated on a three-year track record or people, in some instances, you have situations where like these superannuation funds in Australia, if they spend any money on a hedge, they drop 10 ranking points and then they're being evaluated on some two year record. So, you end up having like a late '90s scenario where people are chasing performance and that creates its own kind of false sense of demand, of course, until the wily coyote moment occurs.

So, I think it's difficult [00:59:30] to just ... if you're in a situation where you're entirely distrustful, you can't just go purely into cash and you can't purely pull out of the system. Because there could be a scenario where we end up in that kind of hyper, where something becomes overvalued and goes hyper overvalued, that's entirely feasible. At the same time, where do you hide when stocks are overvalued and bonds are overvalued? Where do you hide?

[01:00:00] I'm a believer in owning gold. I think it's one part of the solution, and I think people need to look for alternative asset classes that allow them to be allocated to equities and risk that actually show anti-correlation. So, one of those asset classes is volatility, so long vol funds like Artemis, remember the CBOE long vol index, a 50/50 combination [01:00:30] of the CBOE long volatility, CBOE Eureka Long Volatility Hedge Fund Index, so it's 10 like-minded hedge funds to Artemis and the S&P. That 50/50 combination, since 2005 has outperformed the average hedge fund by 90% with twice the risk adjusted performance of the S&P.

So, using long volatility as an asset class, it hasn't done well over the last three years, four years, but long vol unlike tail risk [01:01:00] is more opportunistic. The average tail risk fund might be down, I think, almost 50%, to make back that 50% you have to make 100%.

Demetri Kofinas: What's the distinction there between the tail risk funds and the long volatility funds?

Christopher Cole: Tail risk is a pure form of insurance. You buy the uncertainty, you hold it and it bleeds, you lose money, but you're guaranteed a pay out under all conditions. A long volatility may use opportunistic arbitrage opportunities and different [01:01:30] timing. You have more basis risk, so you may not make money on the first 5% or 3% down, but you're looking to make a lot of high returns when market is dropping 20% or 30% or when it's going up 30% with high vol.

Demetri Kofinas: Wouldn't that qualify as the tail risk or that's not a tail risk?

Christopher Cole: The difference between long vol is you're finding ways to carry that exposure to change without the negative bleed. So, the average tail risk might be down 50% since 2012, [01:02:00] the average long vol fund is down about 7%. So, it's a much more palatable carry profile.

So long volatility provides one solution because in a situation where there's rapid change and high vol, long vol can do very well, but it's not losing money the way tail risk does, or the way that some of these other products are. Other opportunities exist through funds that are like systematic CTAs. CTAs provide [01:02:30] exposure to market trends and can perform, and then some contrarian global macro investors, guys who bet on change and optionality through macroeconomic change events, can provide some element of protection.

I think one has to get very crafty about finding ... you have to imagine, how can I craft a portfolio that does really well in the event that stocks, bonds decline at once. You can't be 100% in gold, that's not feasible, so the idea is to find a collection of other diversified [01:03:00] investments that are anti-correlated and are positively exposed to change. But that are not losing money dramatically every single year or the way tail risk does.

Demetri Kofinas: Let me ask you this, how does someone who's not invested directly in a fund that actually actively manages that, like Artemis? I'm sure you get asked this question all the time, how does someone who doesn't have that type of money, how does that person invest in financial markets in that manner?

Christopher Cole: It's actually one of the [01:03:30] biggest issues because these products are oftentimes institutional products, they're not really geared towards the retail market. So that becomes very ... there's not an easy solution to that question. There are some liquid alts funds, you have to be very careful about what you're buying, but there are some liquid alts and CTA based funds that are kind of based in liquid alt strategies, but you have to be very careful.

Demetri Kofinas: You're referring to liquid alternative funds that look [01:04:00] to replicate some hedge fund strategies.

Christopher Cole: Exactly and you have to be very careful what you're buying and to make sure that those ... I can't give financial advice on that, but for someone to do the research and to actually understand what those products are and what the fee structures are in those.

