Rodrigo: **00:00:01** All right, are we live? We're live.

Mike: **00:00:04** We're live in the show.

Rodrigo: **00:00:06** So none of this is trading advice. Of course it's to the regular thing with anything out here-

Mike: **00:00:13** On this spot, on this YouTube channel.

Rodrigo: **00:00:16** Use your big noggins. We're not giving any advice. We're going to chat about some stuff. Talk to your advisor, do your homework and nothing that we say is real.

Mike: **00:00:29** It is for entertainment purposes only, just and beverages.

Rodrigo: **00:00:32** I'm not very sure we have Dave Portnoy train by the way. Is that the right first name?

Mike: **00:00:37** Yes.

Rodrigo: **00:00:38** Who's the other Portnoy that you guys play?

Mike: **00:00:41** Brian.

Rodrigo: **00:00:41** Brian? They are cousins right?

Mike: **00:00:44** They are related? No, they're not. Brian's gone to great painstaking effects to, I don't know why-

Adam: **00:00:51** Distance himself from that.

Mike: **00:00:52** Yeah, I'm not sure if it's-

Rodrigo: **00:00:55** I think his rules are amazing. Rule number one is stocks always go up and rule number two is don't forget rule number one.

Mike: **00:01:03** Simple rules to live by.

Rodrigo: **00:01:04** I think this is great advice.

Jason: **00:01:07** Back test works, looks good.

Rodrigo:	**00:01:10**	You should hear his prediction. You want to know his prediction? He's going to go back. Remember this follows in the conversation. We had Mike yesterday with Steve that we're going to have in our podcast. But the moment that sports start back up and he closes his barstool thing and starts betting on sports again, I actually think all the Robinhood guys go away and they have something else to play with. I'm going to mark the top. The moment we have like NBA goes live, that'll be the peak of the S&P, fearless prediction.
Mike:	**00:01:41**	Oh, nice. I like it.
Rodrigo:	**00:01:42**	By the way, I've been wrong. I've been 0 for 5
Adam:	**00:01:44**	Would you say the second we go with NBA goes live? What is that?
Mike:	**00:01:49**	Year. It's the sports betting International.
Jason:	**00:01:50**	National Basketball Association.
Rodrigo:	**00:01:53**	National Basketball Association.
Adam:	**00:01:54**	Yeah, it's okay. I see. As soon as they go live because that will be the distraction
Jason:	**00:02:01**	It's a popular sport Adam.
Rodrigo:	**00:02:03**	We want to make money for that. But that was fantastic.
Mike:	**00:02:07**	It's a popular sport. Is that the one with the puck?
Jason:	**00:02:14**	Close.
Rodrigo:	**00:02:17**	So what's our topic for today? What are we going to chat about? Sorry, I digress. I was just saying-
Mike:	**00:02:23**	Well, first of all I'd like to thank everybody who keeps joining us for these conversations which are meant to be set in a happy hour setting. So as we've said, use your brains to extract any knowledge and hopefully you'll get lots of entertainment and we do want to have the conversations that you might have at the happy hour setting after a week's work where there's lots of confusing rhetoric going around the investment world and please subscribe and like and share the show. It'll help us gather more guests to have on as well as our own personalities and today it's beverages and leverages, or, I guess, leverage over beverages and risk and reward and vol trading of all sizing and the implications for strategy, volatility and all that. But I'm going to start with the beverage side.

So I've selected a nice Chardonnay today. A Mon Frere Chardonnay, it's from California. It's got a nice little elephant on a bicycle. I think that's fairly apropos for today's market.

Adam: **00:03:36** You've elected to have a taste of Mon Frere.

Mike: **00:03:39** I exactly, precisely. Well played.

Adam: **00:03:43** That's good.

Jason: **00:03:44** I have the West Avenue cider today, delicious heritage apple sour cherry cider, product of Ontario. It's really good.

Adam: **00:03:52** Excellent. I'm drinking a vodka fruit punch because I have just in the last couple of days tried to kick sugar again which I've been indulging in far too frequently over this quarantine. So I am trying a sugar free solution here tonight.

Rodrigo: **00:04:17** Well, this is a Pinot that has ,in Canada now they show if you go to the LCBO for those who don't know in Ontario we have a government runs liquor store and has all these bells and whistles. In this case you can actually look at the label for how many grams of sugar per litre. This one has four so you can drink away, this is healthy good man.

Adam: **00:04:40** Four grams per litre?

Rodrigo: **00:04:42** Four grams per litre. There's tons of those. Tons.

Adam: **00:04:44** Wow.

Mike: **00:04:47** There's tons of litres?

Jason: **00:04:50** Adam speaking - 25 divided by four?

Mike: **00:04:55** There are extra litres at the store.

Adam: **00:04:59** So what do we aspire to talk about this today?

Mike: **00:05:02** I think this is pretty interesting actually.

Adam: **00:05:05** I agree.

Mike: **00:05:06** You've got a couple of- Right. Go ahead.

CalPERS and Leverage

Adam: **00:05:09** No. But I think it was this Monday, if not late last week CalPERS. The California Pension Plan came out and stated that as a matter of policy, they're going to introduce about $80 billion worth of leverage on their investment portfolio, which I want to say represents about a 30% leverage rate on the value of their portfolio, was it 20?

Rodrigo: **00:05:39** Well, that's what I saw from Twitter, I could be wrong.

Adam: **00:05:43** And there was all manner of reaction to this statement. And so it gave us an opportunity to pretext to talk about one of our favourite topics. We've heard a lot about this. You can't eat Sharpe ratio and we've talked a lot about the fact that the whole discussion of leverage is, as Mike will say, turtles, it's completely disingenuous because there's leverage everywhere. If you've got an equity portfolio, the leverage ratio in the S&P is two to one. We all know that pensions and endowments have been leaning very heavily, and at an accelerated rate into private investments like PE, and private equity and real estate and real estate and infrastructure. All of these have a lot of leverage embedded in them. Now they're making this explicit, but really, nothing's changed. Now, I do think it's an interesting point of discussion about how they're going to use this leverage whether they’re going to use it wisely in order to enable them to further diversify their portfolio, or whether they're just introducing what we sometimes called a Texas Hedge, where they're just doubling down on that one primary risk premium, the equity risk premium that dominates most portfolios.

Rodrigo: **00:07:11** So I think I can provide a little bit of context that I don't think any of you have had, because I don't know if I shared this with anybody yesterday. But I was in a conversation with a CIO of a large pension plan here in Canada. I invited him to come but he couldn't do it. Said he was zoomed out. And so we were discussing our strategies, how they would fit with his strategies, how they did during this first quarter. And he said the alternative sleeve was absolutely decimated. ARP got destroyed in like a 12 vol ARP didn't do what they expected it to do. Their risk parity portfolio lost over 20% at 10 vol. Their hedge fund portfolio out of all the hedge fund managers that they hired only one made positive returns. Everybody else lost money. And so he said, do you want me to tell you what we can do together? Absolutely nothing. Like, I cannot mention to the board anything that has to do with alternative. The word alternative is gone. The word risk is gone.

