Trend Setters: FTX, DeFi and the Future of Finance

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Prof. Cam Harvey joins Long Story Short for a special bonus episode to discuss his book ‘DeFi and the Future of Finance’ and the collapse of FTX.

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What does the fall of FTX mean for the wider decentralised finance industry? Is this a ‘Lehman moment’ as so many commentators have called it or a necessary correction away from centralised, offshore exchanges? And what regulation needs to be in place for the future to give investors confidence in this emerging space?

Joining the podcast again for a bonus episode of our Trend Setters series is Campbell Harvey, Professor of Finance at Duke University and author of *DeFi and the Future of Finance* and co-author of *An Investor’s Guide to Crypto*.

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## Episode Transcript

**Note:** This transcription was generated using a combination of speech recognition software and human transcribers and may contain errors. As a part of this process, this transcript has also been edited for clarity.

**Peter van Dooijeweert:**

So with respect to FTX, is this the industry Lehman moment?

**Prof. Campbell Harvey:**

Well, there's so many differences between Lehman and FTX. So Lehman was an investment bank and it had an extremely leveraged position, more than 30 times its capital, and it took bets on very risky mortgages. When the housing market turned south, those mortgages basically became worth less than their liabilities, and FTX is a completely different situation. So FTX is a situation where it's not so much about the principal risk, it's more about the market risk, and all of that is very...
you've got an exchange where the principles took the customer money and allocated it or co-mingled it with a hedge fund. And on top of that, it looks like the hedge fund was already insolvent.

So in regulated jurisdictions, this is straight up fraud. So this is clearly in terms of what the information I've seen a fraudulent situation, whereas Lehman, there was never any charges of fraud. But there's similarity also.

And one similarity is kind of obvious, that as soon as people thought that there was trouble at Lehman, there was a rush to get assets out of Lehman, a so-called bank run. And the same thing happened with FTX, that you want to be the first out, it's a classic Diamond-Dybvig bank run. And the other similarity is the potential contagion. So Lehman effectively led to the government bailing out all large banks. And we don't have a mechanism like that in the crypto space, but I think that there are probably some others that are at risk and there's more shoes to fall.

But there's one thing that is really important, and that is that this... What happened to FTX is not DeFi. So FTX is a centralized company, it's an offshore company, an unregulated company, and it is basically in the business of trading and you need to trust them with your capital. So this is completely different than decentralized finance. In decentralized finance, you don't need to trust anybody in the middle. So in decentralized finance, you're trading with an algorithm, a decentralized exchange, and the algorithm is completely transparent. So you see the liquidity, it's like an instantaneous audit. You send an asset to the liquidity pool and the algorithm, you get another asset back, and it's instantaneous execution and settlement.

So there's no situation where the liquidity in the algorithm is lent out to some hedge fund. And this is really important, when you trade with somebody like FTX, you delegate your private keys, effectively to them. So if something goes wrong, you're a creditor and you're in line in a bankruptcy. In decentralized finance, you don't delegate your private keys to anybody, you're the one holding the keys and you can do these transactions. So for me, this FTX episode really highlights the difference between centralized exchange versus decentralized exchange. And I also want to emphasize that these exchanges like FTX are offshore for a reason. They're outside the US regulatory jurisdiction. I do think there is a role for centralized exchange, but I think that we've learned the hard way, I guess, a lesson. That to go to a completely unregulated offshore exchange with no transparency, ex-post obviously, is a bad idea.

Peter van Doijeweert:

Yeah, I think that's right. It's actually worse than controlling your own assets under your own key. Basically institutional investors wanted to rely on exchanges, but if the exchanges are offshore and unregulated and potentially frauds like this one was, it leaves institutional investors in a really difficult position. They have to look at exchanges, wonder if they're capitalized, wonder if they have sufficient capital to meet whatever client demands there are and whether they're even set up for this kind of stress. Do you think institutional investors have any options? Do you have to rely on what's out there already?

Prof. Campbell Harvey:

Well, I think a big winner here is a centralized exchange that is fully regulated and based in the US,
Coinbase. It was one of the first exchanges, it's embraced a regulation and it doesn't have an offshore version. So Binance and FTX have US versions of their offshore operations, not Coinbase. So I think that you can get the model right and give investors some degree of comfort, but obviously again, many people have learned the hard way and they were wanting to trade stuff that just is not available for trading in the US given the current regulatory environment. So I think that that's another issue here. Given the current regulatory environment, the lack of clarity as to some of these cryptocurrencies should be classified as a security, maybe some of them classified as a commodity, given the uncertainty, you just naturally see offshore exchanges arise. And again, with no regulation, it just seems like a really bad idea to delegate the ownership of your cryptocurrency to these entities.