I think it's an incredibly difficult question because if you're a $10 billion institution, you have access to a lot of these different ideas. It's very difficult for the guy who has a $100,000 personal retirement system to gain access to smart [01:04:30] convexity outside of these very large based stock and bond index funds.

Demetri Kofinas: But philosophically speaking, what you're essentially saying though, is that you want to be positioned to take advantage of change. You could do that in your personal life in different ways. You could do that ... I'll tell you one of the things, that I don't know if you've ... have you read anything about the electric grid? You know anything about the electric grid and the vulnerability of the grid?

Christopher Cole: It's a fascinating point. [01:05:00] I don't know exactly but you talk about unknown unknowns, that's a great example.

Demetri Kofinas: You go long convexity just buying a satellite phone or a walkie-talkie or some freeze-dried food.

Christopher Cole: That's 100% right. The concept of convexity is really powerful because gold is a form of convexity against the failure of policy, but it's true, Texas has homestead laws, [01:05:30] so by buying real estate in Texas, you have a legal protection. In any event, it is very difficult for someone to seize a home, that's a form of convexity that allows for protection and exposure to, nonlinear exposure to inflation and other aspects, in a legally protected form. Freeze dried food is another perfect example of that, or even [01:06:00] just having a motorcycle that won't be fried in the event of a solar flare. You can carry it as far as you want to go.

Demetri Kofinas: I think what you're touching on is that we've scaled our society, our global village, in such a manner that it's become very fragile. It's very complex and it reaches moments of criticality and we have layer upon layer, infrastructure, information systems, satellite [01:06:30] communications, supply chains, hospitals, medicines, antibiotics, the prison system, energy consumption, all these things are built on the presupposition that we will be able to maintain them indefinitely. And the types of events that we're describing here that would move volatility in financial markets, some of these could potentially cause catastrophic effects to some of these assumptions.

Christopher Cole: And many other [01:07:00] elements and I think it's hidden, the fragility is quite hidden. I think we're going to see this because the fragility, the lack of volatility is self-reinforcing, so today in markets, you have all these ... we talked about some of these factors that come into play where central bank reaction function, you have share buybacks, you have strategies that use volatility as input, these are self-reflexive. So, it's very difficult for vol to break out of a certain point. Vol rises and these pressures, these reflexive pressures begin to push it back [01:07:30] down.

But if you get the wrong policy shock, that pushes vol past that initial point, all of these reflexive factors that are reinforcing lower in lower vol work in the opposite direction. So, there's this theoretical air pocket where once a shock is large enough for a significant shift beyond the reflexive barriers, the shock factor can go up by a magnitude [01:08:00] that is much higher than people fathom in a nonlinear fashion.

Demetri Kofinas: A positive feedback loop.

Christopher Cole: It's a positive feedback loop, so the positive feedback loop works to reinforce lower vol now, but with the wrong policy shock, the same things that are reinforcing lower vol will turn to reinforce higher vol. And that's where we end up with like a 1987 style move in markets.

That's an interesting factor because if you looked at what happened in '87, [01:08:30] you had this large ... people always blame it on portfolio insurance and that was in the middle of a bull market, you had inflation jump up dramatically earlier that year and nominal rate shot up even faster than inflation did. And what ended up occurring is that caused a liquidity seize up in the system and that liquidity seize up suddenly exposed [01:09:00] all of these short vol, short convexity-type strategies like portfolio insurance, that led to a reversal and a very large shock in markets.

Demetri Kofinas: That was also the beginning of electronic trading. Some of that was driven by machines.

Christopher Cole: But this could be a very interesting dynamic because if we ... everyone wants to manufacture inflation. Be careful what you ask for because if we end up getting an inflation shock, that could [01:09:30] be the very thing that causes the liquidity seize up in the system. I don't think money people are prepared for that.

Demetri Kofinas: Explain a bit, how would that happen?

Christopher Cole: It would happen in a very similar fashion to '87. That's the template. People blame it on portfolio insurance. Portfolio insurance had an impact, but I think it had an impact in the later parts. The market sold off 11% prior to the day it dropped 20% [01:10:00] and what ended up happening is that you had increasing inflation in a bull market and a large jump in nominal rates. That led to seize ups in interbank lending, which were occurring well before ... that happened a month and a half prior to Black Monday.