So risk parity, risk premia, I just can't, it's not happening. And yet, we are underfunded and we need to provide better returns. And so what I am leaning towards, I think the only tool left for me as a CIO is to use leverage on beta. And by beta he means all the beta. And I said, okay, so you're taking a chapter out of CalPERS and he's like, what's CalPERS doing? So independently, he came to the conclusion that all this stuff that was supposed to provide cushion and diversification and offset and excess returns has been dismal for the last two years. The board is tired of it, the only thing left because what he mentioned was indeed we know, when I mentioned the two to one on equities in terms of leverage and so on. He said, I'm well aware, the board is well aware. That's why I can do that. Because it is the easiest new thing, that's old. Because they're already using leverage and I can be explicit about that. The only difference is that that's implicit leverage, this is explicit leverage that they're legitimately going to go out to the banks and say, I need this much leverage in order to get more exposure to capture that excess return that I need to provide for my constituents.

Adam: **00:09:38** So it's fine. But are they just talking about levering onto equity beta or equity beta proxies, or are they talking about-

Rodrigo: **00:09:48** You know what? In your case it's more like a 60-40. They're levering it at 60-40.

Adam: **00:09:52** So yeah, then equity beta? Since 60-40 is-

Rodrigo: **00:09:56** No. Equity in bonds, the 60-40 will be. It's like, what's that ETF that Jake-

Mike: **00:09:57** The 90-60?

Rodrigo: **00:10:03** The 90-60. It says something-

Adam: **00:10:04** That's fine, but then they've got a larger capital allocation to bonds to even out the risk. It's not even, but it's better. Is that what they're doing? They're levering up the bonds?

Rodrigo: **00:10:14** That is what I took away from that. They're levering up both sides. He kept saying beta …

Adam: **00:10:19** If you're levering up this 60-40 capital ratio, you're just levering up equities.

Mike: **00:10:29** Well, just a couple of things, I'd love to hear about the-

Rodrigo: **00:10:31** The only thing left.

Mike: **00:10:33** Well, it's the only thing understandable that's left and there's problems in there because the Sharpe ratio of that portfolio vacillates between point one and one or two. And so you lever that Sharpe ratio and over 1, 2, 3 rolling periods you're going to have vastly different outcomes. And then you get into decade long periods where neither stocks nor bonds perform and you have that lever that's going to be a real mess. But I kind of think this conversation actually triggered my thoughts because I haven't had a chance to connect with Adam yet on some of the things that you might have discussed with Andrew. I think it's - sorry, Andrew, you said you had a call with him later - Miller. Andrew Miller on return assumptions. And then bringing that back to the research report from Research Affiliates that talked about the actual significant gap that the endowments have post COVID on their pension requirements on their distributions and whatnot. And so I would love to hear what you and Andrew touched on. If you touched on that. I actually don't know because I haven't had a chance to listen to it yet. But those were things I wouldn't mind connecting.

Adam: **00:11:46** Andrew had had some really good points, as usual, one of them was that non-recourse leverage is very different than recourse leverage. So CalPERS is in a position to be able to issue debt. Now I don't know whether that's true in terms of their corporate or the rules of CalPERS. But they could certainly modify the rules if it's not currently encoded in the rules to allow them to issue intermediate or long term bonds. So you can issue debt. And that becomes non-recourse leverage. If you issue debt, five year debt, 10 year debt, then you can use that leverage to empower as a force multiplier on your diversified portfolio because if markets drop, then the people that have loaned you money are not in a position-

Jason: **00:12:43** There's no margin call.

Adam: **00:12:45** Exactly. There is no margin call.

Jason: **00:12:46** And you're also locking in your interest rate too, as opposed to margin typically, obviously, changing every night. So you get into variable interest rate risk which is a whole other element of all this.

Adam: **00:13:02** Yep. They obviously have different balance sheet components. There's a very large liability on the balance sheet and so you can use the leverage to better manage that liability more directly as well. So, there's a variety of moving parts and if they do this properly, I think they should be lauded for it, if they do it improperly with just like a levered beta bet then I think then, they're just all in on black.

Mike: **00:13:35** Implicit in that too, though, is the fact that like pension liabilities grow as the risk free rate drops. So you've got this downward pressure on very long term rate assumptions which actually balloon the size of the pension obligation. And then you go to the market, you're going to get some capital in and then the assumption there has to be that that capital has to be allocated across a various number of assets that will produce a return in excess of that capital and the payments regardless of the margin call issue. Which gives you a longer timeframe to have the vacillations back and forth, but you still do need to have an excess return. And if the equity risk premium disappears for a decade that becomes still a challenging problem over a decade. I'm not sure how long they were thinking about issuing the bonds or what that might be like, but it still creates some interesting, maybe unintended consequences or long term consequences that are maybe more difficult to manage.

Adam: **00:14:50**

It just reduces the path dependencies in the short term. Like if they're able to issue bonds and create duration on their liabilities. Then they're adding obviously - I mean their liabilities have a fairly long duration anyways, but because of pension liabilities they're adding to that. But the alternative is, you have borrowing using short term borrowing instruments that are callable, which is a typical margin type borrowing situation against long term assets. So you've got this major duration mismatch, like, take on debt, match your investments against the duration of that debt and diversify so that as you say, you're not vulnerable to a situation where you're levering up the balance sheet into a period where the growth side of that equation doesn't deliver enough returns to at least overcome the cost of borrowing.

The whole point is, if you borrow it allows you...given a fixed return requirement, if you're allowed to borrow or introduce leverage, it allows you to diversify. Because when you look at the cross section of the available investments, stocks are high volatility and commodities are high volatility. But there are other types of investments that are much lower volatility. If you want to create diversification in the portfolio, you need to have some of those low volatility investments in there alongside the high volatility investments. And in order to hit your required return, you then have to lever up that full portfolio. So, it provides the option to diversify, but it doesn't necessarily mean that they're using it to diversify.

Mike: **00:16:39**

Correct and even if you get into a long term deflationary environment, even a minor one, you're now paying, you're having to pay back those loans that you took on a long term basis with monies that are more valuable when you pay them back than they were when you took them out. If we're truly in a pervasive, disinflationary or-

Adam: **00:17:01**

Well the value of your liabilities is climbing anyways, because presumably the rates are going up and you've locked in a long term rate and your liabilities themselves are sensitive to the prevailing rates. So your asset liability ratio is improving in the case of inflation. And if you diversify properly, then you also have an opportunity to amplify that effect because the assets in your portfolio that are designed to thrive during inflationary periods are producing excess returns. And then, while the other sleeves of the portfolio are suffering.

