THE GRANT WILLIAMS PODCAST

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The End Game: Episode 3

Mike Green, Logica Advisors

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The Grant Williams Podcast, including The End Game, *The Super Terrific Happy Hour* and *The Narrative Game* represents the Copper Tier of grant-williams.com and serves as a prelude to *Things That Make You Go Hmmm...*, Grant's monthly newsletter which, over the past decade has become one of the most widely-read financial publications in the world.

Blending history, humour and keen financial insight, Grant dissects the financial landscape with thought-provoking commentary—taking readers in unexpected directions and opening up investment avenues away from the beaten path which stimulate the kind of original thinking so lacking in today's financial media.

Drawing on Grant's extraordinary network of experts around the world, *Things That Make You Go Hmmm...* weaves together a tapestry of insight and information, folding in a series of under-the-radar stories and perspectives, to give subscribers an important edge in a fast-changing world.

Copper Tier subscribers can find out what the fuss is all about by upgrading to our Silver Tier!

Bill and Grant's guest for Episode 3 of The End Game was Mike Green of Logica Funds.

Mike's unique perspective in passive investing has been raising eyebrows for some time now and, in a conversation that will have your head spinning, he outlines the dramatic changes passive investing have made to the very fabric of risk markets.

From cigar butts to tail-hedging, Mike walks us through an amazing collection of original thoughts - many of which will take multiple listens to untangle.

Oh, and he also casually explains how markets could, quite literally, go to zero...

Grant Williams:
Before we get going, here's the bit where I remind you that nothing we discussed during *The End Game* should be considered as investment advice. This conversation is for informational and hopefully entertainment purposes only. So while we hope you find it both informative and entertaining, please do your own research or speak to a financial advisor before putting a dime of your money into these crazy markets. And now on with the show.

Grant Williams:
Welcome everybody to number three in *The End Game* series. The last episode we had with James Aitken, as those of you at least will know was an extraordinary conversation. If you haven't got a chance to listen to that yet, please do download it. And we have another conversation for you this week with a good friend of mine, someone that Bill has been looking forward to meeting for the first time, and that's Mike Green of Logica Advisors. I first met Mike about, I guess, four years ago when we sat and I interviewed him for Real Vision.

Grant Williams:
And at the end of the hour-long, I mean, my jaw was on the floor at just how brilliant this guy was and what a great guy was. And I've tried to spend as much time in his orbit as I can since then, because as you're about to find out, he's an extraordinary intellect. So without any further ado, let's bring him in. Mike, welcome.

Mike Green:
Hey, Grant.

Grant Williams:
Mike, when Bill and I decided to do this thing, right? We just figured let's just have a few conversations about The End Game, what it might look like. And literally, Bill said to me, "The guy I want to speak to is Mike Green, you know him, right? Can we get him on?" I said, "I'm sure I could do it for us, but I'll have to

ask him nicely."

Mike Green:
I literally, saw the title, The End Game and I'm like, oh my God, I have no idea. This is going to be interesting because it'll definitely be a free-form exploration of some of the components. I mean, one of the challenges, and we'll talk about this is just, there are so many pieces that are moving right now is. It is almost impossible to definitively say in one form or another what's going to happen as we come into the end of this, and that's the other thing that I think is really important. And it was actually, Bill and you and I have not had the pleasure of chatting before, but granted has played a key role in many pivotal points in my life, whether he wants to accept it or not.

Grant Williams:
He doesn't.

Mike Green:
One of the things that I used to struggle with when I worked with Peter, was Peter would always treat the world as if it was a chess match, right? Well, we have to be in the end game now, we have to be in the end game. And what I would always see on Peter is it's not a chess game, there's not an end game, right? There is no beginning game, there is no middle game, there is no end game, right? It just is, we are this moment and what happens next is what's going to happen next. And I think that's a really hard that everyone wants to know, well, how does this end? It ends for you when you die, right? But for the rest of us, who knows, right? But it's a fascinating topic to explore the possibilities that exist for the next couple of years.

Grant Williams:
Well, I mean, interestingly, the title, it was really because you're absolutely right, the end game we're talking about is the end of really this central bank preeminence, the end of that phase. You're right, it's the end of a phase rather than the end, because you're right, the game just goes on forever, right? There's no winning it, there's no losing it.

Bill Fleckenstein:
One of the reasons why I particularly was keen to be able to talk to you, Mike was because to me, one thing that was part of this morphous end game was how long the central banks would be able to do what they've done? And I always looked at the way the markets had been distorted to my eye because of the policies of the fed and the other central banks. And to me, the end game always began an end what the feds were doing, and the only thing that would can stop these policies would be a currency crisis or currency problem, or the bond market revolting, which are obviously big things, but you can't time them, they happen when they happen.

Bill Fleckenstein:
But when I finally became aware of your work and I saw the paper that you were nice enough to send me. And I went back and watched some interviews, I realized that the sort of the discovery, for lack of a better way to call it, that you had about how the passive flows have sort of gotten to the point where they trump fundamentals in many ways. I thought, wow, this is an amazing adjunct to the same thing. And so I was really curious to learn more about how your framework deals with the world that we have? And in particular, how you manage to make this discovery?

Bill Fleckenstein:
I saw in the last interview you had with you and your partner, it looked like circa 1995. To you, the world changed and you noted that it had to do with the Vanguard flows. My mind it always was because that's when I thought the fed became reckless. And now, for me, you've given me a totally different way to think about it. So could you tell me, and I'm sure other people would love to know, how you made that discovery and how it changed what you did or what you were doing and how you shifted it? I'm just dying to know that story?

Mike Green:
So it's actually really interesting and somewhat embarrassing that happened as late in my career as it did, right? So in 2014, I launched my first firm, a firm called Ice Farm Capital. And going into Ice Farm, I was very much like everybody else in the industry, you tend to approach from the standpoint of, well, gosh, darn it, I'm just better looking and smarter than everyone else and therefore I should be able to do what everybody else is doing just slightly better, right? And if you remember at the time it was very easy to have the sanctimonious sort of view that I would argue a lot of value investors have today, which is you not while I've seen this movie before, you know how this plays out, people just aren't paying attention to the fundamentals, etc.

Mike Green:
And in particular, in the summer of 2015, and really from kind of December of 2014, through June of 2015, you saw this extraordinary rise in the Shanghai stock market. And it basically made the NASDAQ look like nothing, right? If you remember the Shanghai functionally went up 500% over that time period. And it was in analyzing that market that I actually figured out what had happened in the U.S. markets. And so in that market, you had a situation in which money was incapable of flowing directly into China. And so that the way the large institutional assets were being allocated to China was through futures in Singapore primarily. Those futures in Singapore would then try to replicate their position in shares, right? And so they would try to put money to work in a market in which there was an extraordinarily low float.

Mike Green:
And so many of the components of the indices that were represented by the futures were relatively high market cap, but incredibly low float, in many cases, only 5% of the company it was public. And so when the money tried to go in via the futures and into these names, we began to see this pattern that emerged where the individual securities would go limit up, right? Because there was a 10% limit in each individual security in the Shanghai could move. The security would go limit up without a single transaction, but that limit would then be reflected in the price of the Shanghai. And so we actually built a program, I had a quantity at the time, excellent guy, who's now still in the industry is still working in New York, but he built a model for us that allowed us to track each individual security that went limit up or limit down with no transactions.

Mike Green:
And at one point over 15% of the Shanghai was going limit up with zero transactions. And just did this day after day, after day, the single biggest record was one single security went up 32 consecutive trading days without a single transaction, right? So 1.1 to the 32nd power rule of 72 tells you, you got somewhere around 5.5 doublings there, right? Over the place of 32 days, right? And, for me, that was one of those things where

it looks on my oh, my God, this is what happened in the 1990s and I went back and I looked at it. And while we didn't have the same limit up feature, we did have this characteristic of extraordinarily low floats where securities were attempted to be purchased and represented in reflection of their market cap, right? And so if you go back and you look at those dynamics in the 1990s, what you discover is starting around 1995, the single best predictor of performance was what we used to call insider ownership or low float, right?

Mike Green:
And so from the period from '95 to '98, that was the single best factor. Now because that factor had strong correlation with technology, you had a higher proportion of insider ownership if you had relatively recently gone public, right? That meant that the money actually began to flow into the technology space. The technology began to outperform dramatically. We didn't use to have factor portfolios, we didn't have an ETF that was the low float portfolio. We had technology funds and industrial funds and consumer goods funds, right? And because the technology funds had such greater representation of this low flow dynamic, they began to outperform, they began to attract capital and that capital needed to seek a home, right? And that home was in the form of the companies that already existed in the technology space.

Mike Green:
And ultimately it led to the IPOs, which functionally were identical to what we saw in the 2004, 2005, 2006 time period with the RMBS and CLS and CDOs, right? Product was created for money flowing into a market, it's exact same thing that we saw happen in the '90s, right? And so it really wasn't until 2016 and only about a year before I met Grant that actually these pieces really began to fall together, right? And then I really began to understand what had really happened in the 1990s. Mark Twain has the famous expression, "It's not what you know." That guys just want you to know for certain that it's just adjusting, right? I mean, I think that's one of the hard parts about our business is that we go in and we are taught narratives and you don't question them.

Mike Green:
And if you operate from false premises then lots of things never fall into place, right? I mean, if you believe that people are prone to feats of idiocy, right? Because you saw it firsthand in 1999, or you saw the craziness in 2015 in the Chinese stock market and you want to believe all the Chinese are just gamblers, right? And I mean, remember that was the lexicon, the Chinese people, they were just gamblers, right? Well, what's happened since they haven't done anything like that since, right?

