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Hyun Song Shin on How Big the Yen Carry Trade Really Is | Odd Lots

Remember August 5th? That was the day that markets around the world plunged in historic fashion and everyone became an overnight expert on the yen carry trade. But what really is the yen carry trade? How big is it? Who is making the trade? And what is its connection to markets all around the world? On this episode, recorded at the Kansas City Federal Reserve Bank of Kansas City's Economic Symposium in Jackson Hole, Wyoming, we speak with Hyun Song Shin, economic advisor and head of research at the Bank for International Settlements. He walks us through the mechanics of the trade, what went on in early August, and the lessons we've already learned from it.

Tracy Alloway: (00:20)
Hello and welcome to another episode of the *Odd Lots* podcast. I'm Tracy Alloway.

Joe Weisenthal: (00:24)
And I'm Joe Weisenthal.

Tracy: (00:26)
Joe, do you remember the yen carry trade unwind?

Joe: (00:29)
So the carry trade, what's the deal? Basically people borrow yen and buy Nvidia, and then the yen went up and then the trades didn't work as well?

Tracy: (00:38)
Well, that was one aspect of the commentary.

Joe: (00:41)
That's like the Twitter version of what's happening.

Tracy: (00:43)
Yeah. But I think actually, okay, so we are recording this on August 23rd. The carry trade unwind happened, what was it? Two weeks ago? It feels like a lifetime ago. And it's kind of remarkable how quickly it faded into the background with the market rally and the recovery.

But the conversation at the time was that there is this carry trade, which involves borrowing in lower-yielding currencies or lower interest rate currencies such as the yen and then investing in higher-yielding assets, like, in theory, US technology stocks.

Joe: (01:23)
Or US Treasuries.

Tracy: (01:23)
Yeah. But the problem is that some of the discourse around this has been, I've kind of been offended by some of it, like I've seen things out there basically implying that the entire financial system is imploding because the carry trade is unwinding.

Joe: (01:38)
I mean, it's really crazy how quickly that disappeared because there was that mega vol spike and we were talking like historically high level is on par with some of the financial crises. And then the expectation was that at a minimum, this takes a while to settle down. And it settled down in about 15 minutes, or in a day and a half. And so what was that? What is the carry trade? Because there is this sort of caricature version that is out there. Who actually is engaging in it? Is it still going on? Many questions in my head remain unanswered.

Tracy: (02:13)
And one of the big ones is just how big is it? Actually, and one of the funny things that happened a few weeks ago was people were basically looking at all the yen-denominated assets in the world, like the entire Japanese banking system and saying 'This is the carry trade.'

Joe: (02:30)
Let's clear up some misconceptions.

Tracy: (02:32)
We are going to do that right now, and I am so pleased to say that we do in fact, have the perfect guest. We are recording here in Jackson Hole, Wyoming, for the Kansas City Fed Economic Symposium. And we have once again run into one of our favorite *Odd Lots* guests, an expert on this exact topic. We're gonna be speaking with Hyun Song Shin. He is of course, the economic advisor and head of research for the Bank for International Settlements. And he's been looking at the carry trade for years now. So Hyun…

Joe: (03:01)
He actually knows what he's talking about.

Tracy: (03:03)
Yes. Hyun, thank you so much for coming on *Odd Lots*!

Hyun Song Shin: (03:07)
Thank you for having me again.

Tracy: (03:08)
It's so good to see you again in person in beautiful Jackson Hole. I'm so glad we could make this happen and I am kind of glad that the carry trade unwind happened just a couple weeks ago.

Joe: (03:19)
Something to talk about.

Tracy: (03:20)
Yeah, and you happen to be here and you're an expert on this. So let's start with something very basic. What is the carry trade?

Hyun: (03:28)
The carry trade is a financial transaction where you borrow a currency with a low interest rate and then invest the proceeds in other higher yielding assets. And, I think the the classical version of a carry trade would be where you borrow, I mean, it's basically a currency transaction where you borrow a currency with a low interest rate and invest in a higher interest rate currency.

But the way that the carry trade was portrayed in the recent discussion, I think that was described in much broader terms where you were going into all kinds of different assets. And Joe, as you described, it was a very short-lived episode of stress, but at the time it was pretty intense.

And I think, we can now look back on it with some relief that nothing broke. There was no financial market dysfunction as we saw during the March, 2020 episode, for example. So now we're now back to something which looks more normal, but I think we should try and learn some lessons from that episode.