Peter van Dooijeweert:

Yeah, you've Definitely been making that point, I think that a regulated environment, whether exchanges or otherwise is of benefit to everyone and over regulating crypto pushes it offshore where there's potentially no regulation. So you've Definitely been right, and I think FTX is a good indication of what happens when we allow something like a centralized exchange to go offshore and be unregulated.

But it brings up a few other thoughts. Binance has announced the idea of a recovery fund, which to me is reminiscent of the super SIVs that were around during the global financial crisis trying to buy residential mortgages in 2007, 2008. And we know how it turned out, and we know why the banks were doing it because they were desperate for capital. So am I supposed to be suspicious of things like this, recovery funds? And I guess maybe just to sum up the episode, what does it mean for DeFi here in terms of everything that's happened? Are investors going to have to learn how to operate without centralized exchanges or are institutional investors just never going to make the jump to DeFi anymore given what's happening? What's the right path going forward?

Prof. Campbell Harvey:

So a recovery fund is great until it runs out of money. And again, remember Binance is an offshore entity that is unregulated and a very opaque. So I think a better solution is to have some sort of cryptographic proof of solvency. So if you decide to trade with a centralized offshore exchange, you can actually see what their balance sheet actually looks like in real time. So in decentralized finance, that is routine. So you see everything. And if you do actually go and trust a centralized exchange, you should have the same transparency. So I would rather know what's on the books in real time than to have some vague capital recovery fund.

Peter van Dooijeweert:

I guess one last thing, the typical reaction for investors is people start talking about the end of crypto, the end of DeFi. Does FTX permanently damage the DeFi universe? What do you think?

Prof. Campbell Harvey:

So I think that institutional investors have many choices, and one choice that's eliminated is to deal with an unregulated offshore exchange. So institutional investors I think really have two credible choices. One is a fully regulated US exchange, and two is to use the tools of decentralized finance.
It's actually a moment where a lot of people learn the difference between companies like FTX and decentralized protocols where you can do trading with UNISWAP.

So again, FTX is not a DeFi problem, FTX is not DeFi. FTX is a centralized exchange that operates outside of regulatory jurisdictions in some offshore location in The Bahamas, so it is different. And in DeFi, again, there's no leverage, there's complete transparency, and you don't need to delegate the ownership of anything. So I think that, to the contrary, I think that what happened to FTX really makes the case that, well, there's an alternative where we get rid of the middle person and all of the problems related to the middle person and efficiently transact between peers, that's DeFi. FTX, there's a middle person. So you don't trust any parties in DeFi, but for FTX, you have to trust them, and exposed, that was a catastrophic mistake.

**Peter van Dooijeweert:**

I'm pleased to be joined again by Cam Harvey, professor of finance at Duke University, and author of DeFi and the Future of Finance. Cam, welcome back. It's only been a few weeks, but welcome back.

**Prof. Campbell Harvey:**

Well, thank you for having me on again.

**Peter van Dooijeweert:**

So I'd like to kick off with understanding the genesis for your work in decentralized finance. It's not exactly a space I would expect a lot of professors and researchers to be in. So one, what got you in and two, what's changed since you started researching?

**Prof. Campbell Harvey:**

So the story of me getting into the space is kind of interesting. For seven years, I didn't teach at Duke University because I was editor of the Journal of Finance, and that's a full-time job. And when I went back to teach my course on asset management and international finance, I decided not to use the same old materials that were dated seven years ago, but to renovate the course and renew it. And when I got to the section on forex, I decided, "Well, if I'm going to do basic stuff in foreign exchange, why I'd add something new? There's this idea of cryptocurrency." And this is in 2013, so this is almost 10 years ago. And I read the original Satoshi Nakamoto paper. The first time I read it, I said, "That's kind of novel." The second time I read it, I realized, "Oh, this is a big idea."