Mike Green:
So just was it a short-term mania that took the country and let it, or was it actually institutional investors trying to buy and not realizing the impact that they were having on the market? The second one seems so much more plausible to me. And so this puts you into a challenging situation because then all of a sudden you start, I talk about myself now, I would say 90% of what I do is detective work, right? My job, and it's actually similar to what a short seller does, right? I mean, vast majority of your time is actually spent trying to figure out what the hell is actually happening as compared to, oh, well if I extend out my weighted average cost to capital by three more decimal points I can get a more accurate reflection of what the share price should be trading at today.

Mike Green:
I mean, that's what we spend all of our time learning in the industry, at least it's coming from the background that I had coming out of Penn and Wharton and stuff. And it's the least amount of time I spend today, right? I mean, I used to laugh about Warren Buffet talking about, he needed to be able to figure it out on the back of an envelope, right? Well, that's exactly what you should be doing with valuation, right? Because valuation is just mental preparation for yourself, right? You're just being prepared to deploy capital when the opportunity presents itself, whether that's in the British pound, because you think that there's unrecognized competitive features that exist in the UK economy, if X, Y, Z, or as simple as the cost of labor on a global basis falls because the currency has fallen. That's what you're doing, right? And if you can't do it on the back of the envelope, if you need a giant machine and a giant spreadsheet to do the calculations, to tell you something that's simple, right? Then you're probably misplacing your efforts.

Bill Fleckenstein:
So when it was 2016 and you had this magnificent aha moment, what did you do? I mean, I imagine you are set up differently now than you probably were? And from what I've listened to other things you've said you came from the value school, so to speak, and I'm pretty sure that's not where you are today?

Mike Green:
Well, if you've read any of our recent pieces on value yes, you'd figure it out fairly quickly that's the case. So, I mean, again, value is one of these things that you're taught something, right? You're taught how to do something, right? Here's how you do a DCF. My first company was a firm called ValuAdd Software Solutions and was actually valuation software that was built in the 1990s, initially marketed to corporations and then ultimately to the buy side. And it was literally designed to offer different valuation techniques, theoretically sound valuation techniques that you could plug in the numbers and get lots of different sensitivity analysis, etc, around how much something was actually worth.

Mike Green:
As I said, I spent almost no time doing that today, right? I mean the follies of youth, some spend it on women, wine and song and others spend it on computer programming. But the simple reality is that when you do that type of work, what you're really trying to do is prepare yourself so that very quickly, you can make assessments. And as we moved into that period of 2015, 2016, things just stopped making sense. And so I had to go back and create a different other narrative or a different story that explained why the dog didn't bark, right? I was incredibly fortunate coming out of 2016 in that I met or a re met Peter Thiel and explained some of my theories to Peter. At the time, I was much more focused on the dynamics of what happened when everybody sold.

Mike Green:
And so this is one of these things, it's like forecasting the weather, right? If you're missing one little piece, if you miss that butterfly flapping its wings in the Amazon, you're not going to get all the pieces coming together. And so I recognize the criticality of the role of passive and the role of this increased correlation, all of that work was done at that point. But my focus was primarily on the flows out and the idea that the direction would turn against us, particularly, as the baby boomers began to leave. Now the reality is that it's a more complex story than that, right? Because what we talk about passive as this monolithic element, right? That it's 40% of the market or 43% is my current estimate in terms of market cap.

Mike Green:
It's very heterogeneous in terms of its distribution, right? It's not uniformly held at 40%. And the reality is, is that those under the age of about 40 have an extraordinarily high level of passive ownership, and they're the ones that are buying, right? And those over the age of 65, who are the ones that are selling, really those over the age of 70, they actually have quite low passive penetration, it's between 15% and 20% for those over the age of 65. And as a result, what we're actually seeing is discretionary managers being sold, non-discretionary or passive investors being bought. And that inflation is extraordinary and exponential and its power, right? Again a really good detective holds on to little pieces of information, right? Whether it's in a notebook, ultimately I find writing something down and then forgetting where I wrote tends to be the most effective way of remembering this sort of stuff, right? There's the connection in your brain that's created by that process of writing.

Mike Green:
I never know, too, it's not like I can go back and look at my notebook from November of 2016 and say, okay, well, this is exactly where I remember doing this. But what you do is you grabbed the little pieces, right? Those little tiny pieces of information. And so one of the things that had always stuck in my mind is this idea of cash on the sidelines, right? And many years ago, Mike Shedlock who I think you both as well of the Mish global economics blog, he wrote a really good piece talking about the nonsense about cash on the sidelines, right? If the cash doesn't change there's always a buyer and a seller, right? Well, that's actually perfectly true, there is always a buyer and seller, right? And yet the cash levels do change, right? So we see the amount of cash on the sideline change while you're actually capturing there is the fact that cash has no variance, right? So day to day, it doesn't change in price, but the securities do change in price, right?

Mike Green:
And so if you're what you're actually seeing in markets is not a measure of a stock or even a flow, right? What you're actually looking at is history, right? It is not where you can transact. When you see a price on the screen, it's not where you can't transact, it's where somebody last transacted, right? And it's an assumption that next transaction is continuous with that. Now, March was a fantastic example where we got to see lots of discontinuous price action, right? Things that moved in a way that wasn't a single tick step from the last price. That is actually where it becomes really powerful and really interesting to think about how the individual actors behave. And so went back into my misspent youth and started to build models that said, "Hey, what happens if I actually take the rules of passive construction and have those players transact against discretionary players that operate under a different set of rules?"

Mike Green:
And, Grant, may remember I utilize that my connections at a Real Vision to run a survey of investors and to my knowledge, nobody had actually ever done this, right? And actually went out and surveyed investors and said, what's your propensity to buyer so given valuations? And asked them the question at one times PE, on a Shiller type normalized valuation what's your propensity to buy securities on a new inflow while unsurprisingly it's 100%, right? So everyone is going to buy at one times earnings. Well, what is it? 5 times, 10 times, 20 times, 50 times, 100 times, right? And what you get is a chart that very simply slopes down. It's a polynomial chart, but it basically says people have a high propensity to buy very low valuations and a low propensity to buy very high valuations.

Mike Green:
You'll ask them the same question about redemptions, right? What's your propensity to meet redemptions? Well, we all went through this in 2008, right? Nobody wanted to meet redemptions. People gated their funds rather than giving the assets back to their investors when prices were so ridiculous, right? I'm not going to liquidate my credit fund and sell Teenie's one-point, two-point, three-point bonds because the option value of those is just so high, I'm not going to give you your capital back, right? Gating your fund. That's the extreme version of it, right? So those are the rules of discretionary managers, but what are the rules of passive? It's literally, you guys have heard me say this over and over again, and it's simple and it's elegant. And it's surprising that it came from me, but it's just incredibly powerful to realize that passive says, if you give me cash then buy.

Grant Williams:
I'm buying. Yeah.

Mike Green:
If you ask for cash, then sell, well, what price? Whatever price I can get, right? It doesn't matter, right? Because the presumption is every price is the right price. And that's just insane, I mean, it really is, it's totally insane. We know it's untrue. There was a fantastic interview of Jim Simons, it was actually just published and I'll send a link to you Grant so you can include it because I really think it's one of these things that everybody should see. Jim goes straight onto the efficient market hypothesis and just says, look, this is complete crap, it's totally not true, right? And then proceeds to spend the next 20 minutes talking about the complicated component of Renaissance is not actually the algorithms for how to buy something, right? Or what to buy. The complicated part of Renaissance is the algorithm of figuring out how they are impacting the market as they behave, right? And as they respond to their models, signals and buy and understanding the very complex problem of how do I influence a system that I'm participating in?

Mike Green:
Well, I have an extraordinarily high degree of confidence that Renaissance at $75 billion in total capital and only about $15 billion in the medallion fund, $10 billion, I guess if they're so focused on that, then what should be happening at Vanguard and BlackRock. And I know for a fact that they don't do that.

Grant Williams:
They don't turn it. It's interesting because even on a individual basis. I remember talking to a friend of mine, Lee Robinson about this four or five years ago, and we got to talking about the differences between professional investors, for one of a less pejorative word, amateur investors, and he said that the professionals know how to sell and amateurs don't know how to sell or when to sell, but they don't know how to sell. And so it's interesting to hear you talk about that as the buying side of it is no problem because it never is, right? There's always an offer, there's always an offer 24 hours a day, 7 days a week, someone will make you an offer in that stock. But it's really knowing when to sell and being able to sell when markets get dislocated and people gate funds and spreads wide, and people say no bids that. It creates huge problems.

Mike Green:
Well, you and I, in our conversation back in December of 2016 had an interesting conversation, right? Many of the people that last in an industry tend to come in relatively close proximity to a catastrophic event. They see the craziness that can actually happen in a market. And as a result, they are perpetually

terrified or maybe aware is the way I would use it, right? But yes. And Leon levy has a phenomenal people always ask me for books, right? I mean, one of the best books you can ever read is Leon Levy's The Mind of Wall Street, right? And he talks about the fact that when he was building Oppenheimer in the 1940s, he actually made a very conscious choice to hire nobody who had had any experience, nobody who had lived through the 1930s, right? Because he just didn't want people who were afraid, right?