Rodrigo: **00:17:40** Which answers the first question we got today, which is how it is managing leverage when both bonds and stocks are going down at the same time? So that's a great question and I think you've covered it. You don't, you're just more exposed to both of them going down at the same time like in the 1970s. They were correlated and they both returned around zero for the decade in real terms. So, if you don't have an inflationary asset, whether it's TIPs or commodities or gold, and you're not levering the whole portfolio, then that becomes a problem. It becomes a real gap. So I agree, levering up just the traditional 60-40 can be a dangerous thing.

Adam: **00:18:22** Now, this has the potential to devolve into just another conversation about the merits of risk parity.

Rodrigo: **00:18:31** Why not? Wait, why not? Okay.

Leverage and Risk Parity

Mike: **00:18:35** It's not just risk parity. I think risk parity is just thinking through one lens of asset classes and the potential for asset classes to provide diversity to a portfolio but that is not the only lens. There are the factor premia, there are things like carry which even in a negative rate environment you have carry. And so, again, it's more about the maximization of diversification if you're going to introduce leverage into a portfolio, it is very important that you are really providing some diversification to the portfolio that truly lets that portfolio thrive in any environment which you may encounter. And that's not just an asset class based discussion. That's a factor based discussion as well. The one that is often overlooked.

Adam: **00:19:26** Yeah, it's complicated because we use these terms interchangeably internally. Where risk parity is not just the traditional idea of diversify appropriately into stocks, bonds and commodities, it is rather identify as many different sources of risk and return as possible, and then form a portfolio of all of those different sources of return in a way that allows each of those sources of return to express their unique personalities when the time is right. So yes, and the idea is, risk parity is much broader than what everybody seems to think it is.

Rodrigo: **00:20:06** … I want to address one thing that comes to mind now that I have, you see CalPERS talk about leverage as a pension plan, and they're kind of letting...when

CalPERS does anything, all the other pension plans are like, oh, that's okay to do? Okay, well I'll do it. And I thought this individual was echoing what CalPERS had said, but in fact, he came to the conclusion on his own. I wonder how many more CIOs of large pension plans are coming to the same conclusion and saying, look, the only thing left is leverage here. The question here is there's a belief that there is a level of instability in the markets right now due to many things, one of which is this volatility targeting, the financial universe is actually levering up more than ever has and that this can lead to instability. Now, the pension plans are doing it and how do we think about that?

Adam: **00:21:03** Well, I'm not sure that that's what they're doing either. The idea of dynamic volatility targeting is different than the idea of creating a strategic asset allocation that you lever and rebalance. So they're two different things. Dynamic volatility targeting strategies are observing the current volatility environment. And since you're targeting a certain volatility, if the market volatility is high you need to reduce exposure. And when the market volatility is low, you need to increase exposure. But that's obviously not the only way to use leverage or target volatility. Target a very long term volatility as long as you have strong assumptions about the true distribution of volatility on average over the long term. If you sort of say, well, equities have an average volatility of 18 or 20%, bonds have an average volatility of 5% and you create a strategic portfolio that achieves that target over the very long term or is targeted to so, you're not reacting to changes in market volatility other than perhaps to the extent it shifts your current strategic allocation out of whack, you'll then rebalance back to that strategic allocation. But that's actually counter cyclical that the activity moves in the opposite direction from the dynamic risk or dynamic volatility targeting approach. So in fact, those two are nicely offsetting mechanisms that can preserve some kind of market equilibrium rather than exacerbating it as it is so often can pervade or conveyed in podcasts and into literature.

Rodrigo: **00:22:48** And I think that's exactly from what I've read CalPERS is likely to do, it's going to set a leverage amount. And then when it goes beyond or below that it's going to probably rebalance and re-up. And this is what, again, not to talk about risk parity again. But risk parity is divided into two camps, those that are dynamic volatility targeting and those that set an amount of leverage and then are constantly acting as a counter cyclical approach using leverage to stabilise the market. Anyway, that's something that's come up quite a bit - wanted to address it.

Mike: **00:23:24** I thought it was interesting. I don't know if you guys actually had a chance to look at the Research Affiliates paper on this, but they sort of made the connection that in an environment where you've got a risk free rate of 1% call that 1.15% on long dated treasury bonds, any return assumption over 4% is aggressive. The average state pension fund assumption is 6.5 with a large dispersion around it. So those are very large pools of capital, they're faced with a pretty significant problem that I'm not sure that they're addressing and CalPERS is going to add leverage. At the same time, they removed their tail protection, which is if you were going to...I'm pretty sure it was not CalPERS that …

Rodrigo: __00:24:09__ Yeah, I think you're right**.** Yeah, they did, like a few months before the event, right?

Mike: __00:24:13__ Right. So now you're going to lever into well, we don't know exactly how they're going to be levering. I don't know, at least if anyone has some comments out there that does know a little bit more detail it would be great. But it would seem to me that you might prioritize some protection if you're going to lever in order to...One of those ways is obviously, we discussed is diversification, right? So you if you diversify, you are cutting off the tails of the individual assets because their exposure to the structural regimes that they have a proclivity to react under. And so that will smooth returns, you're also doing that through diversifying the portfolio. So there's a number of ways to do that. We talked about adding factors and whatnot, but it just seems strange that the reaction is let's throw the tail hedge out the window. And now let's lever. It just seems quite reactionary or but I hadn't really considered the idea that they would be just issuing bonds into the marketplace, which is another interesting wrinkle in that whole thing. It allows you to take a much longer period of time to smooth out the returns.

Adam: __00:25:17__ Yeah, and I'm not sure that that's what they're doing. But I think that that would be a... that's more akin to the Buffett method, right? I was wondering as we go through this you've got sort of more permanent capital. AQR published, it was Lasse Pederson published a few years ago, a paper called Buffett's Alpha where they decomposed Buffett's excess returns into factor exposures and access to very cheap non-recourse leverage through the float of his insurance company and determined that Buffett ran his portfolio at an average leverage ratio about 1.6. So, I was wondering what they sort of trying to mimic the Buffett bet here with his leverage or just lever up into equities, maybe read up into some other factor exposures? Buffett obviously preferred quality companies and low volatility, et cetera. Maybe they're taking some steps in that direction, which I think would be positive. But I wonder, the reality is, there is a huge amount of leverage already on the balance sheet just by virtue of their allocations to equities, private equity, infrastructure and alternatives. So, you're in many respects levering up and already highly levered portfolio. And if you're not taking steps to diversify away the concentrated risk in the portfolio then you're probably compounding the problem rather than creating a force multiplier on the solution.

Leverage and Private Equity

Rodrigo: **00:26:56**

Well, what's interesting is that a large portion of the leverage if not the highest portion of the leverage and a lot of these plans happen to be private equity, private debt. And so one of the discussions we had yesterday with him was I asked him, Canadians are really big into private equity, Canadian funds are big into private equity right now hitting up to like, 50% limits in the long term portfolio. How is everybody feeling about that? And he's like, on the one hand, feeling good, it's dampened their volatility. There's something magical about that. On the other hand, the cockroaches are there and we don't have a clue. We're completely blind as to how much each individual private equity company is vulnerable to, how much leverage they have in the books, and we won't find out for 18 months to two years. So this is kind of a trickle-down effect. But I think we all know, and he knew viscerally as well that the leverage is a big problem there. And the only thing that's allowing them to deal with it is the fact that you don't have to mark to market. But it is.