So you have this sell-off, it starts as a ... you have 2% sell- [01:10:30] off, 5%, it goes to negative 11%, you have a seize up in lending, a seize up in liquidity, and then you throw on some of these self-reflexive strategies, and all of a sudden, that air pocket in volatility exists where it's a very slow rise to 30 and a very quick rise from 30, all the way up to where vol [crosstalk 01:10:52]. Non-linearity up to 150. And it looks like it comes out of the blue, in retrospect, it feels like it just happened.

But if you look [01:11:00] at the evidence, there's this build-up. You could see that the whole world is levered to low rates and low volatility and you could see a situation where if we actually get a ramp up in inflation too quickly, that leads to some kind of liquidity seizure, which leads to a rapid unwind of those shortfall positions, we're back to that '87 and that is an interesting kind of template for something that could occur.

Demetri Kofinas: And that's what leads to those air pockets you're referring to, because those are not realized [01:11:30] until each entity investor or mutual fund or whatever gets feedback from the market that tells it, hey, your protocol says it's time to sell and when a critical number of people are functioning off that same protocol or template, you can get a very large move down in a very short period of time. And it can wreak havoc with models if there aren't any market participants there, able to adjust on the fly, to information [01:12:00] that doesn't fit into some predetermined model. Essentially acting as brakes to market collapses.

Christopher Cole: Right, this is the way things always blow up in life. you cannot destroy risk, you can't destroy risk, you can transmute it, so if you go over and the analogy has always been about forest fires, where the idea that you put out forest fires over and over again, you're actually creating more dry foliage, you're creating the potential for a larger fire. Marriage [01:12:30] counselors will say that the couples that are most likely to divorce are the ones that aren't fighting, they're passive-aggressive, they're refusing to bring anything to the surface.

Demetri Kofinas: They're not pricing their problems. The lack of transparency around pricing has been I think the central biggest problem that we faced, and of course, when you don't price the risk-free rate, you're affecting the price of everything else.

Christopher Cole: So, marriage counselors, forest ... the avalanche detection, they go out [01:13:00] skiing up in Jackson Hole, they're out there early in the morning making little controlled explosions to release the pressure in the mountains. Cancer is the same way, if you give the patient amphetamines instead of treating the tumor, the patient's going to die. We've known this in fighting forest fires, we've known it in fighting avalanches, marriage counselors know it, we know it in medicine.

Apparently though, we've just lost our way in global [01:13:30] finance and I think part of the reason is because there is a reflation of a certain ... there's an uber class that's benefited from that and the financialized class that's benefiting from that. But we have created new risks that are very even difficult to fathom, that are even beyond my ability to sit down with Bayesian analytics and come to realization on what they are. [01:14:00] You can sit back and clearly see what events may lead to an EU breakup, it's hard to actually see what air pockets exist from that, that are not seen, that have been paved over?

And this is where it becomes really interesting.

Demetri Kofinas: Are you seeing that reflected at all in any of the ... because the zeitgeist, through film ... I don't know, have you seen Black Mirror on Netflix?

Christopher Cole: I've seen one episode, it was fantastic.

Demetri Kofinas: Although that's a commentary on technology and I think they do [01:14:30] a really excellent job of conveying that unease in the society around that, because in your papers, you mentioned Mad Max, Road Warrior and there's another film also for long convexity analogy, but do see films reflecting the anxiety? And are there any films that you've seen in the last five, six, seven, eight years that reflect the anxiety of the population around this fact that we understand that we're on an unsustainable path. We just don't understand how it's going to play out or where it's going to play [01:15:00] out.

Christopher Cole: Absolutely, it shows up in pop culture all the time, I think, and actually one of my favorite books and I think it should be a book that every risk manager reads is World War Z. Skip the movie, it was ridiculous.

Demetri Kofinas: Brad Pitt, right?