Mike Green:
You hear the same thing from Stan Druckenmiller. He was handed the reigns in the 1970s and his boss said, you're not the most skilled, you're not the most talented, you're certainly not the smartest guy here, but you are the youngest guy here, and as a result, you don't have the battle scars that everybody else has. And as a result, you're the guy to lead us through this, right? It's interesting. You use the phrase the difference between the amateur and the professional, right? I would also just say that I see this very specifically in youth and I think it's a very powerful feature, but I also think that it is a perfect example of the challenges that we're going to have, right?

Mike Green:
So for many years, I've run a strategy that I call quality junk, right? And I'm effectively trying to buy stocks that have a very high quality component to them in particular, in terms of reduced levels of leverage, reduced levels of volatility in the stock market. And part of the reason why I do that is because momentum is a strategy that rewards low volatility, right? If you just think about the simple math of something going up 10% and then down 10% while it's actually down 1%. And if money is continually flowing into a passive strategy that is allocated on the basis of market cap, that high volatility, that volatility drag that results becomes a negative momentum contributor, right? And on the other side of that, junky companies tend to have relatively high volatility in part because a significant portion of their capital structure is on the credit side. And so the equity is truly a residual and can move with a tremendous amount of volatility. When I worked with a young person who had a similar strategy, he called the cigar stub strategy, right? He basically...

Mike Green:
... who had a similar strategy. He called this the Cigar Stub strategy. He basically was trying to go short, nearly bankrupt securities. Now, anyone who's done this for a very long period of time, knows that that strategy can't work. Because the cost to borrow those securities is extraordinarily high. And as I pressed him on it, he's like, "I have no idea what you're talking about. I don't have any problem borrowing these securities." I'm sitting there like, "Oh, that can't possibly be true." And sure enough, he was right. And what I hadn't realized, and this is the sort of thing that, again, is the benefit of being around young people, it's one of the reasons Peter Thiel constructs his organization the way he does, where I was a dinosaur and many other people were much, much younger.

Mike Green:
Because that naivete, that inability to say with experience, well I'm not going to look at the strategy because I know it doesn't work, often blinds you to changing market structure. And so this was, to answer Bill's earlier question about how do you put these pieces together? Well, this is another piece of the puzzle because what you discover is that the reason he was not having trouble borrowing is because Vanguard and BlackRock had become so large and because they don't make money, none of us make money running a zero basis point or a three basis point fund in terms of management fees. The way they make money is

by lending out their securities. And so it causes a security to go special. It's just like a commodity. It passes a pinch point in which the quantity that is demanded is in excess of the quantity that is supplied.

Mike Green:
When you have someone like BlackRock or Vanguard who has to lend out everything they possibly can in order to create profits off of zero management fee products, the supply of securities available to lend is extraordinarily high. I know it's a terrible idea to be borrowing and lending out these securities because they benefit from the same general lift that everybody else has in a passively driven market. The Vanguard total market index basically buys every security out there. It's got the largest inflows of any vehicle that exists. But if you want to borrow it, they'll lend it to you very, very cheaply. And so his strategy was an extreme version, was the tail version of [inaudible 00:28:18]. And it worked extraordinarily well until unfortunately experienced tremendous problems in the February March time period. And in part, because he hadn't actually understood exactly what was happening and exactly why this mattered and et cetera.

Mike Green:
This is part of the dynamic to explain this long winded diatribe. So if he had come in through a crash environment, instead of coming in through a massive bull market, he might have run that strategy with less leverage. He might have been willing to de-tune it and not try to maximize his PNL. And understand that the five-year history that he was looking at was far from indicative of everything that could happen to that. So in that momentum unwind that occurred in April and May, that strategy just got destroyed.

Bill Fleckenstein:
So if I can try to pin you down a little bit more, so as 2016, you've figured this important thing out, what would your portfolio have looked like generically, say six months before you really crystallize this? And then how did it look six months later? And what sort of intellectual gymnastics did you have? How did that go?

Mike Green:
The biggest change that happened and the single biggest... The one thing that I recognized that I had been doing wrong, I had for a very long period of time, sought out expensive areas of volatility to sell and cheap areas of volatility to buy. And suddenly I found myself recognizing that if the surface was curved... You can think of the impact of something like passive on a theoretically efficient surface like a massive body. It creates a gravitational frontier and bends. Now we're getting off into the hippy dippy sort of stuff, but it bends the surface. It literally changes the return service in the same way that a massive body changes the path of light through gravitational forces. And the minute you recognize that you recognize that optionality is not properly being priced because the assumptions that go into the pricing of options under the efficient market hypothesis, which actually unlike many other aspects, sits at the core of all option pricing models.

Mike Green:
Risk neutral arbitrage requires the efficient market hypothesis to be true. And that's how all options are manufactured. That's how it's measured on a regulatory basis. What you suddenly recognize is that options no longer behave in the way or no longer should be priced in the way that they had historically. You need to actually toss out a Black-Scholes Model entirely and understand that what you are accessing is non-recourse leverage on a curved surface. And it sounds very mathematical and very full of nonsense, but you can visualize it the minute you recognize that curve, you understand that that doesn't work

within with an EMH type framework. And so my portfolio became straddles. I was always long calls. I was always long puts. And where I made mistakes in my portfolio, it was expressing too much directionality.

Mike Green:
And again, this goes back to the conversations that I would have with Grant. I was looking at the sources of volatility selling, where people were providing you with those options, even back then. And crazily enough, I've run long vol portfolios since December of 2016 in an environment in which, until basically the middle '18, that was a death sentence. And was fortunate to run it in a way, because I maintained both upside and downside exposures, recognizing that this curvature led to both inflation and immediate collapses that I was able to make it through that time period. And now things are obviously leaning much more in my favor.

Bill Fleckenstein:
So did the actual security analysis, however you went about it, that had to have some factor. It couldn't just have been proper weighting of the straddles or credit.

Mike Green:
So the irony is is that over the past several years, you could have gone as far as saying, "I'm just going to buy shorter dated straddles on the S and P," and you would have actually gotten paid for that strategy. The guys at Cornerstone Macro, they have an options crew that has demonstrated this. I demonstrate it in slightly different ways. But for the past several years, you've been actually paid to own options. And I would suggest that this is part of what you're seeing in the explosion in call buying by many in the retail sector. They don't do things that haven't worked. They're now piling into this space. Now, I think the way it's being done, at least the way I'm seeing it be done, is not necessarily the right way to do it. But it's a very simple strategy that historically has been disastrous. We're all familiar with the phrase, 85% of options expire worthless, and they all lose money. Those statistics are broadly just not true anymore.

Bill Fleckenstein:
Yeah. Because there's so many on the flies, on the wings, that don't have any real meaning anyway, most of the time.

Mike Green:
Yeah, exactly and so from a regulatory standpoint, if I'm forced to purchase a down 20% put on a continuous basis to reduce the amount of capital that I need to hold [inaudible 00:33:56] portfolio, I'm not actually, this is to the Nassim Taleb point, I'm not actually evaluating whether or not that down 20% put is the right price. And I'm saying, "Okay, well, if I'm going to run my business, I have to own that down 20% put."

Mike Green:
And so this has been part of the pushback that I've had for years against the strategies that try to buy these extreme tails, because there's so much capital out there that is actually focused on the need to hedge from a regulatory standpoint, that I actually think a lot of the skew and stuff that we're seeing is telling you that those legs are often overpriced. I tend to find the at the monies and the nearer shoulders to be much, much cheaper. Which is theoretically what they're selling.

Grant Williams:
Mike, you brought up obviously the kind of dislocations we've seen recently in this massive jump in put to call ratios and this huge kind of swarm into options. A lot of that has been placed at the feet of quote unquote, the Robinhood crowd, retail, going back to the 99 days when we saw this phenomenon. What does that change to the market structure done for you? Have you gone back and looked at what happened in the late days of the dot-com bubble to see how this might... And because we're seeing, talking about your Cigar Stubs trade buddy, what he would have made of Chesapeake and Hertz and all these other things, obviously they would've just carried him out on a stretcher. But is this just a moment in time? Or does any of your back testing suggest that there is a specific path that this is going to take that will look familiar?

Mike Green:
Well, I haven't seen his portfolio, but at least at last check, he was short Chesapeake and Hertz. So that's exactly the point on this type of dynamic, right? So I think it's interesting because I think that the role of Robinhood is overstated, at least on my analysis in much of this. And I'm cautious because I do think it does play a role, right? There's absolutely no question that if single stock options are purchased significantly out of the money, in an environment in which prices are largely inelastic the dealers themselves, as they hedge those options that they've sold and have the unintended consequences of forcing that price up, increasing their Delta and therefore they have to buy even more to hedge. And I think that that's actually a primary explanation of what has happened with things like Hertz and Chesapeake, where the prices soared even as the securities themselves were bankrupt.

Mike Green:
The second thing I think obviously that contributed there is that you had many distressed credit investors. Their strategy often involves buying the debt and shorting the equity. With their analysis giving them comfort that the equity is worthless, there's uncertainty around the recovery and the debt, and you'll use part of the profits from shorting the equity to offset that. Well, those best laid plans and professional insights often fall apart when you're tapped on the shoulder by your risk manager who says, "Well, I'm thrilled that you decided to buy Chesapeake bonds thinking that they have a recovery of 65 cents, but you're also now short this equity that you shorted it at a $1.25 that has gone to 6.50. And so all profits are gone. Clearly, you don't know what you're doing and we can't take the risk on this position."

Mike Green:
And I think that's, I've talked about this with a couple of other people, I mean, one of the biggest challenges when you look to empirical finance and the idea that contained in those prices is the story of what happened in the past. And you have no idea why somebody transacted. Did they transact because a risk manager tapped them on the shoulder and said, "I don't care what your DCF says. I've got a stock this moves against us for 400%. Take the position off now."