Adam: **00:28:05**

Well. If there's implied beta too. I know, we know that we can model private equity returns with exposure to small value or increasingly given the current size of the deals, mid cap value companies. We know that small value has a beta 1.3, 1.4 to the market. So there's this implied leverage anyways, in terms of just the beta of the cyclicality of these companies to general market cyclicality and then you layer on excess explicit leverage and then you layer on the private equity companies themselves are layering on and then you layer on further leverage in terms of your borrowing to invest in private equity tranches, and that's the negative or potentially highly fragile leverage that I think investors should be concerned about. I'm not persuaded that that's not actually the direction that they've gone. And from your conversation with your contact, it does seem like that is the direction that these companies are going. It's just like, we're all in this together. We're all loaded up on equity beta. If equity beta fails us, we're all going down together. Though we're going to go down-

Rodrigo: **00:29:28**

And there will be bailouts from the government anyway.

Mike: **00:29:33**

We're going to be bailed out, which is kind of a couple of questions that we have here too is, the incentive to lever up all asset classes. Where does that end? So leverage in itself is a claim on future growth, and it has to either be paid back or restructured or debased. So, you have that issue which I think, Adam you're sort of alluding to, and also talking about the instability that it can create. So you've got more efficient less volatile markets in the short term, but they are also subject to larger or single events. The instability creates this larger breakpoint and then the question of moral hazard is brought in. And for the long term health, I'm not sure that means long term health of the market, I'm assuming maybe it does. But I think that there's not only moral hazard from the standpoint of the idea of risk taking so that you'll get everybody doing this until at some point, you get a massive break. There is also the regulatory moral hazard, which is that of the central banks of the world becoming more and more powerful. These are not elected officials. These are not officials that come into the purview of being elected in a democratic format, yet they hold incredible amounts of power. And you see, you go from 2000 where the US had 15,000 banks today having 5000 banks. That's a lot, a pretty significant contraction in the number of banks that can be operating in separately distinct marketplaces that can have some diversity of their loan book and diversity of their opportunity.

Adam: **00:31:13** Economic sensitivity.

Mike: **00:31:14** Correct. So this is this continued increase of potential instability. It's that castle of sand that you don't know which grain causes the potential earthquake or the potential actual realization of uncertainty where you get the falling sand, down the pile. But these are-

Adam: **00:31:38** It's a weird situation because as you say, leverage, all things equal leverage creates instability. But to the extent that diversification creates robustness, so if leverage is used to increase diversification, there's this competing dynamic, it's interactive. So if you're taking on leverage in order to increase diversification, you're actually making the system more resilient. Then there comes a point where too much leverage makes it, it overcomes the value of diversification and we begin to move back into a state of fragility. I don't think we're anywhere near just observing a typical pension portfolio or typical client portfolio or endowment the portfolio. I don't think we're anywhere near the point where if there was a dedicated push to increase diversification, we would have too much leverage for the amount of diversification. The problem is, we're increasing leverage without driving towards greater diversification and so that increased leverage creates fragility. So I think there's this competing dynamic.

Mike: **00:32:56** Agreed. I think that helps answer the next question that's in the post. Go ahead.

Jason: **00:33:02** I'm just saying like I 100% agree with that. Some of the elements where people are looking to diversify like we've talked about private equity and some of these other investments where the volatility is not as easily expressed may be low liquidity, low vol not fairly representing the risk but the risk is actually high.

We've learned low vol often means high risk and I love your comparison earlier of strategic allocation offsets vol targeting because vol targeting gets it wrong when vol is really low and vol targeting gets it wrong when vol's really high. Generally, it's good. And the strategic rebalancing can do the opposite so that they work but I think you got to be careful when you diversify and leverage, being careful with regards to what you're trying to put in there. Don't fool yourself with some of the things you add into the mix. That may be really a lot more leverage than you then think.

Adam: **00:33:59** And you can't. You're so right. You can't use volatility as a signal if they're obfuscating volatility. Clearly you have no sense of what the true volatility, we all know volatility is flawed anyway. But it's a whole order of magnitude more flawed when you're deliberately obfuscating the volatility by using private marks on whatever your investments are, like private equity does. It's this strange, open secret that private equity funds have low volatility because their marks are not priced by the market. They're priced by accountants, and the price of that accountants put on it changes more slowly than the discount rate that market participants use to price liquid assets and this seems to be a benefit that institutions especially really appreciate and adhere to, and it's like everyone's agreed that we're just not going to discuss the fact that they're deliberately obfuscating volatility.

Leverage and Margins

Rodrigo: **00:35:17** Well, what's interesting is how volatility is viewed in different asset classes by the general public. When you talk about leveraging, sorry, leverage is viewed by the general public. So when you talk about leverage in the perspective of a portfolio, the first thing that comes to mind to most of the retail investors I talked to is, well, you can lose more than what you got like they're thinking you're going to use leverage to lever up small cap equities. Which used to be a quite a big thing in Canada, with the mining companies when I got in the business. Margin accounts were the thing, and everybody was leveraging up small cap and indeed you could lose all of your money and more and it is a real risk.

Adam: **00:36:02** Well, most of those funds are not around anymore.

Rodrigo: **00:36:03** That's right. Well, I'm not talking about retail investors.

Adam: **00:36:05** … in 2006, 2007, right?

Rodrigo: **00:36:09** But even the retail investors were listening to the portfolio managers quarterly calls saying what they were doing what they were levering, and they're going up to their broker with their margin accounts and levering to the hilt. So that is one way to view leverage and now because of what happened in '08, Canadian investors are terrified of the word leverage. So there's this general leverage version. But as you mentioned, this is a different story when you're dealing with a well-diversified portfolio, that when you're using leverage in order to increase diversification. You're not levering up a small cap equity. You're using leverage to maximize diversification. The other area that I always find interesting, when I mentioned look, we're going to grab a well-diversified portfolio and you can have it non-levered and this is kind of the result you're going to get. If you use a little bit of leverage. Here's how you can get a better outcome for the same risk. This is kind of Nobel Prize winning capital market line type of stuff. And they're like absolutely not… I'm totally against leverage. Well tell me about your home and the two other homes that you own. How much leverage do you have there? 20% money down, 80% leverage? Well, that's totally except it's Canada, Toronto doesn't go down. It's totally acceptable for institutions to give massive amounts of leverage at a five to one ratio to individuals, the individuals are okay with taking it with perfect comfort. But the moment you talk about maybe adding a 20% leverage to a well-diversified portfolio, it's absolutely not going to happen. I can lose it all. I just find that cognitive dissonance, has always been fascinating to me. And you can talk about it with them and point it out and yet they just feel like it's still different. So maybe, what is the difference? Is it different?