Joe: (04:34)
Absolutely. And obviously there's a lot of [it] that's still out there and much to be learned before we even get to the future. I mean, you described what a sort of classical carry trade is and what we're talking about, and I joked in the beginning it's like ‘Oh, borrow yen cheaply and then buy Bitcoin’ or whatever.

But actually when we talk about this, who are the actors involved? Is it speculators who see a spread? Is it institutions like insurance companies, etc., that have some sort of larger structural reason? Like. who actually is engaged in such type of activities?

Hyun: (05:12)
It's really the whole ecosystem, if you like. I think the main actors would shift from time to time. I think one way that we could try and approach this question is, as Tracy alluded to earlier, how large is this? What's the most reliable way of trying to gauge this? Now, one way of doing that is to look at the on-balance-sheet lending in yen.

And at the BIS as we've received data from our member central banks. We collected and then we distribute it, and we've been doing it since 1977. So in a way, we are the curators of this very important banking data of international banking business. So one thing that we can look at in that dataset would be what is the cross-border lending that is yen-denominated? Or even if it's not cross-border, what is the yen-denominated lending as a foreign currency?

So even if the loan is booked in a country outside Japan, it's in yen and it's in foreign currency. Now, one of the things that I put in the tweet thread is that if you look at that number, there was clearly a very sharp increase in yen borrowing as foreign currency, in 2023, but it's something like 40 trillion yen. So that's quite large, $270 billion roughly, depending on exchange rate, but it's not the kind of numbers that were being banded about in the markets. And not all of that is going to be engaged in yen carry trade.

The other way of thinking about this is, how does that borrowing take place? And one thing that is quite interesting is that a lot of the cross-border lending is happening through the inter-office accounts, which is to say, if there's a foreign banking group, which has an office in Japan, how much is the subsidiary or the office in Japan lending out to the headquarters in yen? And that turns out to be a pretty sizable chunk of that 40 trillion, it's around 14 trillion would be that interoffice.

But much more important than this on balance sheet is the off-balance-sheet transactions. And here the crucial market is the FX swap market. And FX swaps are where one party would deliver one currency. So if I deliver dollars to the counterparty, counterparty would give me the equivalent in yen with the promise that that transaction would be reversed at a set date in the future, at an agreed exchange rate. So the exchange rate is fixed at that point. And normally, if I'm a dollar provider, what I do is, I provide the dollars, I receive the yen in return, but because I need to repay the yen, I need to keep it in a safe place. So I would park it in safe yen asset.

Tracy: (08:06)
Just to be clear, typically FX swaps, it's not really a trade per se, or it's not often a trade, it's more of a hedging activity. So if I have a lot of yen exposure, I wanna offset some of

that by acquiring dollars and vice versa.

Hyun: (08:21)
Yeah, and that's exactly the classical use case for for a swap contract. But the issue here is if I receive the yen rather than parking it in a safe place, what if I just sell that yen on the spot market and acquire dollars, then I have a naked yen obligation, which I will need to meet at the time by repurchasing the yen on the spot market. And that market is pretty sizable. It's around $14 trillion, the swap market between yen and another currency. That's quite a bit larger than the $270 billion that I mentioned earlier.

Joe: (09:00)
So as Tracy characterized it, there is sort of a natural hedging need for those sort of swaps. What types of institutions have that need to engage in the swap market?

Hyun: (09:13)
It's both financial and non-financial. I think typically the textbook case is of a non-financial institution. So if I am an exporter or an importer I would like to pay for the goods in advance, but then I need to hedge the currency exposure in the meantime until the maturity of that swap.

What we've seen though is that since the global financial crisis, it's the financial uses of the FX swap market, which has really grown much larger. So it's fair to say that it's the financial uses of the FX swaps, which are the lion's share of the FX swap market.

And I think [this] raises perhaps a deeper question, which is, if you are not constrained by the funding currency in what you can invest in, by using the swap market, in other words, suppose I can only raise funding in one currency. Well, typically that means that unless you have balance sheet mismatches, you would need to invest mostly in that same currency, but through the swap market, you can basically overcome that particular constraint. And what that means [is] it's much better to think of financial conditions in global terms rather than simply country by country, because you, you can always deploy the funding in one currency and invest in the assets of another currency.

Tracy: (10:57)
It sounds also like it's additional liquidity if you can use FX swaps to bypass specific currency constraints in terms of funding capacity. If I was, I don't know, an emerging market exporter and I needed dollar funds, obviously there's a limit to the amount of dollars that I can get in a situation like that. But if I know that I can go into the FX swap market and get that additional liquidity, it presumably expands credit in the overall system?