Bill Fleckenstein:
Well, that's precisely, when I was running my short only fund, this was precisely why I stayed away from those kind of broken stocks that would get down to those levels where you knew they were going to go to zero, but people don't appreciate the risk management required to actually to have enough [crosstalk 00:38:15]. Yeah, so I just basically said, I'm not doing that just because it was too hard. And so that kind of makes me think about your cigar butt fellow that... It was working and he didn't quite know what he might've known had he seen a different part of the cycle. So as it applies to how you make all of this work,

when you see something changed, do you have to... When we got into the bumpy period, for lack of a better expression, earlier this year, did you have to tweak how you weight different variables to capture this passive factor? Or does the risk management take care of itself? Or do you have to say, "A-ha, I got to do something different." How do you manage that piece of the equation?

Mike Green:
So nobody has a 100% of the answers. Or at least if they do, I haven't been introduced to them. And so we are constantly aware that there are changes to how we have to manage our portfolio. One of the greatest gifts that I've actually had in joining Logica is that for the very first time in my career, I have a true partner and somebody who I'm truly who I can't think of a better peer to exchange these types of ideas with. We come at things. Wayne Himelsein is just absolutely brilliant. We come at things from a completely different perspective 99% of the time. And yet we arrive at almost the exact same conclusion close to the close to the same percentage. And so he spent his entire year in math and quant, and I spent my entire career, I'm sorry, his entire career in math in quantum.

Mike Green:
And I spent my entire career on the discretionary side. And I recognized as I went through the 2016, 2017, 2018 and into 2019 markets, that one, my traditional process which has allowed me to seek out the best values and the best expressions by looking on a global basis and saying, "What is the purest representation of what I'm looking for?" That that began to be almost a burden, because if the core of the problem is the growth of passive in the United States, then Hey, you know what? You got to focus on equities in the United States. The Japanese yen is an interesting story. And I mean, I still today look at aspects of different markets that I've traded and say, "Oh my God, I wish I could have exposure to that." But the simple reality is, is when you find something this big, you just have to focus. And you just have to say, "Look, I want to own this story. And I want to own this situation."

Mike Green:
A flattering experience. I sat down with Seth Klarman and presented my stuff. And at the end of it Seth said, "Mike, you know this story ends with you dying, right?" And I said, "What?" And he goes... I know it's a dark story, but like that wasn't quite what I was expecting you to say. He's like, "Well, if you're correct, you end up with all the money and everyone is going to kill you." And that's great. But one, I don't think that's quite true. But it's flattering to have you think that. Can I have some of your money?

Mike Green:
And there absolutely is a component of that. I mean, this problem is so big and so huge that I just have to focus on it. The second thing is recognizing that the way we construct our portfolios, we treat it, and I use this analogy all the time. I tell people, it's like we've walked into a casino. We discovered that the roulette wheel is imbalanced and it comes up black 55% of the time now. Now, if it came up black 100% of the time, the casino would immediately take that roulette wheel out because this is like, okay, this is so obvious. There's something really wrong here. But if it's coming up 55% of the time, well, statistically, we know there's going to be periods where that goes for an extended period of time across an entire casino it's not going to matter all that much.

Mike Green:
If you're going to bet at that roulette wheel, you can't adopt a strategy that says I'm going to go a hundred

percent black every single time, because you're going to be wiped out. 45% of the time it's going to come up red and that's the end of your game. So you have to do some variant of Kelly betting that says, I understand what my odds are. I understand how I've improved my odds relative to the construction of the game. I have an edge, and therefore I'm going to build a particular strategy. And so for us at Logica, that means that at any point of the portfolio, we're only betting about 20%.

Mike Green:
And if we're only betting about 20%, that means that we need to seek leverage. And that's actually what options provide in my model. So if you think about that curved space, if you're going to move into a curved space, you need something that is in turn curved itself, and that can provide you with leverage. And that leverage has to be non-recourse because if I use recourse leverage, and I'm wrong, then I can get wiped out just as easily. Well that's what we're thinking about in the option space. That's how we treat it. So I'm looking for that non-recourse leverage both to the top side and to the downside.

Mike Green:
And so our portfolio naturally changes by virtue of how expensive those bets are. We're never betting that much more. So many of the adjustments happen naturally. And we actually wrote about this in our March letter to investors. When you see the VIX print 85 and implied correlations at 100%, basically, I literally put it in my letter, that's the universal symbol for the shrug emoji. Like, I don't know. 85 vol. I don't know what you think. I mean, I don't know. And so to shout at somebody who's saying, "I don't know," to shout, "You're wrong," is like just a silly response. It reminds me of many of the protests that are going on. I don't know. Well, you're wrong. It's a meaningless discussion. And so our process naturally actually takes down exposures even more when things get that crazy.

Mike Green:
And so when you're running a long volatility position, if volatility gets to that level, you kind of just naturally have to say, "I'm going to de-risk." Because the asset class that I'm long now, basically everyone is saying [crosstalk 00:44:54] needed in some way, shape or form. That's not a great time to be building and stocking your warehouse.

Mike Green:
And then the last thing of course, is that as Wayne and I collaborate and look at the environment that has come through, and I mean, obviously I would have preferred to have gone into this with five billion in assets under management because performance, we've been very fortunate, but in the absence of that, this has been just an extraordinary experience where things that we had designed and built our portfolio for that had never happened before suddenly happened repeatedly over the course of a couple of months. And basically things that we had had built into our portfolio as, well we think that this will probably eventually happen, suddenly happened. And now people are turning... Part of the reason why people see me around so much is because people are turning to me and saying, "Hey, you had an explanation for this. Can you explain to us what happened?"

Mike Green:
And we were very fortunate that that occurred early in the product life cycle at Logica. And now it obviously becomes a function of capitalizing on that, but it also means that we've seen things that we hadn't seen before. And so that drives Wayne and I into research and collaboration mode where we're forced to

say, "Okay, how would we treat something different? Given a second stage, what happens from here?" And so that's been very, very powerful to have somebody I can collaborate with in that manner is candidly, not something I've really had before in my career. And it's an extraordinary resource.

Bill Fleckenstein:
So basically the way your process works, I can see, the risk control... I don't want to say solves itself, that's too simplistic, but there's an element to that. So, I mean, I get totally what you just said, how do you go about then selecting the securities in the portfolio or do you use factors to try to decide, okay, what things do we want to have positions in?

Mike Green:
Well, despite Wayne's many years in quant, I now force him to read 10 Ks and 10 Qs. No, I'm joking. So we use factors, but we... You can broadly think about the long portion of our portfolio, at least as traditionally aligned with momentum. And the reason why is because the dominant force in passive is momentum. How do I choose how much to allocate to something? Well, I allocate however much this current market cap is. How did its market cap get there? Well, it either went up or it went down. So if it goes up, I'm allocating more capital to it. If it went down, I'm allocating less capital to it. That is a momentum reinforcing component. And as long as passive continues to grow, I think that we're only going to see episodic exposure to the value factor have any real meaning or value.

Mike Green:
One of the collaborations that we had, and one of the innovations we had was we recognized coming out of an event like March, that you were likely to see some of those momentum characteristics reverse. In part, because people had gotten overly confident that they could short the junk or the cigar butts. And so part of the behavior that you actually saw with the Chesapeakes and the Hertzs, is once their short interest began to pass 40%, which is roughly the supply that's available from the Vanguard and BlackRocks, they began to go special.

Mike Green:
And suddenly something that had costs three or 4% to borrow, moved to a hundred plus percent. Well, shorting something at 100% borrow rate is even though that's an annualized rate and so you're not actually shorting on that basis, it has a very different picture than shorting something at a three or 4% borrow. And so, again I can almost directly paint a line to the role of Vanguard and BlackRock in the debacle of the short interest names. We actually write about this in the third piece of our value series.

Grant Williams:
Mike, let me ask you, how do you, in such a noisy environment as we have right now, when you and I have talked in the past and when I listened to you again now, it always fascinates me because it's almost as if you have to physically stop yourself thinking about the future. It's almost as if there's a point past where that actually becomes detrimental to your strategy. Because if you think about it too much, you're going to come up with a really smart idea about what might happen, and then you're not going to allow the strategy to do its thing. You might try and get around that or circumvent it. Am I right? And if so, how do you do that? Because I know how smart you are and I know how inquisitive you are about the world around you. That must be a really tough thing to do.

Mike Green:
So it is very tough not to be interested in all things at all times. And I think that's actually... I'm trying to think about how to say this properly. That recognition that you heard me talk about before that the problem is so big and that there's so much opportunity in this one space and that I can't distract myself with what's going on around me, that's a skillset that I think belongs to the old for the most part or the incredibly talented young. And so Peter Thiel obviously had that with the PayPals and to a certain extent with the investment in Facebook. I would argue that Jeff Bezos demonstrated that by leaving D.E Shaw and going all in on the idea of an online bookseller that only he saw that the first piece of this was no, this is a compact, dense value that I can easily mail and therefore service over the internet.

Mike Green:
But this creates the platform that I can use to do everything over the internet. That sort of focus belongs either to those who are approaching the end of their career and they're like, "Okay, look, I got to take this shot." Or to those who are incredibly young and incredibly, incredibly skillful in a way that I probably never was. But I have to do that. I just have to. And in the same manner, it's actually quite liberating for the first time in my life to sit here and be able to say, "Man, I'm not following the yen on a day-to-day basis other than understanding the dynamics of flows and how money coming from abroad or going abroad is influencing my core thesis." That's an incredibly liberating feeling in a lot of ways.