Christopher Cole: Yeah, it's a terrible, the movie had nothing to do with the book, they just stole the name. Max Brooks' book is fantastic because it's all about global policy in action to a ... you have a nonlinear problem, a nonlinear extremist problem [01:15:30] and how different organizations both on a macro and a micro level, either respond or fail to respond. And the rise in the popularity of the zombie film I see, which coincided directly with the financial crisis, I think is a ... monster movies always reflect this underlying tension. Zombies are a non-linear problem. It's like a financial crisis or an ecological [01:16:00] crisis, it's nonlinear, where you end up having what starts as a linear issue, gradually becomes exponential in nature before it becomes out of control.

I think the rise of the zombie genre reflects the underlying tension with how policymakers are failing to respond to a nonlinear problem. And that really gained steam after the financial crisis, you saw things like The Walking Dead and [01:16:30] all these-

Demetri Kofinas: Winter is coming, Game of Thrones, but I think that's exactly right. The outcome of defeating your enemy, which is dead people, are then harvested in the long game to come back at you in the form of winter, which is the armies of the dead.

Christopher Cole: Exactly and now we just have zombie companies and zombie institutions that are ... how do we respond to extremism and how do we face [01:17:00] that? And today we're seeing that threat not only financially, but technologically. When you look at today, I think it's ... can't remember, 4% to 6% of the jobs or cashiers and Amazon is experimenting with stores where you just-

Demetri Kofinas: Automation is going to be ... absolutely.

Christopher Cole: Automation, people talk about we want to bring jobs back to America, we have twice the manufacturing we did in the '80s with one-third the number of workers. [01:17:30] That stat is staggering to think about and we're not even starting about the idea that the number of jobs that are about driving and I came here in an Uber.

Demetri Kofinas: 6% I think is the estimate for job losses by 2018, no, 2021.

Christopher Cole: Self-driving cars and I look at some of my ... I think my first job in the financial industry could be entirely done by machine. I really think about it a lot. [01:18:00] It's staggering to think and it creates a ... this is a non-linearity that's the gaining steam and there is that kind of tension, it goes beyond just finance, but there's that tension and you're seeing that being reflected in the monsters of our pop culture today. And I think that's going to manifest not only through ... it's manifesting through pop [01:18:30] culture and manifesting through populism.

Demetri Kofinas: Let me ask one more thing, and this is obviously, you're not a prognosticator, your whole position, your whole job is to be able to position yourself to benefit from change whenever it comes, but do you have a personal feeling, would you be surprised if three years from now, we're still here in this place that we're in today? And when I say place, where we have not had a significant change in volatility.

Christopher Cole: I would be shocked. [01:19:00] I would be truly shocked.

Demetri Kofinas: So, within this first administration.

Christopher Cole: That would be shocking to me, although I have been wrong for two years in fairness, I've been wrong for two years. I really felt like things would begin to get out of control in 2015 and we saw that-

Demetri Kofinas: When you wrote the Prisoner's Dilemma, when we saw the mean reversion in August after that.

Christopher Cole: But to clarify it, I think that could break out in either tail, because I could see [01:19:30] a scenario where the late '90s, for example, was a period of extreme volatility in high asset prices. The VIX averaged over 25, you had multiple vol spikes to 40, you had two periods of peak to trough drawdowns of 20%. So, you had a tremendous amount of volatility with very high stock prices.

Depending on how the policy levers are pulled and it's very confusing, well, I am not smart enough to predict how those policy levels would be pulled, [01:20:00] or what they would do, I could see either scenario where we would have a break to the right tail with extreme asset prices or a break to the left tail. I would be shocked if we came back three years from now and vol was averaging 10, the way it's been sort of doing in this sense.

Demetri Kofinas: Then you're going to be more scared shitless.

Christopher Cole: I think you can push off the risk, but I think eventually that volatility has to ... and sometimes [01:20:30] people will sit back and say, well, Chris, what about the 19 ... vol was very low in the early 1960s, for a later part of the '50s to the early '60s and we just won a world war and you had this tremendous job creation, tremendous manufacturing, tremendous growth.

Demetri Kofinas: Demographics.

Christopher Cole: The middle class, yeah, that made sense, all those factors are moving in reverse right now, so I think there's one bank that released a paper that's, [01:21:00] oh, we're just going into the low vol regime of the late '50s, '60s. I disagree. I think it's a ...