Adam: **00:37:53** I think it's hidden leverage. People don't notice. People are not constantly pricing their homes, so they are not thinking about their wealth in the context of this levered asset. So, there's just no incentive for anybody to have risk aversion-

Rodrigo: **00:38:15** There is no incentive to call in the margins either. The margin calls for those because then they abandon the property and it goes to shit. They're like, oh, you can't pay sure. Stick around. Let me know when you can pay again. Maybe there's some safety there.

Adam: **00:38:30** I don't know maybe. In Canada, we haven't really in like 30 years we haven't had any downturn in real estate even in 2008. There wasn't a meaningful downside. It's sort of flatlined for a year and then resumed its climb. As Canadians we don't really know and in other jurisdictions, obviously in Europe you had all these borrowers in Eastern Europe who are borrowing in Swiss Francs, and Euros who became very intimate with the risks of leverage where the liabilities were rising profoundly because the currency that they borrowed in had been rising relative to their local currency at the same time as the value of their local asset had declined by a substantial amount. So you get these double whammies. So, I think if you were going to talk to somebody in Ukraine or some of these Eastern European states that they would give you a very different impression of how to think about the borrowing for a home.

Rodrigo: **00:39:42** Even though it wasn't a private wealth individual and he was very against leverage, but then I asked him what he's doing right now, and he's a deep value, small cap stock picker. And I stared at him. I was like, so you must understand the balance sheet of their particular companies. He's like, oh, yeah, I get it, I'm fully involved and, how much leverage do they use? Well, it's different balance sheet leverage, not the same thing. Again, hidden leverage skews the perception of the types of risk that you're taking.

Jason **00:40:18** I'm just thinking of like, okay, so you're absolutely right, five to one if not 10 to one is the norm, if not 20 to one, in fact is not the norm if you're first buying a home in Canada, and there is a comfort level with that. Let's go to a five to one. I'm imagining I'm a listener trying to figure out what could I do? You want to go five to one? What do you invest in and how do you most efficiently get that leverage? The second one, leverage as a tool and the availability of the variety of tools varies dramatically, which we can touch on later. But what do you do with a five to one, if you're going to leverage five to one, does that change what we've already talked about at all or?

Rodrigo: **00:41:06** It comes down to, we always talk about this left tail and equities. When you invest in the market, you have this left tail reality that it's a four standard deviation event that happened once every 10,000 years, but it actually happens once every five to 10 years. That is true in a single asset class. It is a problem. You levered up and every five to 10 years, you're going to have a four standard deviation event and you're toast. It's almost certain that you're going to lose all your money. So how do you do that better? Well, how do you reduce the tails? Well, you're reducing tails by having things that zig when the other ones zag. Let's look at 2020. So what happened to the average portfolio? The truth is that the vast majority of real money isn't 100% equities, or 150%. They're in equities and they're in a bunch of bonds and sovereign bonds, government bonds, German gilts, German bunds, Canadian government bonds all made money while the market was going to shit,- gold was up. So when you include those asset classes, guess what happens? You start seeing a more normally distributed function. Those fat tails actually you don't see four standard deviation events. You can see three standard deviation events very rarely. But you're now hovering around one to two standard deviation events with a well-diversified portfolio. So now that that's kind of out of the way for the most part, you can now use … leverage in order to use that. Now the question is, where can you get that leverage? How much would they charge? When we were part of a broker dealer, what was their margin rates? How much was the borrow cost? 8% or something like that back in 2004.

Mike:	**00:42:51**	For what particular?
Rodrigo:	**00:42:53**	A margin account and-
Mike:	**00:42:55**	Six percent plus prime. 6 to 8% plus prime.
Rodrigo:	**00:42:59**	So the problem is the-
Mike:	**00:43:02**	It will come back. There's no risk premium.
Rodrigo:	**00:43:04**	And there's nothing there. So the average individual can't say to his broker, I'm like discussing the topic of this guy-
Mike:	**00:43:11**	Actually saw this advertisement on TV the other day. And Fidelity, Schwab still charged 6% and IB, Interactive Brokers was talking about how they charge like one and a half or whatever it is. So there's your spread, it's, in the current marketplace, I think it's around 5%. For someone at one of the large broker dealers to try and employ any kind of retail leverage. Really is not worth. It's hard.
Rodrigo:	**00:43:38**	Even a thoughtful investor who listens to this conversation and says, okay, leverage is useful if I have a truly diversified portfolio, I'm gonna talk to my broker and try to implement. It's a non-starter with that much "vig". So, first of all, you have to go to other broker dealers that provide really institutional style borrow. If you're going to try to lever up ETFs, or equities or whatever, and going from a traditional broker to that requires a level of expertise and the brokers that offer that are not easy to deal with as an individual. So it's doable, but it's tough. And then let's say that you do get there and you realize this is really good. But it's still expensive because I'm dealing with smaller account sizes or maybe I'm just doing like cash borrow? This is where I think what you were getting at, because I know that's your jam Jason. Why don't you tell me about the efficiency of being able to use leverage on using futures contracts? What is so special about futures contracts? It almost seems like its primary function.

Leverage and Futures Contracts

Jason:	**00:44:49**	Yeah. Let me first start by saying I'm not recommending anyone go out and five to one and borrow to invest. Just was trying to entertain the idea if you're going to do that. You're really going to think about diversifying. And you're really going to think about how are you going to get that borrow and I think we hit on the point I wanted to get to is that-

Mike:	**00:45:08**	Really? I had my banker on the line who-
Jason:	**00:45:12**	The ability to borrow. And borrowing is a tool and it needs to be used wisely. But there are vast differences between John Public and a professional investor and institutional investor. So certainly one of the tools we have available to us as a professional investor are futures contracts, which have implicit leverage built into them. And on a daily basis, every day, there's a clearing mechanism where we don't have counterparty risk. So that counterparty risk is cleared for us on a daily basis. So, we have a great degree of comfort in our counterparty, which is a big risk if you take on if you borrow or lend large amounts of money to an individual and you say, well, let's square up in a year. That creates a bending and breaking in the system. But, I won't get into all the nitty gritty details, but certainly we've seen that the use of futures contracts used wisely, can create tremendous opportunities from a borrowing cost standpoint. It's just less expensive to borrow. It gives ourselves access to effective borrowing rates and credit advantages in terms of low credit risk that are just generally not available. You a smaller investor can use it, but they're dealing with, you need size to deal with it properly because futures contracts-
Adam:	**00:46:59**	Each contract is 50 to a couple hundred thousand dollars per contract.
Jason:	**00:47:03**	I always like to think of when you're buying gas, unleaded gas you're not buying enough to fill your Honda Pilot but you're buying one train car full of gas.
Mike:	**00:47:13**	It will fill your pool - you're not going to fill your car, you're gonna fill your pool.
Adam:	**00:47:19**	The gasoline exactly yeah.
Mike:	**00:47:21**	Didn't you use the calculations on that when we have in the storage issue of minus 37 crude you figured out how much-
Jason:	**00:47:27**	Yeah. I was constantly draining my pool of drinkable water overflowing with crude oil, I was being paid to put it in there but that was a lot of other technicalities.
Mike:	**00:47:38**	The point on the question's a well-diversified portfolio can only be constructed using historical returns, adding leverage changes the distribution and invalidates the analysis in a dynamic system. Yeah, true. These are complex and adaptive systems. But I do think there is a rhyme to the way history repeats itself, there's a human behavioral proclivities that that do lend themselves to performance chasing, to bias of recency and that creates the hurting aspect and that hurting aspect for humans is pretty deeply genetically rooted. And I think this is Mikey G. It's Michael G but I'll nickname and Mikey G.