So the genesis for me was basically this paper is a foundational paper and a potentially very disruptive idea, and I put a two hour lecture together on this topic and I delivered it, and it took a lot of work to put together because I had to learn a lot of computer science stuff that... It'd been a long time since I took these courses, so it was a big investment. And I did the lecture and you know how it goes where right on the hour you don't go late because people just get up and leave after that hour. And I'm finished, and people are just sitting around and not standing up and I'm thinking, "uh-oh, I ended the lecture too early, what a mistake." I look at the clock, no, I'm exactly on time. People are
just sitting there. And then I'm thinking, "Oh, well I already bombed this lecture if they're having this reaction."

And no, then they came up to the front and many students said that it was a transformational lecture for them and that this shouldn't be a lecture, it should be a full course. And that's the genesis of me getting into this space where I turned this into a course. And originally we didn't have room for it and the business school, so the university was very interested and I had a course offering that was really unique because I had about a quarter of the students were business students, a quarter computer scientists, a quarter engineers and a quarter law students. And it made for just a really dynamic experience. And indeed, I think that was the first blockchain oriented course that was taught. And it really did get the attention of Duke University when a story featured the course in the Financial Times as kind of an innovative course.

So in terms of academics, what are we supposed to do? Our research is being creative, plotting the course for the future, and our teaching, we want to give our students a glimpse of what could be in the future and that will help their choices. So I'm very comfortable being, I guess now a specialist in this space and guiding my students through a very complex space. And it's not just students, of course, many people on the outside are seeking advice in this space as to how to deal with that. So I'm increasingly comfortable with that and I see that this is a very significant disruption.

**Peter van Dooijeweert:**

I guess since you've started, I mean from the original paper, from Nakamoto to now, there's probably been a lot of change. What do you think is the cause for the big uptake with investors and the attention from policy makers? Where are we headed?

**Prof. Campbell Harvey:**

So the original paper, and this is the Bitcoin paper in 2008, it basically is about a mechanism to do transactions. So it's a peer to peer method so that I can send you some money or you can send me some money. And the original course that I taught focused on that technology. What I teach today is completely different in that I focus exclusively on decentralized finance. And let me tell you the difference between let's say the Bitcoin technology and Ethereum, which is the blockchain that most of decentralized finance deals with.

So in Ethereum, you can do everything that you can do in Bitcoin in terms of I can send you money, you can send me money, but there's another aspect that's really important and that is that we can also send money to an algorithm that exists on the Ethereum blockchain, and it's called a smart contract. So I can send to the algorithm or I can send to you, and this opens up so many possibilities. A simple example is decentralized exchange.

So there is a liquidity pool where people have deposited, let's say Asset A and Asset B into this algorithm. And then I can interact with the algorithm for exchange. So I can send Asset A to the algorithm and it will send me Asset B. And it doesn't matter what time of the day it is, the algorithm's completely transparent. So I can see the code, I can see the liquidity, I can algorithmically figure out what the slippage going to be, and this is decentralized exchange. So it effectively enables a peer to peer trading via an algorithm. And this is, in my opinion, the key innovation that broadened this
space very substantially. So now we can think about other things like decentralized exchange, it's not just money transfer, it's borrowing, it's lending, it's savings, all of the applications in terms of what we do in banking, what we do in insurance. And the latest innovation is Web3. And Web3 is not possible without decentralized finance. So it basically is... The reason we go from Web2 to Web3 is decentralized finance.

**Peter van Dooijeweert:**

All right, so we're going to build up to that, I think. There's a lot of wood chop. And I think what I want to start with is a bit of innovation in banking, because when I think of banking, I don't think of innovation, I think of dentists still pulling wisdom teeth with pliers and banks charging fees after fees and processes that take two, three, four or five days that feel like they could be instant. So are banks going to become blockbuster video or are they going to be Microsoft and thrive in this new DeFi world you're building?

**Prof. Campbell Harvey:**

So the world of finance changes, so this is not a renovation, this is a rebuild from the bottom up. But I'm not of the view of some DeFi evangelists that everything is going to be decentralized. So if you think about it, 10 years ago everything was centralized, and today we've got some progress on decentralization. Will we go to a hundred percent? Probably not. And I see a continuum where some things are done more efficiently via a centralized institution and some things are done more efficiently in a decentralized way. So for example, money transfer is more efficiently done in a decentralized way. Like today, just think about it, it takes two to five days to transfer funds, in this technology, it's a matter of seconds to do it, and it's highly secure in decentralized finance for transfer.