Hyun (11:28)

In contractual terms, a swap is completely symmetric because one party is providing one currency in return for the other and vice versa for the other party. But from time to time when financial conditions vary across different currencies, different markets, there is a lead party in asking for that transaction. And there is a market, if you like, response in supplying it.

So let me give you an example. So if I am a, let's say, I'm a euro-area insurance company, and I would like a globally diversified portfolio including all assets, but most of my obligations are in euros. And so if I were to invest nakedly, in dollars, there would be a currency mismatch on my balance sheet. And this is where I would go to the swap market, I would swap the euros into dollars, and then I would invest the proceeds in, into dollar bond, for example.

You know, in a way that's like borrowing dollars. I mean, the economic rationale is very similar to borrowing dollars in order to invest, but it's not treated as borrowing in the conventional accounting sense because it's a swap. There is also a countervailing transaction the other way, but you can normally track what's called an FX swap basis to see which direction that transaction is going.

So it turns out that typically normally it is more expensive to borrow dollars in the swap market than it is to borrow dollars in the dollar money market. And that extra premium is, if you like, the additional price you have to pay in order to access dollars. Now, coming back to the yen story, although most of the time financial institutions are borrowing dollars in the swap market in order to invest in dollar assets, that's typically the direction of the trade.

This is why during financial stress periods these FX swap bases spike, and then there has to be central bank swap lines to quell [them], etc. But there's nothing in principle that says it always has to go towards a dollar, right? If your intention is to engage in a yen carry trade, but through using FX swaps you could borrow yen and then acquire that yen obligation by going through the swap.

And so one telltale sign is what happened to the FX swap basis during this recent episode. And in fact one of the interesting findings is that the dollar FX basis versus the yen hardly budged. It's actually a very small movement which is very atypical of a financial stress event.

Tracy: (14:10)
Why is that? Because I would've assumed that the people providing swaps, who I assume are dealer banks of some sort, with such volatility in the currency rate, I would've thought that they would back away from providing that liquidity. And so the basis would blow out?

Hyun: (14:28)
So there was definitely a little bit of that, but it was by no means the same magnitude as we saw, for example, in the March, 2020 episode. And the reasoning would be that in that case, the, if you like, the party that was driving that particular transaction wasn't borrowing dollars, which needed to be repaid in the scramble for dollars, but rather it was the repayment of yen. So it goes the other way.

Joe: (14:56)
So actually so much sort of happened during that, I don't know, this sort of like the mini-crisis of July 31st to August 6th, 2024, and it came and went. So there was a Fed meeting that was perceived perhaps to be a little hawkish. Then we got a weak unemployment report. Then of course the yen had been creeping up. Right now, what is the story that you tell? Like what actually happened in those six or seven days that triggered such a move and then triggered such a move that was able to reverse so easily? What's your basic story what happened that week?

Hyun: (15:36)
Yeah, and, and clearly Joe, there was quite a bit of action in the currency markets. But I think what you're referring to is the fact that equity markets were impacted very broadly across the world in a way that you wouldn't have expected if it were a sort of narrow carry trade story. And indeed, I think there is something to that in that probably we are putting too much weight on the carry trade as a key theme of what happened in early August in that, yes, I mean there may have been the classical carry trades going on where you borrow yen and then you invest in the high-yielding currencies. You can see which currencies fell most in early August, and they were the Mexican peso, Colombian peso and the rand.

So these were the destination currencies for those classical carry trades. But I think it's not really enough to explain why there was this much more broad based stress, especially in the equity markets. And I think here we have to think about the broader issues to do with how risk is managed, how risk management itself, risk management in the form of loss mitigation also generates some potential for amplification that could actually make things more volatile.

So let me explain what I mean by that. So if I have a Value at Risk rule that says if my risk is triggered beyond this VaR level, then I cut my position, that means I sell, or if I'm lending, I cut my lines, etc., from the point of view of the borrower or from the point of view of the market as a whole that is something that would actually amplify whatever stress that was there in the first place.

If I'm a lender and I set margins, or if I'm a CCP — a central counterparty or an exchange — there is a margin that I ask for, the various contracts that I deal with, typically during stress periods, those margins go up. So that's a kind of de-leveraging now, the way that we deal with risk is precisely to mitigate loss. And there is a spillover effect that goes to the broader market.