Adam:	**00:48:27**	As a fellow Mike you can take the liberty.
Mike:	**00:48:28**	He also mentions the fact that diversified portfolios raise the correlation in the moment of the liquidity event. That mid-March period where you had illiquidity across pretty much everything and then you truly understand what is long vol and what is short vol. And even things that you might expect would be trades that do well in short vol like long treasuries, actually struggled with some liquidity requirements in that period. So you make some good points.
Adam:	**00:49:09**	There's a clue there, too, right? It's a bit of a clue. Just going back to his idea of how well diversified portfolio, can be reconstructed in retrospect? I'm not sure that's quite true. Certainly there are elements to it that lean into history. But I think we can safely say that commodities and hard assets are fundamentally designed to thrive during inflationary episodes that stocks are fundamentally designed to do well in a growth environment, that bonds are fundamentally designed to do well during deflationary episodes. So there are elements to diversification. If you want to take it to extremes, a put option is structurally designed to be negatively correlated to whatever the underlying it's essentially so-
Rodrigo:	**00:49:57**	It's structurally designed to deal with inflationary periods. I think if you wanted to take it to the limits, which is I think what Mike was saying. So what he's talking about is correlation risk, these things are non-correlated until they all are correlated. There's a risk there, for sure. And the question is, how long is that risk? When does it happen? And I think it happens at liquidity events. When there's a complete like, okay, let's just take all the bets off the table and go to cash. And we saw that in March, we saw it, we see it every time there's like a momentary period where the rug has been pulled out from under you. And that's when the Fed steps in and makes sure that the markets are working and functioning correctly. And the moment that they step back in and add that oil to the gears, all of a sudden, the diversification comes back online, but there is that gap risk and the more levered you are, the bigger the gap. I would bet that if you...let me finish my thought. That gap that could possibly be filled by what the most loved and hated option, which is that tail protection. That thing that's there when let's say we gapped down everything that correlates all of a sudden for three days down volatility spikes, a long vol strategy can mitigate a lot of the issues with whatever levered position you want to be in.
Mike:	**00:51:22**	Totally. And I think this is where it gets hard. This is where we're quite systematic in our thinking and it becomes more art. And I think, Adam, you've got a great story of 2008 where you pinpointed the epicentre of the European banks as being the closest to the actual epicentre of the tectonic event, if you

will. And maybe you can share some stories around that because it's really hard to do that. Even when you-

Adam: **00:51:52** Yeah, it requires a different way of, there are ways absolutely using network topology and there's quantitative ways to identify clusters centres are where there are risk centers. And so this is absolutely a very interesting area to explore. And there's really good war stories from 2008. And I'm certainly happy to go there. I did want to talk about, because I didn't mention sort of this clue and Michael G. mentioned the idea that when you add leverage, even in the presence of strong diversification, that when more market participants are leaning into leverage, eventually the leverage itself becomes the systemic risk.

So I think that's a really interesting statement. I think there's a clue there because it's not like it's impossible for systematic managers to measure to a reasonable approximation the total aggregate leverage in the system, and so is there a feedback mechanism that systematic managers can use, that allows them to look at their target leverage relative to aggregate leverage in the system and say, great, there's not much leverage in the system, my systems say that I should be more levered, I'm going to add leverage. But when my systems say that I want to be more levered, but there's a high level of aggregate leverage in the system, then you begin to reduce leverage. And in that way, your adaptive system becomes adaptive to the markets adapting, and I think it's an extra layer of thinking that again validates or provides a way to see how even systematic strategies can adapt to markets that are simultaneously adapting.

Rodrigo: **00:53:50** It's insanely reflexive. Mike actually just asked another great question. That's an assumption in the growth of systematic strategies that’s designed to offset those biases, changes those assumptions, he’s right. You have this perpetuating system going, creating a popular trade. But there are ways like we've identified it, we are ways to identify that there's a bias. And how do you make sure that you use quantitative methods to identify the biases?

Adam: **00:54:25** There's a difference because I think and Michael, you can clarify, maybe we'll have you on this discussion but, if you are moderating your leverage by instead, taking on tail risk strategies, you've identified you've got risk, you've got high levels of leverage. Therefore, I'm going to buy tail hedges, there's two ways to reduce the risk. Maybe there's more but let's talk about two. One is reduce exposure. Another is keep your exposure and layer on more exposure. So, you're going to introduce a tail but that tail hedge comes by introducing more exposure. If you're managing your tails or managing your exposure in response to the identification of the fact that there's lots of leverage risk in the system, you're adding to the leverage risk. If you are reducing exposure, you are not, so

I do think that Michael G has a point. But there's two ways to think about it. And one way reduces aggregate risk and one way changes the nature of aggregate risk, but probably doesn't reduce it in the many instances they actually exacerbate it.

Rodrigo: **00:55:43**

My guess is that Michael would rather not have any leverage in the system. I'm not sure he's a tail hedge guy. But the way to deal with this risk is you're going to reduce your exposure, maybe have no leverage from an explicit perspective, you still have the leverage embedded in the asset classes that you invest in, hopefully you diversify, and you will still have at the level of risk that you have decided to participate in, you will have more gap to your exposures than you have in the past if indeed this is true, it is a reality of the markets and the question is, do we want to give up? Or do you want to say okay, that's the new reality, let's try to be reflective of that and solve it. Understand the nature of the market and do something creative with it. It's always been this way.

Mike: **00:56:27**

Then there's another point of, in his initial comment, well diversified portfolio, is there a way to identify how many actual bets you might have in a portfolio? Because those are dynamic as well and how sturdy are they? How rugged are they to actually be supportive? Are they structural in nature? Are they potentially vulnerable to that liquidity event? Gold's a great example. So you think that gold provides this opportunity for a different asset class, but in March, it really doesn't. Is it the same? Even a better example would be treasuries, you think that that's going to be there and there was there was actually some liquidity issues in US Treasuries and notes. So it's an interesting concept.