Mike Green:
I mean, you've known me long enough to know, you send me an email typically at two o'clock in the morning and I'm going to respond. It's not because your email is so particularly important to me as much as like, I probably was just awake checking to see what's happening in Japan or the UK or whatever else. I mean, I spent the better part of 20... I actually wrote about this on Twitter, I spent the better part of 20 years thinking that I was just so interested and so into my job that I couldn't sleep through the night. And it turns out I had sleep apnea and I was waking myself up and then creating a narrative for a why I was awake.

Mike Green:
You know, I was waking myself up and then creating a narrative for while I was away. But, that is a luxury that I have right now that I can focus on this one thing.

Bill Fleckenstein:
Obviously, this passive is a powerful factor to, I have a gift for understatements, and it's a sort of self-fulfilling prophecy. We're in, if it's a nine-inning game, we're not in the beginning, I'm assuming we're in the middle somewhere and I can see how this can go on rather indefinitely. Have you given any, but as we both know something, this, is the irony is something where the concept is flawed, but it's working well has worked well. It looks like it should keep working well. How do you carry those thoughts around in your head? And, and I know you probably don't worry about how it would end, but you must have given some thought to how long this can go on.

Mike Green:
So this is actually part of the irony for me. When people jump on, Davey Day Trader or whatever it is. There is genius in the innocence, which is this idea that stocks only go up. If I didn't carry the concern about the end game, the simple I've told people this statistic, and it sounds kind of silly, but, if you think about the simple math of what happens when you move from a world that's a hundred percent discretionary and

discretionary investors carry about 5% cash, it's historically been about the level. It used to be a little bit more than that in the nineties, it was about 9%, early nineties was about 9% to a world in which it's dominated by passive investors who carry on average about 10 basis points of cash. It's the staggering math that you go through, as you realize that moving from a 5% cash holding universe to a 0.1% holding universe causes the market to go up 50 X.

Bill Fleckenstein:
Yeah.

Mike Green:
That's the only way it works because the cash is neither created nor destroyed. And so given that naivete, Hey, I actually, Dave Portnoy was onto something when he said stocks only go up. All right, because 50 is a big number, just from switching from one group of holders to another group of holders and that group of holders is basically set in stone. Now the problem with that, is that simultaneously, it also takes the volatility through the roof and so if you think about what happens when you're making that last move, where you're going from 99.9% passive to a hundred percent passive, what price change is required to get that last active holder to sell? It's just, it's volatility, you can't even begin to imagine to the top side. But what happens if you were there you're at 99 point percent passive, 0.1% active and for some reason, the passive decided to sell 1%. What happens to prices?

Grant Williams:
Yeah.

Bill Fleckenstein:
Limit down? I don't know.

Mike Green:
Beyond limit down, they go to zero there is no way you can actually,

Mike Green:
Cause that's what markets are. Markets was the solution for transactions, price that you see is the intersection on a supply and demand not in some, theoretical sense, but it's the point at which buyers and sellers were able to meet and balance that book. Well, if there are no discretionary buyers that are capable of meeting the 1% redemption, because they only have 0.1% of the capital, there's no price at which that market can clear, except zero.

Bill Fleckenstein:
Yeah.

Mike Green:
And by the way, if it goes to zero, that 0.1% active guy he's wiped out too. He's, it doesn't matter how much cash he is holding. And so, that machine approaches limits far before it gets to that point, the volatility becomes so extreme, I would argue, this is what we saw in February, March. It's not that the passive players sold, which is what I was always concerned about it's that they didn't buy anymore.

Mike Green:
So when the demand came to sell, when suddenly the discretionary managers who had convinced themselves that there wasn't going to be a recession in 2020, and that they therefore were massively under invested, going into August of 2019. When they recognized that there wasn't going to be a recession because the fed had moved aggressively, the yield curve had stopped its inversion. Everything was totally fine. And they plowed into the cyclical, low quality stuff saying, okay, clearly the fed has gotten ahead of this and we're going to be fine. When they tried to unwind that in February, March, there was no increase in demand from the passive investors, cause nobody said, "Hey, here's more money". Well, they just bought what they were supposed to buy and so you had an order imbalance that was caused by inattentive investors. People saying, I have no idea what you're saying to me. It doesn't make any sense.

Grant Williams:
What, does it take? What does it take to reverse these flows? What does it take to change passive flows into selling or, can that not happen? Realistically speaking, because there's always money coming into this stuff, because you would think, given the economic backdrop that we've got now, there would be people who would be switching those floods, but it doesn't seem to be happening. And given the fed backstop, which is now literally, as they've said, unlimited, you can understand why the stocks always go up. Mantra actually has some credibility to it.

Mike Green:
Well, as I said, I mean, not only does it have credibility, that's actually true in this model. If you think the passive is going to continue to gain share. And by the way, like I would just highlight, at no point in this that I mentioned the fed.

Grant Williams:
Absolutely. Right.

Mike Green:
If that is correct, then perversely, as long as you can ride through that volatility, you want to be buying stocks. Right. But there's many simulations that I can run. And, I was talking to Leon Cooperman about this, for example,and I said, "Leon, I don't think you understand, I realize it destroys my credibility to say this, but I have simulations in which the market goes to zero." And he's like, "Well, that just makes you sound stupid." and I'm like, "Well." Come March, all of a sudden Leon was like, "Hey Mike, what do you think is going on?". And we're not that far away from where my simulations start to say no, you can actually go to zero.

Grant Williams:
Right.

Bill Fleckenstein:
So, so would it be fair to say Mike, that the active, if there's to be a trend change, albeit for five minutes or five months, the trend change almost has to be precipitated by these active guys. I mean, it's sort of stating the obvious, but since things have gone, as they have for so long, perhaps they have to get extra agitated by some, a bit of outside events, which is perhaps why it took so much what we would consider obvious negative news that piled up in February and March before it went splat. Is that a good way to think about

things? Do you think?

Mike Green:
I Think that's exactly the right way to think about it, because at the end of the day, prices are being set at the margin. The increasingly marginal investor is one of these passive target date funds. The target date funds, people are genuinely shielded from the volatility of the market because they own an uncorrelated asset in the form of bonds. And so when the market falls and the fed reacts to that fallen price by lowering interest rates, what's actually happening there is, it's not that the fed is printing money, but the fed is printing collateral, So the price of the 30 year bond goes up a portfolio that is [inaudible 01:00:07] or a 10 year bond was actually the one that it really moved. When the 10 year bond goes up in price, a portfolio that is composed of 60% equities, 40% ten-year bonds has seen that 40% rise as the 60 has fallen. And they then need to rebalance by selling ten-year bonds and buying equities.

Mike Green:
If you're running a risk parity strategy, where you're running a levered expression of those bonds. Well, your portfolio should have been largely protected where we actually saw the chaos, where things really broken. This is, our portfolios, we actually use rates as a component of a non volatility, downside protection. We looked at what was happening in the rates markets and recognized that the failure of running capital, when the fed cut interest rates by a hundred basis points basically caused those who had sold call options in the Euro dollar space to be liquidated.

Bill Fleckenstein:
markets

Mike Green:
They blew up. And so when you have an exchange liquidation, that has to be settled by auction. Nobody in their right mind is going to step ahead of that and say, "Okay, well, the next price is the price right next to this one." The continuous price, they're going to say, "oh, I'm out of the markets until that clears". And so what happens, tenure rates go from about 25 to 32 basis points. And that's what everybody focuses on. But the crazy part is three days later it's back at 120.

Mike Green:
What killed people was the move from 32 basis points to 120 basis points. Because then everyone who had built their portfolios with rates, being the hedge, had their hedges destroyed. They moved in the opposite direction, And that's where the real chaos happened. That then forced the risk parity guys to unwind. And as the risk parity guys are unwinding the target date for the, I'm sorry, the target vol funds are unwinding as well, because they've now realized levels of volatility that they say, "Hey, should never touch equities as an asset class. Oh my God. These are the riskiest things in the world. Right. Let's get out of these things." Right. Well, again, this is an incentive component, why do we have target vol funds or vol targeting funds to, use the right phrase? Well, we all talk about this, but nobody knows why they exist. I mean, do you guys have any idea why these things exist?

Grant Williams:
Well, I mean, they've kind of grown up out of themselves because like everything, the strategy has worked really well and therefore successful volt targeting environments, beget vol targeting funds.

Mike Green:
So the answer is that it wrong. The reason that these things exist is because of structured products. And what a structured product is, is a principle protection combined with participation to the upside. Well, how do you get that product? What you're actually doing is you're buying a zero coupon bond, So I give you a thousand dollars, then you're going to protect my thousand bucks deliverable in five years. And you're going to give me some level of participation in the S&P. So how do you actually structure that product? Well, I buy zero coupon bond. Let's say interest rates are 2%, I've got five years, so that means I get to buy somewhere... on a thousand bucks, right. I would get to buy a $900, zero coupon bond that would then become worth a thousand dollars in five years. With that remaining a hundred bucks, I go buy an option.

Mike Green:
How do I maximize the value of the option while I construct a strategy that minimizes the level of realized volatility, right? So I say, okay, I'm going to have a strategy that says every time volv rises, I sell. So as the option holder, I don't participate in that high volatility environment that reduces the price of the option and allows me to buy more participation. That's what a vol targeting strategy is actually doing. It's not that people are actually investing in the vol targeting strategy on a Delta one or a cash basis it's that they underpin options.

Bill Fleckenstein:
Interesting.