But there are other things that banks do, such as the credit function that's not well suited for decentralized finance. So in decentralized finance, all loans are fully or over collateralized. So there are certain things that banks can do that are not as well suited in decentralized finance. So in the future, I see that there will likely be a shakeout in terms of the number of banks that exists. They will still remain, but their business model will be different and they will be smaller in my opinion. So this technology does not eliminate them, it does change their business model. And indeed, I think the banks realize this and are making investments that kind of give them a longer runway.

**Peter van Dooijeweert:**

So what you're saying to me a bit is something like SWIFT might be a relic, but at the same time every day I read an article about Bitcoin theft or crypto theft, I mean, how fast are people really going to embrace that trillions a day of moving money around using DeFi?

**Prof. Campbell Harvey:**

There's many issues here. So it is true that given this technology is a fairly nascent technology, that there's been a lot of exploits. And for example, famously some exchanges have been compromised and their funds taken. But let me emphasize that those exchanges are centralized exchanges. It's different than what I'm talking about with a decentralized exchange where you've got an open...
different than what I'm talking about with a decentralized exchange where you've got an open source algorithm, you can see the code and you can see the liquidity that's there. And many of these exchanges had very poor security precautions and people literally went in and found a file with all of the private keys, took the private keys, and spent the money. So that really isn't a decentralized finance problem. There are other issues in decentralized finance, other challenges, but to me, we need to weigh the potential benefits and the potential costs. I see a lot of benefits, and of course there will be bumps on the road and we will see more of them. But again, it's not surprising with a technological innovation of this scale, you expect things like this.

Peter van Dooijeweert:

One of the things that I thought, especially as we live through a bit of a crisis in the UK with respect to LDI Investing and margin calls is, effectively improving the settlement process and the settlement speed of transactions should be something that improves financial stability. Do you think that's a reasonable application here?

Prof. Campbell Harvey:

Yeah, it's interesting because in decentralized finance there is no phone call for request for a margin, extra margin, and maybe somebody doesn't answer the call or says, "I'll get back to you tomorrow" and kind of stretch it out when you're basically undercollateralized. So in decentralized finance, there are incented actors in the space that if see if something's undercollateralized, they have the ability to close it out before it turns into a problem.

Peter van Dooijeweert:

Yeah, not only that you're settling a transaction fast, right? So instead of saying, "I'll wait..." It's not six weeks till I get my money, or one week or three days, the archaic way, I have my money now.

Prof. Campbell Harvey:

Exactly. So given the speed, you avoid the problem. So again, think of this situation where you've gone below your maintenance margin, you're still over collateralized, but you've gone below the maintenance margin and then you spin out extra time and then by the time it is settled in traditional finance, there could be serious undercollateralization and losses. So in the decentralized finance system, you're correct that the execution of the trade and the settlement are identical. So if you drop below the maintenance margin, you're closed, and that's it. So in a way that speed, in my opinion, reduces the systemic risk in the financial system. It's what it should be.

So again, many people don't realize that to settle a stock trade, a simple stock trade, is two days of time. And this was the reason that the very successful FinTech company, Robinhood, almost went bankrupt. Even though they're successful, that two days in terms of the difference between the execution and the settlement almost put them out of business. In a system where we had instead of T+2, like tZero in decentralized finance, you don't have these problems. So there are many positive ideas here. It's the way it should be. We should not have to wait two days to settle a stock. We should not have to wait two to five days. You mentioned the SWIFT system, and we are so reliant upon SWIFT. And a reasonable question for a company that is so relied on Swift is, well, what if SWIFT goes...
Swift. And a reasonable question for a company that is so relied on Swift: what if Swift goes down? What if SWIFT is attacked? And I've written on this, that there's various different attack vectors for this messaging system. What is the plan B? And right now there's no plan B, and it's unfortunate because decentralized finance is a credible plan B.

Peter van Dooijeweert:

Yeah, I think that's exactly right. I think that's exactly right. And in fact, I think you presented to the treasury, the Financial Stability Oversight Commission on regulation. And what I think is fascinating about it is that actually both sides want regulation, and maybe you could expand upon that a bit.

Prof. Campbell Harvey:

So the regulation problem is really challenging because our current laws are just not suited for this space. Obviously the Securities Act in 1933 was written before we had computers, let alone digital currency. So the challenges are multifaceted. Number one, the space is very complex. And once the regulator is up to speed, they realize that their knowledge is depreciating so quickly that they have to constantly invest in understanding this technology. And the regulator also realizes that they have to have a balanced approach. So if you do nothing, then you induce the wild west and people are taken advantage of. And indeed, that is the genesis of the 1933 Securities Act where somebody lost their fortunes in the late 1920s due to basically unregulated fraudulent securities offerings. So you don't want the wild west, but on the other side, if you're too harsh in the regulations, then what happens? You drive innovations offshore. So instead of setting up in the UK or the US people set up in some island in the Caribbean, and I don't think any country wants their best ideas driven offshore.