Adam: **00:57:18**

It's true. Thinking about bets, as you say there's a number of different lenses through which you can think about the number of independent bets in the portfolio. And if you just use the contemporaneous correlation estimates to calculate bets, then you're making some strong assumptions. So, if you're going to think about how truly diversified your portfolio is then you need to create scenarios given your current portfolio weights. Let's create some scenarios where the correlation structure is highly punitive to your current exposures. How many bets do you have in the portfolio and what is the implied vol if you're...if you're simply running your exposure based on some kind of contained contemporaneous volatility estimate without introducing some scenarios or some shock estimates, then you run the potential to be very highly exposed by overestimating the number of bets in the portfolio at exactly the wrong time.

Mike: **00:58:18**

Well, and Mike has a follow up point, however when leverage is used to generate return, rather than facilitate capital formation it becomes a systemic risk. Well, it depends. Is it pro-cyclical or is it counter-cyclical, to your particular portfolio? If it is a tail hedge protection or some sort of counter-cyclical event in your portfolio, I'm not sure that that actually becomes a systemic risk. It's like a short seller. What do short sellers do? Well, a short seller actually stabilizes the market because when you have a decline in the market, those short sales need to be covered and it reduces the drop because those sales that were made by call it short money, smart money at the top, have to rebuy and they will be a stabilizing force in the market. So I'm not sure-

Adam: **00:59:12** I also think that the idea of capital formation is you get capital formation when your expected return on investment is higher than your weighted average cost of capital. So there's a lot of estimates in there. And like I said-

Rodrigo: **00:59:27** You can be levered into a company that is just losing money.

Adam: **00:59:31** Absolutely. Obviously, if investors and corporate managers are acting rationally then they're not taking on debt in order to facilitate investments in projects that have negative expected value after accounting for the cost of capital. Properly functioning economy managers are deploying capital in order to create capital formation by-

Leverage and the Banks

Rodrigo: **00:59:59** It's many wheels. It's many wheels in the machine going like they're all...we'd love to create narratives around. It's this and that but the truth is that to benign, to make a bank seem like them giving leverage for the sake of leverage to a portfolio manager that's just trying to get excess returns. Well, what's the bank's role there? The banks is going to have a P&L there, and the better they do there, the better they manage the amount of leverage that they provide, they're going to get a fee for that, that fee is going to go into their base, and that is going to help them finance good companies by lending to those real companies. It's all a vicious circle. It's all part of, are you managing the leverage in your portfolio as a bank well? Are you doing the right thing? And if you are, you're increasing your base and if you're increasing your base, you're able to lend more to other companies. And you wouldn't have that benefit if you hadn't gotten that extra juice from securities lending?

Adam: **01:01:04** You can only measure that in retrospect. You can only measure what the optimal leverage ratio is on the corporate balance sheet or on the bank balance sheet or in your portfolio, ex-post. Once you've actually realized the return on capital, and until then it's an estimate. So you don't know if your activity is facilitating capital formation in advance. You only know that in retrospect. And when, of course, you've got actors in the market that are creating distortions in the cost of capital. Then how do you even think about capital formation?

Mike: **01:01:44** It come back to a point that Jason made earlier about exchange listed types of futures where you have some certainty where if you if you are a counterparty to a swap with Lehman, you had a problem if you were a counterparty to an exchange listed futures contract you had a much higher level of certainty. And I think that layers into another point that, I think, Jason, you've got a ton of experience in this. And that's the different types of leverage or notionally there's a nav leverage. So, there's a leverage on your nav but then there's in the world of futures, there's a margin utilization approach because having leverage of two or 300% nav leverage with a Eurodollar contract is very different than the actual margin equity usage in the futures world. And I don't know if you want to take a poke at sort of enlightening people on that Jason at all or?

Jason: **01:02:42** No. They're kind of related. The margin to equity relates to the volatility of the contract and the size, the leverage of the contract, the notional value of the contract, relative to how much margin you have to put up does vary. And actually I look at that as the margin requirement as an uncertainty that never really works for you. So in the time of stress, crude oil contract margin skyrockets, when everyone's piling into VIX when volatility is low, their brokers are asking for four times notional. So, it is actually there in a way to - really it is there to protect the system. So there are a few things in place again for larger investors or professionals or institutions where we can have access to properly use these contracts.

Rodrigo: **01:03:43** Dave, let's remember what futures are for. They're very useful for producers. They're very useful for the economy. They're very useful for companies.

Jason: **01:03:52** Absolutely.

Rodrigo: **01:03:55** And the less financial participants there are, the less liquidity they have in order to hedge out those risks. So reducing the cost of hedge is important. It's part of the work. Now, on average, that is a fantastic useful tool. Do we get out of whack? Of course we do. This is a dynamic system and we can get too many speculators and too little hedgers, too many hedgers and too little speculators. And it's never a straight line that we can continue to try and create regulation in order to minimize the variance there. But it's …

Mike: **01:04:29** …

Jason: **01:04:32** Go ahead, Mike.

Mike: **01:04:34** You guys keep going.

Jason: **01:04:35** I was just going to say in the commodity markets too it's important to understand, like in the height of 2008, which I lived through in the liquidity just vanished everywhere. But there are markets where liquidity was extremely rich. For coffee, for example. People still needed it. So the roasters needed to buy it. Starbucks was buying it, the growers were selling it. There was this rich market outside of speculators and hedgers. Of course, speculators and hedges add a lot of liquidity to the margin but to have that extra element there of liquidity is huge. Also even things like I remember on the run bonds or bonds period, the only thing that had liquidity was the precise on the run bond for the 10 year and the five year even in governments around the edges, you'd lose liquidity. And if you've got recourse loans, and you got a slightly off the run bond, and it's marked a wacky price in combination with other stuff, that all kinds of things happen. I guess the lesson is leverage turns up the volume. If you start getting static, it becomes more and more uncomfortable. So, you just need to be obviously just need to be balanced responsible by that place.

Rodrigo: **01:05:57** And we always see it in periods of duress, those who took on too much leverage. And we'll also I wonder how many of these people care, maybe they were just like that's my risk tolerance. I know it's going to get blown up, maybe they didn't think they were going to get blown up. But you know, in the marketplace, there are always people who are risk seeking and people who are risk averse. And there's people in the middle who with the right amount of leverage cruise through. Not a big deal. … absolutely. Are we seeing a system that actually bringing up just generally what governments are levering up? And we're seeing an increase of that? For sure we are. For sure. The dynamics from inflation come in and how are we going to deal with that leverage, or we're going to reduce it and actually crush the economy or we're going to start inflating as much as we can in order to reduce our debts over time? At which point, what are the likely asset classes that are going to benefit from that? Like commodities and bonds and gold and the like that provide an offset to an economy that's in high inflation. So again, it's just a living breathing thing. And accesses come and they go, and they came in at the end of 2007 and they went by the bottom of 2009. We might be finding a similar situation in the next decade or so. If you're thoughtful about managing risk, then that's what you get paid for if you're an active manager. And if you're not an active manager, then being thoughtful about not levering up is probably a good idea.