Mike Green:
And so, again like, this is the sort of thing that's going on that everybody is...I think the technical term is bitching about this stuff, but laziness prevents us from digging in and understanding exactly why it exists.

Bill Fleckenstein:
So you said that, it's like almost the, the fed rate cuts don't matter in the sense that the rebalancing has an impact. And of course, for me, the roads to all evil, lead back to the fed or start with the fed or whatever. And I was just curious, this is more of an intellectual question than a 'how can we make money out of it question'. To what extent do you think, if rate cuts, distort asset markets, and if rates too low change the potential, obviously it wouldn't matter to passive purely, but change the price earnings ratio or price of salespeople will pay for active guys will pay. How much do you think that fed policy, if you will allow that it was slightly a responsible or more than that, how much did that help fuel, if at all, help fuel the rise and the efficacy and effectiveness of the passive strategies? Is there any kind of twinning there of the two factors going together or does it not matter in your opinion?

Mike Green:
So, well, I think everything matters, right? It's just a question of how is it actually influencing things, right? So the way the fed thinks it works is through what's called the Euler coefficient. E U L E R, which posits that people's propensity to consume as a function of interest rates, but lowering interest rates, you're reducing the incentive to defer consumption, you're reducing the incentive to say "that's the hypothesis".

Mike Green:
All of the empirical data tells us the exact opposite. That the higher, the interest rate, the higher, the pres-

sure to consume, the greater the input is. And I'm actually in the process of writing a paper with Mark Blyth of Brown University on this dynamic of what actually causes inflation. What does it actually mean? What drives a lot of the consumption behavior and, and this reliance on the Euler coefficient actually sits at the heart of all of these fed models. And it, it's almost demonstrably inverse to reality. That's part of the reason why you hear me, why you heard me say, like, what I think is actually happening is this is that the fed is raising the collateral value of a portion of the portfolio.

Mike Green:
This behavior is obviously not been the dynamic forever. And Bill, I sympathize with your interpretation as the mid 1990s time period where the fed put emerge and, began this process with the fed put is literally the fed deciding, "Okay, our primary concern is with the expectations channel and nothing captures the expectations channel better than financial markets, so I'm going to turn and look to financial markets to help me establish my policy". Well, if the fed cuts interest rates, anytime asset prices, risk assets take a tumble, what they're actually doing is they're creating conditions for bonds to have a negative correlation with risk assets. And modern portfolio theory tells me that if I have an asset that has a negative correlation with risk assets, it has to, by definition yield less than the risk-free rate, otherwise the solution set to modern portfolio theory moves from a backpack problem, 60 40 portfolios to the optimal portfolio.

Mike Green:
It becomes a levered portfolio and a levered portfolio by definition expands the demand for financial assets greater than the current level. You hear people talk about risk parity is offering protection, what they're really saying is that the 10 year bond has put like characteristics to it, and I'm being paid to own that put because it has a positive yield, right? If I hold it to maturity, I can't lose money. Well, if that exists, then the optimal portfolio becomes a levered portfolio. Now, where does that end? It ends when that asset no longer offers a positive yield. So it doesn't matter what's happening to Boone's. It doesn't matter what's happening to JGB's. The minute ten-year bonds in the United States offer a negative yield or at zero, then you cease to actually have that positive carry put, and those portfolios have to collapse. Now, I don't know. I don't know if that's the end game, but I think that's the end game.

Bill Fleckenstein:
Do you think the fed has, my opinion, the fed is quite low. I believe they back into things and they react to things. Is your opinion that they actually understand this, and that's why it seems the fed is less interested in taking rates negative, unlike Europe. Perhaps you and James have had this conversation. I don't know.

Mike Green:
So James and I have had this conversation. I think James tends to agree, agree with me. I don't know if you've ever had the pleasure of actually sitting down one-on-one with a fed governor. They're all very nice people, not a single one that I've seen sprouts horns underneath their headgear, but in really simple terms, to ask them to understand something that I just made you say, "wow" to, that's not their job. They've never traded a billion dollar portfolio. They've never actually seen this dynamic of, "oh, well, collateral went up in one portion of my portfolio, therefore I have increased risk taking capability". They understand what they were taught, and so, interestingly, Jay Powell is one of the first fed governors not to have the grounding in academics.

Mike Green:
It allows him to have a fully formed opinion of what's going on. And so like my opinion of Jay Powell is it's basically just pressing buttons and "Oh, that worked, okay, let's press it again. That works let's press it again." There's no core understanding of anything that's going on. And that's, I've told my wife this many times, I've been fortunate enough through my career to have the chance to sit down with many of these individuals, and inevitably I come away saying, oh my God, we are in so much trouble.

Grant Williams:
Mike, Mike, let me take you back just quickly, cause we're keeping you a lot longer than I thought we were going to. But when you talked about those simulations that could see the market go to zero. And the fact that we are close, just walk people through a couple of the variables that would have to be in place for that to happen. Obviously not fully constructed one, but just some of the things that perhaps you've got flagged as, as pieces of that jigsaw that, that you need to watch out for.

Mike Green:
So, the single biggest one is ultimately the liquidity, so the challenge of, of firms like Vanguard and BlackRock going as large as they are, is people tend not to think about the dynamic of how a trade actually makes its way to the market. So if the three of us in this room are the only participants and we're all investing with Vanguard and we're all buying, well then Vanguard has net positive order flow, it has to take out to the market and go in and execute a trade. If I'm a seller, you're a buyer, Vanguard will cross us rather than actually have a go out to the market. The problem is, when they get large enough in the market. So that, that net buying activity, or even more concerning actually the net selling activity, becomes a quanta.

Mike Green:
So use the physics or chemical term where, a pulse of light hits an atom and elevates the electron to that next thing where something actually happens. If it goes high enough, the photon will be re-emitted in the form of a particle of energy off of the electron, as it falls back down to a lower level, when that becomes large enough, that the scale that then hits the market is incapable of being absorbed by the market, that's where chaos occurs. And we don't know the form that that takes. Right. Cause we just haven't seen it. I can literally, I can count on one hand the number of weeks in its history where Vanguard has received net sale orders. Unfortunately I think one of those is coming up by the way, but I'm not going to tip my hand too hard on that.

Mike Green:
The second thing I mentioned, the role of the fed. Well, the fed has, in my opinion, a misplaced view of what they're doing, they think that they're stimulating consumption, but what they're actually doing is stimulating collateral. The minute that collateral just becomes another put, so it offers a negative yield or a zero yield associated with it. Then those levered portfolios begin to collapse. This is my biggest complaint about risk parity. I think that there is a fundamental misunderstanding of what they think they're doing. They're using a historical volatility stream and historical measure of returns in which all yields are positive to determine the volatility of an asset class. Well, we know that fixed income, we know that credit is the same thing as writing a short put, the payoff feature is identical and it's all risk parity is, basically the antithesis of the nursing tailored portfolio. Let's sell a whole bunch of, out of the money puts.

Mike Green:
How do I decide that the volatility has been very well? Cause we've never actually seen those puts go in the money and we'll have those puts go in the money, or more importantly, the demand for financial assets collapses because the levered portfolio no longer offers excess return with protection. We have no idea what that looks like. I actually, I know exactly what it looks like. We just haven't seen it before.

Grant Williams:
Yeah.

Bill Fleckenstein:
You've, really certainly changed my thinking since I've been aware of your philosophy and the power of, and the dominance of passive. I'd like to flip it around for a second and ask you a question about active management. So I'm still in the dinosaur school of active management, and so, but I've started to think about it more, so for instance, because of my view of the fed, I'm bullish on gold. And I think that gold mining stocks, there's a lot of them that represent really good value for look that up from a fundamental standpoint. And for the longest time, I couldn't figure out why they traded so poorly. And now I've come to incorporate your viewpoint into saying well, because there's only five people that care, and even though the markets move around on a daily basis, cause it's dominated by passive, there's not much passive that flows in there, all their art or there are ETFs.

Bill Fleckenstein:
So it's made me think it just, as now it takes a bigger amount of conviction on the part of the active manager to do an upselling, to upset the apple cart. It probably likely is if you had a group that you felt like this, somebody else might make the case about another industry, it probably takes an even bigger commitment on the part of what's left of the active crowd to get the stuff to move. Cause it doesn't really go with the flow of what's happening in passive. Am I thinking about that right? Or is there still hope for some of us?

Mike Green:
Yeah, No, unfortunately I think that's the right way to think about it because it does, that's what it requires. It requires such extraordinary conviction on the part of non gold managers. Right. Cause it's at the end of the day, gold managers are already fully convinced. I don't need to pitch, somebody who's a gold bug on "Oh, well here's the attractiveness of why you should own gold". I broadly think, and actually I think I'm going to write my next piece, having hopefully extricated myself from some of the value debate now on the role of gold. And hopefully it's interesting, but I do think that there is that idea that you need to express such extraordinary commitment, not just from the group who already owns it, cause they've spoken, already, right?

Bill Fleckenstein:
Exactly.