Demetri Kofinas: Who released that? I didn't see that.

Christopher Cole: It was a well-known bank. I respectfully disagree with that assertion.

Demetri Kofinas: That's interesting and where were they basing that off of, the idea that the central banks would be able to maintain low volatility? What are they thinking? They don't think it's a natural condition of the market.

Christopher Cole: This is one of the problems [01:21:30] with ... we've done a lot of experimentation, we use machine learning in our techniques, we use a lot of quantitative and systematized metrics. But one of the problems with pure quants, is that a pure quant will look at the last 10 years and they will optimize. They fall in love with the data and they will optimize and curve fit to the last 10 years, to the last 20 years. And I think sometimes you have these reports where guys are pure quants and they just look [01:22:00] at data without really thinking about the underlying conditions that drive that data or why that data ... interest rates have dropped. One of the largest declines in rates in history.

So maybe the last 20 years that our systems have been optimized to that, maybe that's not the best assumption to assume for the next 20 [01:22:30] or 30 years. But the pure quant approach looks at those data assumptions and carries them forward and optimizes around them. And what's a little scary is that you have a very unique period of time where baby boomers have been at their prime, in terms of spending, there's demographics, the U.S. has been a unique moment of financialization with lower and lower interest rates and we have created the entire technological and financial system that has optimized to that [01:23:00] dataset.

Demetri Kofinas: That's a really great point. I've talked about that before on this show, in fact, the very first episode I talked about that, which is we have a love affair with data and we have a love affair with measuring things. I use ESPN as a classic example, and if you don't have a way to measure it, you kind of don't look at it, or if you don't have a way to measure it in a way that's proper or makes you feel good, which makes you leave out a lot of stuff.

Christopher Cole: Machine learning, it works great in a closed system. So, machine learning, you use it for spam detection, [01:23:30] for example. That's a pretty simple problem, it's a closed system. Even something that seems complex, like a self-driving car, roads, in many ways, you can model out the number of situations that might occur on a road and they're already having trouble with some of the more difficult ethical considerations. But facial detection, even something as complex as a car, there's a gazillion scenarios but if you run enough cars, you can model all those scenarios or 99.9% of them.

The [01:24:00] problem with politics and financial markets is that it's a changing organism with incomplete data. So, the data that was relevant over the last 20 years is changing and the scenarios that we're likely to face or the very impact of technology itself on those markets and the impact of technology on some of the economic indicators that we use to make decisions, these are changing. So, you can't use [01:24:30] a frequentist type statistical approach, you have to use a more Bayesian type approach. It's very hard for machines, machine learning to do that, as advanced as machine learning is, it's very hard for machine learning to do that. It's still a great tool.

Demetri Kofinas: That's a very good point.

Christopher Cole: But this is part of the problem, imagine trying to create a self-driving car, where as those cars are driving, the rules and the composition of the road is shifting [01:25:00] and that's the problem with applying these techniques in a pure fashion.

Demetri Kofinas: And there is no constraint as to how those rules can change and how the road can change.

Christopher Cole: Exactly and then all of a sudden it becomes much harder for that car to navigate because you're always looking in the rearview mirrors at the last kind of dynamics that occurred and if the road is shifting shape and the rules of how you drive are changing, the car is not going to be adapting fast enough to that.

Demetri Kofinas: You need creative thinking, which is why a lot of people think that active managers [01:25:30] will be ... you'll want to be in a position where you're actively managing or having someone actively managing your money during a period like that, because of the fact that having an algorithm do it, I don't mean a computer algorithm, I mean any kind of pre-programmed approach protocol is going to be inadequate to deal with the type of creativity required at that moment.

Christopher Cole: If we want to talk about one of the major things with, this is fascinating, there's such a push towards ... this active versus passive is its own discussion. [01:26:00] Right now everyone says no one wants to be in active management at all anymore, everyone says we want to be passive, someone's suing a pension system because they were not passive, they're inactive managers.

Demetri Kofinas: For all the fees.