And I wonder whether we should look back on the events of early August and if you like, apply that lens to to the events back then. So if for example, I was not borrowing in and investing in technology stocks as you suggested, but it's just that within my firm there is a team that is doing a classical carry trade, but there is also a team that is leveraged the US tech stocks, but one team doesn't know what the other team is doing.

So let's say one pod doesn't know what the other pod is doing, but from the firm's point of view, it looks as if in aggregate that there is a short yen position and the long position in technology stocks. And if that risk constraint is triggered somehow it's going to have a much broader implication, much broader repercussion through all of the holdings.

Tracy: (18:49)
This kind of reminds me, there used to be that saying about [how] 'In a crisis, you sell what you can,' not necessarily what's most impacted. So it might be that the most volatility is falling in the currency market and in the carry trade, but the thing that you're selling to reduce your risk exposure is something totally different just because you can, or because it's easier to do in an extremely volatile environment.

Hyun: (19:15)
And if you like, it's the risk limits that are triggered. And the way that risk limits work is if the aggregate portfolio is suffering losses, then the risk limits are tightened for all the different assets that you own. And I think something that we need to think about in terms of how we can mitigate some of these issues.

And going back to the, the FX swap discussion, the BIS also collects data on FX swaps. We have the six-monthly release of our over-the-counter derivative statistics. And the numbers that I've given you these are all from our data, it's all on our webpage. I think there is probably more scope for us to have more refined data.

For example who is the instigator in having the FX swap drawn up in the first place? So who is the lead party? Where is it being booked? What are the sectors that the two parties are coming from? At the moment we don't have that kind of data, but this is something that the BIS is working very hard to try and assemble, and given the shift away from the very bank-centric system to something which is much more a market-based system, which we have now. I think this is really something that we need to do as a matter of urgency.

Joe: (20:45)
I want to go back to your point about financial conditions being a global phenomenon,

because that has been one of the questions here in the US and there are people scratching their heads [about] financial conditions by some measures being tight, but spreads being very narrow for credit. And of course the stock market having rocketed up. Can you flesh that out a little bit more? How we should rethink financial conditions in a world of easily swapping between currencies on a non-bank basis?

Hyun: (21:15)
Sure, sure. I mean, that's a very, very important issue actually, Joe. When you look at the typical financial conditions index, let's say you take the Goldman Sachs index, which is probably the best known. There are two components there. One is really just about how high our interest rates, how high are yields. There's another set of indicators which measure how tight are the credit spreads what's the dollar doing that kind of thing.

And what's really been quite surprising is that even though rates have been raised to quite high levels, those indicators that point to how high interest rates are, they've been quite tight. But stock markets, credit spreads, they've been extremely accommodative. And I think one way that we could rationalize this is that if we have a world where essentially money is fungible across currencies, basically what a swap does is to make money fungible across currencies $5 I can get yen vice versa.

And in that kind of environment, it's not simply how much the US money supply is, how the euro money supply is that matters. It's really about what the global picture is and what are the marginal rates at which one is swapped into the other. And I think one potential explanation for why financial conditions have been so accommodative in spite of the very high rates is that money will flow to the most accommodative section of the money market, and the swap is the instrument that's going to really give you that fungibility. And when we look at the growth of the aggregates, it's been quite rapid. So if we go back to the GFC, before the GFC, the global financial system, it was very much a bank-based system. And the GFC was in essence a banking crisis.

And the existing BIS banking statistics covered that really well. In some of my work as an academic, I relied really a lot on the BIS banking data to really document what happened in the lead up and the resolution. But since the GFC, we've moved very much to a market-based system where the non-bank financial intermediaries are taking on a much bigger role.

And in that world, the banking statistics that the BIS puts out is only looking at a very small part of the overall universe. And increasingly it's the FX swap market and other market-based intermediation sort of figures that we need to keep track of. And so in that sense, it's quite important for us to update our perspective on how markets work, what kinds of indicators we need to keep track of, and basically make sure that the official statistics are really up to scratch.

Tracy: (24:14)
So in the two or three weeks since the carry trade hit the headlines, the yen dollar exchange rate has normalized somewhat. But if you had to take an educated guess, how does the carry trade reestablish itself, or how does it evolve from here? Because I have to imagine there's some lingering memory, even if it feels like a lifetime ago, that this actually happened on the market. So what happens next in terms of the carry trade's evolution?