So the balancing act is really important to get it right. It's further complicated by the fact that this is a global technology, so it's not just existing in the US, it's existing all over the world, and we know it's very difficult to coordinate that. So in terms of your specific question, there are many protocols that are looking for regulatory guidance because having no guidance, having no regulations whatsoever induces uncertainty. And what we're getting is a brain drain that is effectively motivated by, well, we don't know what the regulations are going to be, but we do know there will be regulations, so let's locate offshore. So we need to resolve that uncertainty somehow and have regulations that recognize that this is a very innovative area and there's potentially a lot of benefits in terms of the economy to having this technology, but also recognizing that some people will take advantage of others. So the balanced approach is really important. Right now we're effectively in limbo waiting for some regulations.

Peter van Dooijeweert:

And I think that's right, the innovation in the US has been such a driver of growth. In US financial markets you see valuations of tech companies far in excess of kind of old tech. And so not embracing that innovation and leaving it in limbo definitely seems like a mistake to me, and you certainly don't want anyone else to win the opportunity to open up decentralized finance to everything we do in the US.

Prof. Campbell Harvey:
So again, we need to think about the big picture here and the problems that are being solved potentially with decentralized finance. So things like inefficiency, and we talked about the lag and settlement or the ridiculous 300 basis points you need to pay on every credit card swipe, but it's bigger than that, it's also inclusion. And I talk in my book about the number of people that are underbanked. So there's 1.7 billion unbanked people in the world, but there's probably many more, it's not well known what the number is, that are underbanked.

So think of the following dynamic, that you're an entrepreneur, you're starting out, you've got a really good idea, you go to your bank, so you are banked and pitch the idea, you need financing for the idea and it's a 20 plus return on investment sort of scenario. The banker likes the idea but says, "Look, this is a great idea, but I prefer to deal with one large customer rather than a hundred small customers like you. But given that you are a customer of the bank, we will increase the credit limit on your credit card and you can pull the money out that way to finance your idea." And we all know what the interest rate is on credit card borrowing, and that eliminates the innovation.

And these are precisely the types of innovations that we need to rekindle economic growth in, especially developed countries, where the US seems stuck at 2% real growth, the UK and Europe, maybe 1%, Japan zero. We need five, six, 7% real growth. And one way to increase growth, and it's very much related to my academic research, is to reduce these frictions. So to finance that project and the hundred other projects like it, or thousands, and that can really jumpstart these economies. We need growth, and these frictions that exist in the centralized financial system are holding us back. So again, when you think about regulation, you need to think in the big picture about what this could offer the economy and what it could offer, in my opinion, is very substantial.

Peter van Dooijeweert:

Yeah, I think the underbanked is clearly a topic that this helps. And I guess I would like to extend that a bit to talk about frontier markets. When we see projects financed in Africa, South America, at best, they're large scale projects, they're almost always energy, often they involve some people you probably don't want to be dealing with to get the project done. And I feel like this is the kind of technology that opens the door to financing lots of different projects, projects with more social good, and maybe even in a way that pensions can do real ESG, real socially conscious investing. I don't know if your thoughts extend that far?

Prof. Campbell Harvey:

Yeah, no, definitely. So if you think about all of the possibilities in decentralized finance, so think of the usual things we've got, stocks and bonds and mortgages, all of these are tokenized. And as soon as you tokenize, it's possible to have unprecedented diversification. So think of somebody like a retail investor that wants add some mortgages to their portfolio, and it's not the usual thing you put in your portfolio, but let's say you want to do that, and let's say you've got a thousand dollars. Well, that thousand dollars could hold tens of millions of mortgages diversified all over the world because of this fractionalization. So on one level, this provides, again, this added efficiency. Again, the settlement and the execution are simultaneous, but let's kind of go beyond the obvious assets like
Settlement and the execution are simultaneous, but let's kind of go beyond the obvious assets like stocks and bonds and mortgages and things like that, and think about tokenizing all of these projects around the world. And it could be infrastructure projects that could be, as you said, true ESG projects.