Mike Green:
You need other people to basically buy into that. And I think, you're broadly starting to see some of those components. But the other thing to remember about active managers is that they're benchmarked. And so we have built a death trap for active managers, and this is part of the feedback loop that's so painful to people, is. If you think about my analogy of the curved surface, right? Well, the tools that we use for mea-

suring active manager performance don't have the capability of measuring a curved surface. They're linear tools. Things like alpha and beta are linear concepts. They're just literally the M and a Y equals MX plus B equation is the beta component. And the B, confusingly is the alpha component, the intercept is the alpha component. And when you're using linear tools to measure a curved surface, you get nowhere. This is, this is why Newton has become so famous, calculus was developed to analyze curved surfaces. And unfortunately for most of us in the industry, that's beyond our mathematical capability because we are far more interested in making money than pay attention in advanced mathematics classes, but that for me is,

Mike Green:
You know, but that for me is the potential excitement, Is we're going through a phase where some really terrible stuff is happening and some really bad signals are being received and people are reacting to that in the markets. The positive story to the end game is that more and more people begin to recognize this and that we are able to change the structure of markets back to what they're supposed to do, which is allocate capital through the discernment of individual investors, whether they're represented by discretionary professionals or whether they are doing so on their own.

Mike Green:
That's the objective of financial markets is to facilitate the formation of capital. They can then pursue positive NPV projects. The negative is that we decide to continue to follow this path, and the catastrophe becomes so large that the only solution is that the capital markets cease to function as we see them currently and the fed is forced to step in.

Mike Green:
We have a model for how this happened. Under the Nazi stock market the 1930s, you became a symbol of national pride that their stock market would only go up so laws were actually passed that said you can only execute a transaction at a new all-time high price.

Mike Green:
If you think about what that means, it means that literally stock markets can only go up. So good news can be digested with a higher price, although it has to be discounted with the lack of liquidity going forward. So what you see is a market that marches upwards with lower and lower volume and eventually it gets to the point where no transactions happen because you can't sell and nobody can buy. So capital markets ceased to function.

Mike Green:
In the aftermath of World War II when the Western powers invaded and recognized that in order for Germany to rebuild itself in a productive manner, it needed access to capital markets so the decision was made to allow prices to move to the appropriate level. In a single day, the German stock market fell 90%. One day, it fell by 90%! that's similar to what we're setting up today. We're setting up a condition under which there is no liquidity and it was a very real fear of mine that we would actually shut markets in March. I know there was a tremendous amount of outcry for it. People were saying, just stop this, this is craziness! We've done it before. I think we'll end up doing it again. At that point, then Bill, I think you'll probably be right. The fed will become the dominant feature. The government will become the dominant feature, the capital markets will cease to function.

Mike Green:
The only way anyone will obtain access to capital is by virtue of the emperor granting them a contract or a charter that gives them exclusive access to catering the white house. That's what has happened in the past is when things become too big to fail.

Mike Green:
There's a message that I can try to convey to people and I can try to convey in the public sphere. I don't think that there's a way out of this at this stage. I think we're too far in prices are too far elevated relative to the underlying fundamentals. The cost to society from the loss of purchasing power associated with prices, moving to their natural level is probably too chaotic and too catastrophic. We can mitigate it if we start now. I see no evidence of that. I would actually point out that the lobbying activity of BlackRock and Vanguard, and to a lesser extent, some of the other players in this space is now so much more powerful that I can say all I want and nobody in the halls of power is ultimately going to care. There's a fed paper that was written in 2018 by the Boston Fed that like literally reads like he said, she said. It's called this passive investing represents systemic risk.

Mike Green:
It's like here's the unnamed my green point of view then who's the person you're going to call once you've talked to Mike Green, what you're going to call Vanguard and BlackRock and Vanguard and BlackRock are going to say that's a bunch of nonsense. This point is made, well that's a bunch of nonsense. Then this point is saying well that's a bunch of nonsense! I don't think there's a way out. I don't. So I'm forced into a situation in which I, as much as I don't like the game, I had to build a vehicle to trade, along with Wayne had to build a vehicle to trade the game as it's currently constructed and hopefully generate enough social influence and financial wealth that maybe I can influence it in some way going forward. But I think the prospects are low.

Bill Fleckenstein:
Well that makes perfect sense. So I'm going to give you so much power. I'm going to make you king. So you'll have more power than Trump even. If you had that power, If you had the power, how, I mean, I can see how we're past the point of no return, but people ask me this sort of thing all the time. Well, if you were run the fed now, what would you do? And sometimes there's nothing left you can do. But if you had all the power, what could we do to get us off this path, if it's even possible to where we have sort of assured destruction at some point, we just don't want it.

Mike Green:
So many people have talked about this sort of thing. And unfortunately, I think it's, it's a variant of inevitability, although it just becomes question how traumatic it is as we go through this. There will be some variant of a debt Jubilee. That debt Jubilee can take a variety of forms. The way Caesar rose to power was through a debt Jubilee in the Roman economy. Other people have heard me say this as well and I'm public enough now that I'm worried that my aphorisms are becoming very tired, but in really simple form, people like to say we live in the age of uncertainty. That's just a catch all. We live in the age of uncertainty, that is literally the biggest pile of horse hockey that exists.

Mike Green:
We're sitting in our homes that are permanent construction, permanent structures. Mine is in an earth-

quake zone and it has reinforcements that it'll survive a nine and a half Richter scale earthquake. Well, that's not uncertainty. I'm not saying, where am I going to wake up tomorrow? You know what animal is going to invade my cave? What's the risk of being attacked by a bear, etc... I live in an environment of almost perfect certainty where if I were to go upstairs right now, there'd be a nice, warm hop cup of coffee waiting for me and hopefully a wife who loves me.

Mike Green:
That security actually drives inequality. If you simply take a game in which you flip a coin, the best illustration of this is actually the work of Ole Peters, which a lot of other people have heard me guide to on what's called the Ergodicity problem in economics. He just had a paper published in nature December of last year. We inhabit a world in which we've adopted a Calvinist type view which is your empirical worth is driven by your financial success.

Mike Green:
The validity of your point of view is given by your status of standing in society. We all have inherent worth. Some of us are more fortunate than others. Some of us are more evolutionarily adapted to the environment in which we currently exist. People think about evolution as progress.

Mike Green:
Evolution is not progress. Evolution is fitness within an environment, and it actually breeds its own fragility. If I'm a Finch and happens to inhabit the Galapagos islands and nobody else has a beak that's seven inches long and can reach into a particular pine cone, well, then I can grow a beak that is the first one and a half inches and two inches and three inches that eventually it's seven inches. It provides a huge advantage. But if that environment changes a seven inch beak becomes an extraordinary disadvantage. And I go extinct almost immediately. What we have done is we've created a system that is so stable and where the focus itself becomes stability. Preserving the status quo that we've created all the problems of specialization and fragility and inequality associated with it. We're very few members of our society controls so much of the resources and are actually in a position to defend those resources.

Mike Green:
Google can buy any threat. Somebody comes up with a better search engine or a better product like Ways versus Google Maps. Well, what do they do? They write a $2 billion check to buy it and create enough certainty for the founders of Ways that they can't turn down that check. That's sort of environment needs to be disrupted. Stan Druckenmiller had a fascinating proposal that is on its surface it feels the opposite of a technocrat, but his proposal was every Fed meeting there should be a random number generator that if it spits out a particular range, the Fed randomly raises or lowers interest rates by 25 basis points. Why would you do that? Well, simply because it reduces, people's willingness to engage in leveraged speculation.

Mike Green:
Those are the sorts of things we need to focus on. Nassim Taleb, God bless his irascible and totally unenjoyable soul, is very focused on this idea that we need to in some form or another, create the systems and feedback loops that reduce fragility and enhance not stability, but robustness. That's where we need to head to. That's what antitrust legislation was originally designed to help do if depending on how you want to think about it. Right. It's absurd that we have institutions like Vanguard and BlackRock that they control as large of a share particularly of the flows into American retirement savings, etc... And that they're not

treated as systemically important financial institutions. Fingered has no idea how to unwind none and I publicly challenged them to debate me on this point. I guarantee you, they will not cause they have everything to lose and nothing to gain.

Mike Green:
But that's the core of the issue that we face now is that we have this misconception about how things were, and I would strongly encourage people to take a look at Ole Peter's work to understand that things like inheritance taxes, that lead to a redistribution of resources, those actually enhance robustness. When you can consolidate wealth across generations and the way that we currently do, this is absurd, I work for ultra high net worth individuals, that's my job. So in many ways, everything I'm saying probably feels to many of my clients and I'm advocating against their interests. But part of what I'm actually saying is, is that your interests are increasingly poorly served. Being sent a millionaire in a world in which a few people are emperors or billionaires, Like we have these nonsense debates around, who is the most powerful person in history. Well, most poor, most powerful person is always the person who can put a gun to your head and pull the trigger or a spear to your throat or whatever.

Mike Green:
At the end of the day, the governments have become so powerful and so strong that they're able to do almost anything they want. We're seeing that in it's fully formed format. Now that we're abandoning any pretense that we actually need to pay for things. I mean, that's what the implementation of MMT actually is.

Bill Fleckenstein:
MMT kind of coincides. You just hung a curve ball for me, or I want to hang one for you. The Jubilee debt concept because it's something Grant and I have talked about, and it seems like you're one of the few people I've heard actually mentioned it. It's something I feel like is inevitable. It seems like Japan would be the first place given what they've already accomplished. You spoke about the Yen, you've obviously paid attention to Japan. So do you want to just give us your view on the Debt Jubilee, what might trip it off or kick it off?

Mike Green:
Typically what kicks off the Debt Jubilee is that there is so much societal pain associated with the repayment of debt that it is recognized you're either going to have a wholesale revolution at the lower level, at the lower end, or the elites have to forego some of their claims against them. That's what a debt Jubilee is, is the rich people saying we're going to forgive a certain amount of the claims held against the poor people. And we're going to do this in the name of social stability. Now, inevitably it happens at the barrel of a gun. Japan, I would agree is probably further down this path than most other countries. The simple factor on MMT is the reason that we adopted the fictions of limitations on government financing, and that's what they are, they are fictions.