Hyun: (24:45)
Well, actually I think you've had guests on *Odd Lots* where one of their big themes was 'We're waiting for this big crash because it's going to present a huge opportunity for us to come in and really pick up some bargains.' And if you were following this and you had spare powder on August 5th, for example, that was the Monday, then there were huge opportunities out there.

Think about the VIX. The VIX hit 65 on the morning of August 5th. So I think we have to assume that many of the people who are very agile are already back in. And I think what we need to think about is, first of all we have to be thankful that nothing broke. But at the same time we can't be complacent and say 'Well, that's it, we can forget about it.' I think we have to learn some lessons from that episode.

And one of those lessons is some of the standard ways they've been looking at markets may not be adequate. We have to look at some of these bigger picture issues, especially those big aggregates to have been off the radar for various reasons, and we have to bring them back on the radar. And I think when we think about the broader policy questions as well, especially monetary policy, financial conditions are absolutely key. They're a key input into how we conduct monetary policy. And so even for that question how will financial conditions evolve? We have to think about this bigger picture.

Joe: (26:14)
Thinking back to that week from a sort of fundamentals standpoint, there was nothing that major that had happened. Like, I think maybe the unemployment rate caught people by surprise, but data is noisy and we, there are surprises all the time in both directions. Maybe the Fed, I don't know, the Bank of Japan, obviously they're a little bit out of cycle, perhaps with other central banks. I think actually today we got a 2.7% inflation rating, so maybe it's a little higher, but there was nothing that unexpected.

Thinking about the risks going forward, the fact that you could have such a sharp move in such a short term, what does that say generally about the broader, I don't know, structure of the financial system? and nothing broke, and it did quiet down extraordinarily fast. But what does it say about the structure of the financial system more broadly? That something that sharp can happen without some seemingly major fundamental surprise.

Hyun: (27:10)
And you're absolutely right. So the fundamental economic news was not that big a surprise. I mean, there were some surprises at the margin but nothing major. I think what it does point to is the power of amplification effects of various sorts. And as officials, as policy makers, we need to think about how do we dampen those amplification effects in a way that's going to preserve financial stability and not have one of these episodes feed into the real economy. And the typical response we would go to would be something like regulation. If these were banks that would be the sort of in the first port of call. But because if these are non-banks, some of them, many of them are not regulated. That's not really the first port of call.

But there are points of contact with a regulated financial sector where we can do something. And I think one of the lessons we learned during March, 2020, with the Treasury market stress was that we need to make sure that we don't have these hugely pro-cyclical margin variation. That means that there are forced sellers onto the market now. These huge swings are justified. Well, some people will just justify it, saying ‘Look, I need to protect my solvency by raising the margins.’ But that has huge repercussions for the others. So from a systemic risk perspective, that has negative spillover effects. So that's one example where if we can make sure that margins don't get eroded too thinly during good times so they're raised very sharply, that's really a no-brainer.

And that's something that the official sector has worked on. We actually, of course, need to have much better data on these other aggregates that have now emerged as being very important. And the BIS is on that case. We are working very hard to make it much more detailed so that it's gonna be much more useful, but it's gonna be a continual struggle, Joe, because you can never declare victory because, the financial system is always evolving and you're just playing catch up all the time. It's just a case of how badly behind the realities are you.

Tracy: (29:27)
I have just one more question, which is, thinking back to August 5th when markets were tanking, there were, or at least there was, one prominent call for a hundred basis point emergency rate cut. And I really don't mean to be mean-spirited here because hindsight is 20/20 and we all get things wrong from time to time.

But I'm just very curious, we are here at Jackson Hole with a number of high profile policymakers. Is there any discussion of that call or are people talking about how ridiculous maybe that that call actually was at the time? The idea that the Fed was gonna cut rates a hundred basis points and now two or three weeks later, we have markets near all-time highs. The FX exchange rate has normalized to some degree, and a lot of this is just in the rear view mirror?

Hyun (30:28)
I think we have to look at this with a bit more sympathy. Tracy, I don't think we can say definitively ‘yes’ or ‘no.’ You know, if we think back to the summer of 1998 when LTCM, Long-Term Capital Management, the hedge fund failed, there was tremendous stress there. And there was an intermediate cut at that point because what we could see then was that the real economy looked to be showing signs of being affected.