And in the world that I envision in the future, this will be available not just to the largest institutional investors, but to everybody. So right now we've got this gap between the institutional investors and the high net worth investors where they've got opportunities that other investors just don't have. And I think that this technology will democratize the opportunities for investors, but also be very efficient in enabling the financing of projects all over the world with broad participation. And again, I'm not talking about, oh, well there's this infrastructure project in Kenya that I'm going to take 50% of my portfolio and gamble on. No, this can be done in a very diversified way where a very small fraction of your portfolio is devoted to any single project, but you get this global diversification and the opportunity set increases. And many of the assets that will be available in the future are just not available today, so this space also creates new assets.

Peter van Dooijeweert:

So I guess we both see something in the future for everyone, but maybe talking a bit about where we are now and where a lot of the crypto skepticism, and I'll admit I'm a bit of a crypto skeptic in one sense that Bitcoin isn't necessarily an amazing asset for a lot of institutional investors to hold, some people have compared it to gold. How do you view the portfolio utility of Bitcoin? Is it an asset class? Is it just something that ran away from itself and has gotten a bit overvalued? What does it look like to you?

Prof. Campbell Harvey:

So bitcoin is the original cryptocurrency, and it is basically the most important in terms of market capitalization. But I think it's really important for investors to step back and look at this space in a holistic way. So in my paper with my colleagues at Mann, which hopefully is linked so people can read it, we talk about the diversity of this space and we detailed 20 different categories of crypto. And one of them is called, the so-called Layer 1 Currencies, which could be Bitcoin or Ethereum or others that have their own blockchain. So for an investor thinking about a diversified portfolio, it's hard to ignore the crypto space given the capitalization is around a trillion dollars, so it's hard to ignore. But if you want exposure to that space, again, you do the usual thing that we do routinely, have a diversified approach.

So to just think that you're getting exposure to this space thinking, "Oh, well, I'll get it only with Bitcoin," that's like saying I've got diversified exposure to the US stock market because I own a single stock in Apple. No, that's not the way it should work. So what I recommend is to look at the entire space, there's many different ways to get exposure to this space. One way is to buy Bitcoin or Ethereum, but there's many other possibilities. You can buy governance tokens that are linked to particular protocols, they're easily available. You could invest in platform tokens. There is just a long list. You can stake some money and earn a yield on it. Again, this is a diverse space and just to focus on Bitcoin or whatever Elon Musk is tweeting about, Dogecoin, that I think is too narrow and we need to broaden the assets that you're looking at within the crypto space.
Peter van Dooijeweert:

So I have a reasonable list of other things to hit on, so we're going to maybe make this a bit of a lightning round, if we can. So, I don't know, 60 seconds of topic. So Circle Bank is trying to become a narrow bank at the Fed, the ability to deposit at the Fed. What does that mean for stable coins? Will all banks have stable coins? What do you think?

Prof. Campbell Harvey:

So initially Circle wanted to become a narrow bank. A narrow bank, just for the listeners, is a bank that takes deposits but doesn't do any lending. So they just take all their deposits and park it with the Fed in terms of excess reserves. So I don't think that would ever go through, the Fed wouldn't approve that because effectively Circle's USDC becomes a defacto US digital currency, so the CBDC, the Central Bank Digital Currency. So I don't think that the regulator would actually allow that.

But instead Circle, I think is really embracing the regulator and looking to do the right thing. They're very open in terms of their collateral and how it's reported. And so I don't think they're going that direction, but I do believe that there will be regulation, and I think that that's probably a good thing for Circle. The competitor stablecoin that's not based in the US called Tether, and there's been legal action against Tether, I think is in a far weaker opposition and probably amongst the Fiat collateralized stablecoins, Circle will do the best. And indeed, I remember in my course having a speaker from Circle, and it was the week after they launched, and they were just so excited that they had 20 million dollars in terms of capitalization already right out of the box, now it's a completely different story and they've done really well.

Peter van Dooijeweert:

With respect to Tether, I think there's a lot of smoke, and I think that gets picked up by the press, and plenty of hedge funds are out there saying you're supposed to short it. But skipping into hedge funds that trade crypto, I mean there are thousands of them. We've heard one hedge fund hired someone called Acid Phreak who's a hacker to trade crypto. Are there too many hedge funds for... I mean, the asset class is a trillion, it's smaller than the top five companies in the US.