Mike Green:
So MMT is an accurate description of a world in which Fiat currency exists, in which there is no actual limitation that is enforced by an outside party on the government's ability to print, to pay for things. We have avoided the implications of that because we understand that if we chose to behave in that manner, it makes the government all powerful. Everything that I have saved, the billions of dollars that I have saved

can be made worthless by the stroke of a pen where they decided to print a quadrillion dollars.

Mike Green:
The challenge for the elite, and we see this almost in its most pure form in Steve Mnuchin half trillion dollar bailout program in which he refuses to tell us where the money was spent. The reason the elite often resist these moves is because they think they're going to have access to that half trillion before everybody else does. Their connections can provide them with those resources, they're very seductive. Do you stand against the king of the king who is going to bestow you with favors? I don't know. I try to play both sides if I can.

Mike Green:
So I think MMT, the recognition of MMT and the misunderstanding of that it is a prescriptive and that it tells us what to do as compared to what can be done is part of the problem. If I were to do things, I'd probably do it totally differently. It would be almost impossible to resist the temptation to salt away, a couple of billion dollars for my friends and family. I'm not the right guy for the job.

Grant Williams:
Well, I mean, I don't think there is a right person for the job. That's the problem at this point, right? The job has become essentially impossible.

Mike Green:
You know, we've talked for a very long time and I apologize.

Grant Williams:
No, don't apologize!

Mike Green:
What people tend to forget is what actually happened with the New World. It wasn't that it brought incredible resources, although it did, that's important, but more importantly is it gave people an exit voice. It allowed people to say, I've had enough of this. If you don't treat me well, I'm going to go to the New World and I'll take my risks with various other things, but at least I'm not going to put up with your nonsense anymore. There is a direct line that can be drawn between the rise of the social welfare state. Particularly in places like Scandinavia was actually direct contemporary accounts in the 1870s of newspapers writing about the challenges that industrialists were having in Sweden, in obtaining labor, because everybody in Sweden was basically taking off and going to the New World to go hang out with their friends and family that had unlimited access to land in places like Wisconsin.

Mike Green:
In response to that immigrant outflow, that exit voice, people quitting a company, which is really all a nation state is and saying I'm going to go work for somebody else. In response to that exit voice, he said "hey wait! Here's a benefit package for you, they can't match this for you in America. We promise we'll take care of you at 65!". 0.1% of the population live past 65, but at least it was something. We're going to protect you against the abuses of a system. We're going to offer you X, Y, Z in terms of transparency in a court system. We're going to introduce something that looks like the American bill of rights. These were all actions that were taken when the elite had their feet to the fire and were functionally forced to respond to the immi-

gration practice.

Mike Green:
They either were going to start shooting people at the border or they had to say here's a reason to stay, some chose to shoot and others chose to create incentives for them to stay. We don't have that anymore. I have this discussion with people in the United States regularly, where are you going to go? Everybody says New Zealand. Well New Zealand is 5 million people. It's an island in the south Pacific functionally. It exists by the graces of every other government that is willing to defend it and protect its right to claim those resources. It's not a solution. You can't pick everybody up and move there.

Mike Green:
That was what was unique about the New World. It was the first time, you know, thanks to smallpox in which there was an extraordinary quantity of land available for individuals that had not been there.

Grant Williams:
Well, it's not often you can end the podcast with a big shout out and thanks to smallpox, but we've managed to do it, which is a first to me, I've got to say. Listen Mike, Bill and I've been chatting backwards and forwards for a couple of weeks while we've been talking about this. We both been so excited and I've got to say, you've exceeded our expectations. That was an extraordinary conversation as they always are. Whenever I get a chance to sit down and talk with you, I always come away with my head spinning, and this is no exception. So thank you again for being so gracious with your time.

Bill Fleckenstein:
Thank you for sharing your insights because they're particularly unique and I think they're right on.

Mike Green:
It's very kind of you both to say, Grant you've played a singular role in helping me in my career and I thank you both for the opportunity to speak.

Grant Williams:
Well, listen let the people out there listening, who haven't registered and don't know where to find it, give them the full menu, because they're going to want that. They're going to want to dig into a little bit from now. I guarantee it.

Mike Green:
So our website is www.logicafunds.com. You can find our white papers under our blog and research, and you can follow me on Twitter [@profplum99](https://twitter.com/profplum99).

Grant Williams:
There is one thing I meant to ask you, cause I forgot. I kept meaning to ask you this, your avatar on Twitter is Vizzini.

Mike Green:
Vizzini in princess bride! I think I've told you this story before, but in really simple terms, it is a reminder that often the game you think you're playing is not the game you're playing. If you see any fellow who

fancies himself, the world's smartest man, you know, Galileo, Einstein, etc… Are all morons, and yet he doesn't consider that the parameters of the game include the condition that Wesley has immunity to IO cane powder. So he's playing a totally different game than Vizzini thinks. Every time I've lost money of any significant quantities in my career is because I made an assumption about the rules of the game that did not encompass the actual parameters of the game. That somebody was doing something that I hadn't considered.

Mike Green:
I had no idea that I was going to be well followed on Twitter. I had absolutely no idea that I was going to be able to influence people in that manner whatsoever. Twitter has been an extraordinary platform from that standpoint. I've been very fortunate that people pay attention to my ramblings. But with that said that that avatar is an outgrowth of that. The recognition that the real risk is that you don't understand the game being played. I would just say that with Corona virus, by the way, like I have this discussion with my wife on a regular basis. So she tries to fill me in on the statistics and the data. And I'm like Jen, I understand what you think you're telling me but the incompetence that surrounds the response that we've seen tells me that there has to be a game that's being played that's different than what we think. So I've said this elsewhere, I think the disease is not the game. There's something else afoot. When we figure that out, it'll all make sense.

Grant Williams:
Well, I think we've touched on a number of potential other things that are a foot in this conversation. So I think it's incumbent on everybody to come and try and figure out where the roadmap leaves. But again, Mike, I love every minute I get to spend with you and hopefully we can do it in person again soon cause it's been way too long. Take care. Thanks a lot my friend.

Mike Green:
Thank you. Take care guys.

Grant Williams:
Thanks, boom. There we go!

Bill Fleckenstein:
Wow! Unbelievable. It's the radical idea that he has, but I've never had one idea that was so radical and so different, changed my thinking so fast as what his did when I first started reading about it and understood what he was saying. Then when I saw the paper that had the, the coincidence of 1995 of that, I just thought, wow, the combination of the two things ,there has to be an overlap. But then maybe it works through the 60/40 kind of thing, like you said, the collateral piece. But I'm just blown away about how well it describes what's happened, how well it kind of fits with some of my good feelings, probably yours as well. And probably there aren't very many people who understand this viewpoint.

Grant Williams:
No, the biggest compliment I can pay Mike is that he's an even better man than he is a mind. And he's an extraordinary mind. He really is. I've been fortunate to spent a fair bit of time over the last few years talking to Mike and every time I do that, I have everything challenged. As you said, your worldview is challenged. Everything you think you know is challenged and that's so healthy!

Bill Fleckenstein:
It's had an impact on me ever since I got that, I started thinking about my own little fish pond, the metals and miners I've had. That's why they trade the way they do. When I figured that out, then the non-response that you see on times, it's the times and the noise level. It doesn't bother me like it did before, because I would think before, oh my God, does somebody really know something? I think we can't really know that. Now it's like, it's just noise. That's what it is.

Grant Williams:
Well, Bill, all that remains is for us to thank everybody out there listening. The response we had from our last episode with James Aitken was fantastic. I'm pretty sure this is going to be the same, but if you do get a chance, please take a moment to rate and review the podcast in the iTunes store. It really helps awareness. It helps us climb up various charts of one form or another. Well, number one in Luxembourg Bill, apparently I was told last week.

Bill Fleckenstein:
All right!

Grant Williams:
I'm sure Ulf Simonsen is devastated that he's been knocked off the top spot, but it does help more people find this and listen to this. If you've been with us from the beginning of this and the last time that you realize just how important this stuff is for people to hear and understand. So do that for us, would be much appreciated. You can follow me on Twitter. Should you wish to do so @ttmygh

Bill Fleckenstein:
And @fleckcap.

Grant Williams:
Yes he is, and we will see you next time. Once both of our brains have had a chance to, for the fans to rather than to cool down a little bit. Thanks for listening.

Grant Williams:
That was great.

Bill Fleckenstein:
God! I was so focused. I just caught myself. I literally hanging on every word! It is extraordinary!

Grant Williams:
It is really amazing, it really is. He's one of a kind that has to be said. I've said this before, but whenever I speak to Mike, he simultaneously makes me feel dumber and smarter than before I started talking to him. You know what I mean?

Bill Fleckenstein:
The dumber while you are going through it and the smarter after you get a chance to go listen to the replay.

Grant Williams:
Right. Exactly. Right!

Bill Fleckenstein:
I'm here, we're doing the interview and I can't stop myself from taking notes, not about what I want to ask him, but I kept saying to myself, you can go listen to this again because I just couldn't stop. I couldn't stop.

Grant Williams:
No, at the moment, it doesn't.

Grant Williams:
Nothing we discussed during the end game should be considered as investment advice. This conversation is for informational and hopefully entertainment purposes only. So while we hope you find it both informative and entertaining, please do your own research or speak to a financial advisor before putting a dime of your money into these crazy markets.

GRANT WILLIAMS