And similarly, I think with March, 2020, that was a Treasury market (event) — clearly fixed income is much more closely tied with a real economy. So I would never say never. So what are we looking at in deciding whether you would go in and to intervene? Well, you're looking for signs of complete dysfunction in the market where the market is just broken down and nothing is being sold or bought. And this means that the flow of finance to real economic activity is really suffering. I think if you see signs of that, then I think there is a stronger argument for an extraordinary intervention. But as you say, looking back, although it was a pretty intense period, those two days in retrospect wasn't the kind of thing that needed extraordinary intervention.

Joe: (31:49)
I just have one last question, and I guess it's sort of broad, but it's also one that I think some of our listeners are curious about. And so I'm curious about [it] from the BIS perspective. People are always very interested in the idea of speculative excess, bubbles, etc. I'm curious from the BIS perspective, do we have reliable measures that can observe that? You can feel it in the air sometimes people are talking about AI or whatever it is at any given time. But do we have good tools to quantify sort of the level of what we'd call speculation in the market at any given time?

Hyun: (32:29)
We always have good measures when in retrospect. So we can always look back to the previous crisis, say ‘Oh wow, we should have taken notice of that.’ So if we go back to the GFC, it was the growth rate of credit. It was growth rate of cross-border lending, and in particular the growth rate of cross-border lending in dollars, which was making this round trip from the US to Europe back to the US.

And what tends to happen, and I think the BIS, like any other official agency or institution, is guilty to some extent, is that we draw up a checklist and say ‘Well, next time let's not ignore A, B and C and let's have a list that we check.’ And of course we have this accumulated checklist that we take along with us as we experience markets, but it's never going to be adequate, right?

So this time round what happened was not really central to some of our checklists. So I think to be fair, I think the BIS is probably the best place to draw up a checklist that is closest to what's going on. We are pretty close to the ground and in following these things and we have very good data, but it's something that needs constant effort, right? It's not something that just comes easily and it's simply a matter of effortless brilliance that gives you that. It's something that always needs effort. We have to keep studying, we have to keep looking. And so it's gonna be a never ending struggle.

Tracy: (34:06)
Alright, well we both look forward to the BIS Bubble Index that you'll inevitably be building, but Hyun, thank you so much for coming back on *Odd Lots*. That was amazing.

Joe: (34:16)
Yeah, it was fantastic.

Hyun: (34:16)
Thanks for inviting me back. It was a great conversation.

Tracy: (34:33)
Joe. I'm so glad that we could catch up with Hyun and that he was basically our first episode on the carry trade.

Joe: (34:39)
I love talking to Hyun. It's always just incredibly illuminating and pleasant and great. Many interesting things there. I mean, I, for one, I sort of appreciated him just explaining what the carry trade is of the different types of actors, whether you're an importer exporter, why you would want to engage in it. Again, I don't know if misinformation is the right word, but the amount of people who want to opine on something vs people who have some insight, there's quite a gap.

Tracy: (35:09)
Well, I do think the nuance on causality is kind of important there. So the idea that, okay, two things kind of happened at the same time, which is the carry trade unwound and US stocks sold off. But that doesn't necessarily mean that one thing is directly causing the other.

Joe: (35:26)
Yes, right. And it gets to the joke every time there's some big market event and someone goes 'Oh, a pod blew up.' But it is sort of like that, which is basically, if there is some volatility, if you're losing money, it doesn't really matter what strategy you're using or whether that strategy was central to it, you sell something, right? And so you still have that effect anyway.

Tracy: (35:47)

Someone taps you on the shoulder and says 'Reduce leverage.' So you reduce leverage. The other thing I thought was really interesting was the idea of the fungibility of money. And I think we've talked about it on the podcast before and I've certainly mentioned in the newsletter, but I do feel there is a sense that, okay, interest rates went up in the US and so credit and dollars became more expensive, but that doesn't mean that they became less available.

Joe: (36:13)
Yeah, that's such a fascinating idea. And the idea the need for a global financial conditions index or something like that. And if you're just looking at the US in isolation, there are things that don't seem to make total sense in terms of especially the disconnect between what happens with rates and what happened with spreads over the last couple of years. But that perhaps if you sort of aggregate everything together and recognize that there are multiple places to get funding or get liquidity, maybe some of these puzzle pieces fit together a bit more.

Tracy: (36:47)
Yeah, so I'm looking forward to the global financial conditions index and the bubble index.

Joe: (36:51)
Yes, many, many indexes for the BIS to get on, but if there's any entity that I feel confident could do it, it would be Hyun and his team.

Tracy: (36:59)
All right. Shall we leave it there?

Joe (37:01)
Let's leave it there.