Prof. Campbell Harvey:

So this is important. Number one, it's an early market, so there are inefficiencies and it makes sense to actually go in and trade this space. The hedge funds are there because they can make money. So in our paper, the Investors Guide to Crypto, we showed that really simple trend following strategies are very profitable and far better than buy and hold. So there's lots of opportunities, and no surprise that hedge funds are there. And hedge funds play in the space of relatively illiquid assets all the time. And indeed this space is relatively large compared to some of the other places where they find opportunities. So this is no surprise to me, whatsoever, they'll go in there and do what they usually do while they make money, they make the market much more efficient, that's number one. Number two, you say it's $1 trillion, yes it is today, but what about the future? So there's a lot of innovation in this space, and we shouldn't judge this space by, well, it's only worth a trillion dollars today. What we should be thinking about is, where's it going to be in five years?
Peter van Dooijeweert:

How about NFTs and tokens for private equity, private credit? Are they going to come? Is there going to be a liquidity premium if they come?

Prof. Campbell Harvey:

So the tokenization has already begun, and I'm sure you saw that KKR did a deal where it was completely tokenized. So this is a big idea, and when we talk about private equity, we're talking about companies that are not IPOed and not traded on public exchanges, that we will see a new channel for financing. So it used to be that you go to the bank mainly for your financing, maybe you've got some equity that's raised, and it's super expensive to raise from venture capitalists. But now that channel will become much more efficient, where with tokenization we'll be able to participate on a broad fashion, and this is very helpful for early companies. Indeed, I remember, before Facebook went public that my high net worth friends were talking about the stock, they'd been active in it for years, and they were trading it basically, but it wasn't available to people like me and the average person. So I think that this is great, again, for additional diversification and also importantly to reduce that friction and allow companies to have a different channel of less expensive financing for their projects.

Peter van Dooijeweert:

How about stablecoin yields versus bank deposits? Are the banks finally going to pay us a proper yield thanks to stablecoin?

Prof. Campbell Harvey:

Yes. So this is interesting, and one of the problems that we currently face is this kind of centralization and market power. So I talked about the problem of inefficiency, I talked about the problem of the lack of inclusion. Well, centralization's another problem. And what I mean here is that the large banks have considerable market power, and what this new space does is it injects competition. Indeed, it also injects competition to the central bank and competition is a good thing. So yes, why is it that these rates are so low for savers? Why is it that borrowing rates are so high? It's market power. So anytime you inject some competition, that will make the market more efficient. And again, the implications we need to look at for the economy as a whole are very important. And that is that this allows for higher economic growth.

Peter van Dooijeweert:

Are the central banks going to lose control?

Prof. Campbell Harvey:

So in a way, central banks have already lost control, and I'll give you an example. This is a developing country, Venezuela, so it's got a reckless central bank and fiscal policy, hyperinflation 700%. If you're rich in Venezuela, you're effectively hedged because you have a bank account and US dollars in Miami. But for the average person, you get hammered from the hyperinflation. But with this
technology, the average person actually has a mobile phone, and the mobile phone serves as their bank. So they're unbanked, but their mobile phone has got some, let's say, USDC, the token that's linked to the US dollar. So now they're hedged, and effectively you can transact in this USDC. So you've disintermediated the central bank that's been reckless. And it's not just Venezuela, you saw the same thing in Turkey when their inflation began to spike, that people started to buy tokens that are linked to the US dollar that are very low risk. So the volatility of those cryptos is no more than the US dollar.

So yes, I think that this provides some competition and alternative. Do I think the central banks or US dollar is going away? No, it's just going to be another mode of payment. So in the future, think about paying for something, go to your grocery store, for example. We usually tap our phone or our credit or debit card, but in the future, you'll have a choice of what to pay in. So maybe you want to pay in US dollars, and maybe that will be a CBDC, so issued by the Fed, a digital token. Maybe it'll be a crypto token linked to the US dollar. Maybe it'll be a crypto token linked to the price of gold. Maybe it'll be a token linked to the price of Apple stock, or the price of oil, you choose. You've got all of these different assets on your phone and you can choose to pay with what you want.

And whoever's receiving, they can also decide. Maybe you want to pay for your groceries with your gold token, maybe the grocer doesn't want gold, they want silver. And then just seamlessly, there's a decentralized exchange that swaps the gold for silver and you're done. So in the future, it will be a different world in that there'll be a variety of different ways to pay. So the concept of money really changes. So we've had a monopoly, a Fiat monopoly on money, and that will be broken with this crypto revolution.