Christopher Cole: Let's go back and look, passive investments, the S&P during this period of central banking has had one of the highest Sharpe ratios in 200 years of equity data. So, your top ticking the [01:26:30] highest risk to return, some of the best performance of beta in 200 years worth of data. By beta, I just mean the standard index funds.

On top of that, many active managers are being driven out of business. What do active managers do? If stocks get too high, they sell, they're looking for intrinsic value, so they'll sell overpriced stocks. If stocks get too low, they buy, they act as volatility dampeners. If [01:27:00] you have a nice balance of active versus passive, passive investments are index funds, this is like communism of finance, just everyone gets a certain amount of capital based on-

Demetri Kofinas: There's no resilience in that type of a system.

Christopher Cole: So, if you have active managers becoming very healthy because they're trying to find intrinsic value and in essence, they remove volatility in the system by acting as a dampener, buying when stocks drop and selling when stocks go high, if you remove [01:27:30] in a world where there's no active managers, the potential for volatility is amplified.

Demetri Kofinas: Because everyone's leaning in the same direction, increasingly.

Christopher Cole: So, every incremental buyer drives stocks up dramatically higher if there's no one to look for value, actively, and then the same thing, every incremental seller, you turn to around sell and there's no bid and markets drop. So, if the whole market moves to passive, you actually have a [01:28:00] nonlinear expansion of the potential for volatility.

So, this whole push towards passive, this whole massive push towards passive investing, they had the new DOJ rules coming on to effect now, managers are being taken out left and right, saying we don't want to pay fees, active management is dead.

Demetri Kofinas: Talk about that DOJ rule a little bit because I think that's a good example of unintended consequences.

Christopher Cole: If you're an investment adviser, it makes you have a fiduciary obligation [01:28:30] in order to put your clients in the lowest fee structure. And then even beyond that, you're held personally liable, so let's just say you put your client in an active manager that charges a 1% fee versus a passive fund that has a very low fee. That active manager underperforms the index fund. All of a sudden, you're liable [01:29:00] for that lack of performance.

Now that sounds like, oh great, we're protecting the little investor, but the implications of this are massive, because consider that that active manager might be holding some element of cash because they might be allocating to certain stocks that are not popular at that point in time, but represent good long-term value. Or they might be holding cash [01:29:30] in anticipation of being able to buy, when overpriced stocks drop.

So, these are factors that you would consider prudent looking out 10 years, but it might cause them to underperform for one year or two years. As a result, then, that investment advisor is liable for that underperformance, so they have to go to index funds. You put all those active guys out of business or we go back to the share repurchase programs, well, guess what? What [01:30:00] stocks have outperformed have been the ones that had the largest share buyback programs. They may not be the best stocks, that might be irresponsible management.

Demetri Kofinas: And there may not be those buyers available to prop those stocks up in the event that there's a price vacuum.

Christopher Cole: Yeah, so the prudent manager says, I don't want to invest in a company that has no intrinsic growth and is just buying back its shares to give their CEOs bonuses. That manager [01:30:30] is being penalized for making that choice and then the ... in essence, the index funds are rewarding those share repurchase programs.

It sounds like a great idea, oh, we're protecting the little investor, but this actually results in these perversions in markets that down the line can actually cause a large amplification of volatility and unintended consequences and [01:31:00] this is happening right at a point when there's a tremendous amount of likely selling pressure from retirees looking to convert their retirement funds into consumption.

So, it's going to be a very interesting framework. I think this is a classic example of unintended consequences of some regulation.

Demetri Kofinas: Chris, it was awesome having you on, man. I got to say, it was intense.

Christopher Cole: I hope [01:31:30] it was worthwhile, it was really fun to be a part of this.

Demetri Kofinas: It was awesome, thank you so much for coming on, it's great seeing you, all right, thank you.

Christopher Cole: It's been a pleasure.

Demetri Kofinas: And that was my conversation with Christopher Cole. I want to thank Chris for being on the program. Today's episode was produced by me and edited by Stylianos Nicolaou. For more episodes, you can check out our website at hiddenforces.io. Join the conversation on Facebook, Twitter and Instagram @hiddenforcespod or send me an email. Thanks for listening, we'll see you next week.