Adam: **01:07:26** So where do we want to land on this thing? I think where I land on it is if CalPERS is adding leverage to be able to hedge off risks that they currently are not hedging while not having to lower their expected portfolio return. I'm the hell yeah. Now they're going to use this leverage to buy some combination of TIPs, commodities, gold, other asset classes that are going to hedge their - which is in an amount that's appropriate given their liabilities as well which actually have that complicates their exposure to inflation in a way that a lot of investors don't have that kind of complication. But if they're using it for that, then I think I'm hell yeah on that. If they're just using it in order to increase your expected return on their concentrated equity oriented portfolio, then I'm the hell no. And I think that does in aggregate, increase systemic risk, it increases the rest of the institution and increases the risk to the economy, and makes the entire economy more pro-cyclical.

Rodrigo: **01:08:43** Like anything in life.

Mike: **01:08:45** It's like the pensioners are going to experience a reduction in their benefit if that goes wrong. That has happened. All right. In Nova Scotia, we have had that happen in Canada where across the board pensioners experienced an across the board reduction in their benefits. And it had to be restructured. So that is not new. And at some point-

The Elephant in the Room

Adam: **01:09:08** But it's politically intractable. Look, what is the root of this? The root of this is the absurdity of a six and a half percent expected return with treasuries at a half percent. That's the elephant in the room, we didn't even address.

Rodrigo: **01:09:23** The A&P valuations and all that fun stuff.

Adam: **01:09:24** Yeah, the expected premium is three times higher than is probable. That's the major problem. So you could either tell your stakeholders, your board of directors and indirectly, the pensioners that are relying on this future stream of income that CalPERS has gotta purport to produce, that they need to reduce their expectations about what the income that is going to be produced from this portfolio, or the state is going to raise taxes in order to make these pensions whole. Or some other gap needs to be filled, or you carry on this facade, this circus that we're just going to lever up in order to be able to make our return targets. What everybody knows. I'm sure all of the internal discussions in the CIO office at CalPERS are all listen guys, I know we're never going to make these returns. But we've got to make a show of it. Because our political stakeholders, require it and the public will not tolerate any of the other options that are available to us.

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Rodrigo:	**01:10:35**	So I think in closing, I think you asked what do we want to take away? I think takeaway, we like to paint these things as one or the other. But the truth is that it is all grey. Is this a tool that is good or bad? It's neither. It can be really, really good. It can be really, really bad.
Adam:	**01:10:55**	So it's both?
Rodrigo:	**01:10:57**	It is depending on, depending how you're implementing it.
Adam:	**01:11:03**	I would say it's both. It's not neither. … I know English is a second language. I'm sorry.
Rodrigo:	**01:11:13**	I'm sitting in front of the thousands of live listeners right now. Nobody even asked if - we we're all supposed to wear blue and Jason didn't get the memo.
Mike:	**01:11:24**	No, that's dark blue. He can't tell. There is no black and in actual fact in the colour.
Adam:	**01:11:33**	By the way, I want to shout out to Michael Green who clearly was responsible for sparking a lot of the directions we went in this discussion and Mike, your front and centre in terms of someone who was targeted to be on this this show. We got some guests scheduled for the next couple of weeks, but we're going to have to have you on sometime in July If you're available. We'd love that. So please continue chiming in and prompting hard points of discussion in the meantime, appreciate it. We had Corey poking and prodding last week and Mike this week and we're really grateful for the people that are making our life difficult.
Mike:	**01:12:15**	Fantastic. Well, it makes for good discussion.
Adam:	**01:12:18.**	100%.
Mike:	**01:12:18**	This is not about having an easy discussion. This is the discussion that is had over happy hour in places of financial centres where you sit and talk at the end of the week about very difficult topics and how are we going to handle it. What are the changing dynamics? Mike Green is spectacular insight in the changing dynamics of market driven by passive investing. And there's some great counterpoints out there to that. And so it really is this money rebel in the hard discussions because that's where the opportunity for advancement for all of us is.
Rodrigo:	**01:13:02**	I actually have restrained myself from talking about risk parity and the blame that it gets in all this. I have the article up that we have everything in place but

I actually want to say that from Mike to why he just keeps on saying all about risk parities and vols. We'll get you on Mike. And I think next week though we have unlike normal Rifts, we do have a set topic for next week.

Mike: **01:13:31** We will talk a little bit about Bitcoin. We have a pretty crypto in general and Canada has been very much like you have right Robinhood's taking the blame right now. It's true. There's been some stories that are very sad and Robinhood to about some traders that have had some pretty significant outcomes on the negative side. They've caused some angst. We're getting back to the point. Canada was the first to evolve and develop an ETF and exchange traded fund. Canada has also been on the leading edge of developing an exchange traded closed in fund for a Bitcoin trust. And our head of futures trading moved on from our firm from ReSolve to Three IQ to develop that product. So we're going to have him on next week, we're going to talk about crypto. Is it the new digital gold? How is it impacted in the digital economy? Very interesting topic. You have people like Paul Tudor Jones talking about a 1% allocation being a very smart allocation. If it goes wrong, you're not hurt too much. But if it is the next coming, then you have an exposure that could have some significant impact in your portfolio. So we want to talk about all of the good, the bad and the ugly with respect to that and Shawn has been instrumental in architecting a product that is traded on exchange, its prospectus based so it can be offered to the broad public and so this is a very interesting topic. And I will also say that Andrew Miller's podcast that we were talking about today will be live shortly too. So we talked about that earlier today that's going to be live on the ReSolve site. And I think there's some interesting-

Adam: **01:15:12** That was excellent, by the way. As usual, Andrew, just tremendous insight cover, oh, God, a dozen different topics all of which I think are timely and relevant and where Andrew had a very divergent opinion I think from common views. So highly recommend people tune into that probably dropping sometime likely next week.

Mike: **01:15:34** Like, share and subscribe, hit that bell so you don't miss a single episode.

Rodrigo: **01:15:39** You're responsible for saying that.

Mike: **01:15:43** Hey, topics we missed today. I wanted to talk about our experience with China and how China has been trying to get more speculators into their futures market in order to make the efficiency of that market. That was a topic that I think listeners would be very keen to hear about. I don't know-

Adam: **01:16:03** We've got people that we can bring into that conversation, who'll be able to add to that and I think they would be great guests. That's a really good point.

Mike:	**01:16:11**	I think that's something interesting for down the road.
Rodrigo:	**01:16:16**	All right, gents. Time to think of family.
Mike:	**01:16:18**	Enjoy the weekend.
Adam:	**01:16:18**	Lots of people asked questions and engaged. That was great. Thanks, guys.
Rodrigo:	**01:16:22**	Thanks all
Dave:	**01:16:22**	All right. Cheers.
Mike:	**01:16:23**	Enjoy the weekend.