**Peter van Dooijeweert:**

But isn't the central bank just going to push back on that? I mean, if we think that the banking industry is slow and angry to embrace this, I mean, I don't, not that Jay Powell has any time to think about crypto right now given what's happening in inflation, but do we really think the central bank is going to let that go?

**Prof. Campbell Harvey:**

Well, there's an example where the central bank didn't let it go, and that's China. So they just banned crypto, and for multiple reasons. So the main reason is that if you've got money in China, you need to hedge and get it out of China. So the regulations are very strict, you can export maybe $50,000 a year. And people realize, "Well, what if I just bought crypto?" So within China, buy the crypto and the record of that crypto exists on a blockchain ledger in thousands of different locations around the world. So there's no export whatsoever, and I'm hedged. So the central bank and the government moved against crypto because it was threatening existentially their currency. And then they will push for a central bank digital currency, and maybe this works in China, but I don't think it's going to work in Europe, the UK, or the US where the government sees every single transaction, I don't think so. Or the government can edit your wealth, I really don't think so.

So it is possible that the central bank or government could do things that are basically like China, like doing a ban, but that would be very, very costly. So indeed, in my testimony to the Financial Stability
Oversight Council, I made this point, that if you do something heavy handed like that, then you eliminate a channel for growth. And an example I gave was Web3, that if you do something heavy handed, like banning crypto, it takes the US or the UK or Europe completely out of this really innovative space. And it's like not being present with internet innovation in the 1990s, that would be a disaster for the future growth of any country. So we need to be really careful about that. And I do think that the central bank, it's inevitable that there will be a competition in terms of different ways to pay and different concepts of money. And I think it's too late, that's what I really think, for the US. The horse has left the barn and now it's just a matter of managing.

Peter van Dooijeweert:

So I can hear every skeptic in the world in my ears right now saying, "These are all really great things you've talked about, Cam. They all sound revolutionary. They sound amazing." Tesla promised me that I was going to have a self-driving car five years ago, self-driving taxis and admittedly, Elon Musk has done some cool stuff with space ships. But the question is, when is that innovation going to be here? Some of it's here already, but when are we going to see what we'll call some of your blue sky ideas come to life tangibly?

Prof. Campbell Harvey:

Yeah. So part of what I do is, as I said right at the very beginning, to try to give a credible vision of the future. So what are the problems that exist today, and are there technologies that can solve these problems? And basically I have a view, and obviously there are certain aspects of this view that will evolve through time. As for when this actually occurs, that's a lot to ask. You can have the vision, but to have the actual timing, it's really difficult. I have made the statement that in 20 years I believe that we'll look back on Fiat inflation as a historical curiosity. So what I mean by that is that given that people will have all of these other methods of paying and kind of storing value, it could be a token, as I mentioned, linked to gold or real estate, things like that, that it just won't be as important what the central bank is actually doing in terms of printing money and things like that.

So I believe that given the vector that we're on, that we will see substantial disruption in at least the banking system in the next five years. And then there are many different Web3 innovations that will have, in my opinion, a dramatic impact on the businesses that are very prominent today. And think of the decentralized file storage. Think of decentralized computing. Think of decentralized social media. Think of decentralized mobile communication, decentralized video and audio serving, decentralized ride sharing.

So I don't need to name the companies associated with all of this stuff, but there are small companies today that are in each of those niches and the implications are vast. So I talk to some institutional investors and sometimes they'll say, "Oh, I'm really skeptical. And we've talked to our investment committee and we've decided we're not going to have any exposure to crypto." And then I say, "Okay, well I get that, but have you thought about the possibility that you don't really have zero exposure, you've got negative exposure? Because some of the very prominent names in your portfolio have a bullseye painted upon them in terms of this space. So I'm okay with you not having an exposure directly in terms of dollar investment, but you need to think this through, what this technology could do and you don't want to be in a position where you've got negative data."
Peter van Dooijeweert:

Well, I think the one takeaway people are going to take from this podcast is the idea of an inflation free world, given the environment we're in now this is going to make everyone happy. But for the second time that you've come on the podcast, you've managed to bring up a really fascinating topic that kind of ensures we'll be calling on you again to talk about Web3 in more detail because everyone was doing fine on this call until you said, "Hey, there's a bunch of companies with targets on their back." So we'll invite you back again for the target lists, maybe some target shooting. But thanks for coming on again.

Prof. Campbell Harvey:

Thank you for inviting me.

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