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DeFi-ing the Rules: Five Opportunities and Five Risks of Decentralized Finance

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In the Star Wars universe, the Force is a mystic energy field generated by living beings that penetrates all things and binds the galaxy together. The ability to wield the Force gives Jedi knights their superhuman abilities, making them peacekeepers of the galaxy. But how powerful would the Jedi be if every "transaction" that used the Force had to be processed through a centralized system that exacted myriad fees and was prone to delays?

Unfortunately for us, the second scenario describes much of the traditional financial universe. Too much financial friction reduces transaction speed and increases costs. But the age of centralized finance may be coming to an end and the age of decentralized finance (DeFi) just beginning, as Campbell Harvey (https://www.fuqua.duke.edu/faculty/campbell-harvey) explained in his presentation "Rethinking the Global Financial System," at last month's Alpha Summit GLOBAL by

CFA Institute (https://alphasummit.cfainstitute.org/events/global/registration/#introSection). Indeed, the Duke University finance professor, co-author of *DeFi and the Future of Finance (https://www.wiley.com/en-us/DeFi+and+the+Future+of+Finance-p-9781119836025)*, and Research Affiliates (https://www.researchaffiliates.com/about-us/our-team/cam-harvey) partner and senior advisor believes DeFi can transform the financial system and unleash a wave of economic energy.

For more than a century, the traditional financial system has operated with essentially the same model in Harvey's view. It all depends on the same central banks, the same commercial banks, the same exchanges, the same insurance companies, and so on. For all the technological change and related developments, the basic framework has remained static and centralized.

Lately, fintech has caused some disruption and helped reduce transaction costs. But fintech relies on the same centralized financial architecture, which places a limit on how low those costs can go and how much efficiency can be gained.

"With decentralized finance, that limit doesn't exist," Harvey said. "That's why the current fintech wave will be fleeting."

But what makes DeFi such an inevitable force for change? Will all that change be for the better? And what new risks may emerge with it?

Binding the Financial Galaxy Together

In basic terms, DeFi uses peer-to-peer networks to conduct transactions without third-party intermediaries. Digital assets, such as cryptocurrencies, take the form of "smart contracts," which are self-executing algorithms based on blockchain technology.

"Tokenization" is an important aspect of DeFi. Virtual and physical assets can be turned into "tokens" that act as stores of value and can be used in financial transactions. They also give the holder a vote in the governance of a protocol or platform.

Why will DeFi transform the financial system? Because it can solve what Harvey sees as five inherent problems of the traditional financial system: inefficiency, limited access, opacity, centralized control, and interoperability.

Reducing **inefficiency** means eliminating fees and intermediaries. In the 19th century, a Western Union wire transfer imposed a 3% fee, Harvey noted. More than a century later, even basic transactions — using a debit card, for example — often involve significant fees. Buying a stock might seem fairly straightforward, but actually obtaining ownership requires an intermediary and can take considerable time. With DeFi, the execution and settlement of a trade can happen simultaneously.

Limited access to the financial system is a serious global problem. Removing those barriers could connect billions of people to the financial services they need. An estimated 1.7 billion people are unbanked and even more are *under*banked. The obstacle for many in these cohorts is financial friction. For example, excessive cost of capital — banks limiting access to loans with lower rates and instead providing lines of credit at much higher interest — prevents many small businesses from pursuing projects that could boost economic growth. According to Harvey, DeFi can directly address the sources of financial friction.

That DeFi could ease **opacity** in the financial system may come as a surprise to the skeptics. In August 2021, for example, US senator Elizabeth Warren wrote to Gary Gensler, the chair of the US SEC, warning about the need to regulate the crypto markets and describing DeFi as "highly opaque."

To Harvey, however, Warren has it backward. "What is opaque is the current financial system," he said. Because DeFi is based on open-source technology, there is more transparency, not less. With a decentralized exchange, for example, users can see the code, the liquidity, and all the other details. The traditional financial system, by contrast, has numerous blind spots.

"When you go to a bank, you basically don't know how healthy that bank is," Harvey said. "And you rely upon our institutions like the FDIC to reduce your risk. But our institutions have a dubious track record at best, and I'm not talking about going back to 1930s. We can go back to the global financial crisis, where many people were dealing with banks that went under."

Centralized control and concentration are essential parts of the current financial system. Harvey pointed to the "market power" of commercial banks as a prime example. "That means that savings rates are lower than they should be, borrowing rates are higher than they should be. Maybe people are excluded," he said. "And in decentralized, finance, by definition, it's different. It's highly competitive."

"There's no distinction between different actors in the [decentralized] space," he added. "Everybody is equal."

Finally, **interoperability** is an unavoidable structural problem in traditional finance: Various obstacles prevent different platforms and systems from connecting to each other. If someone wants to open an account with an online trading platform, they may have to transfer money from a bank account. The process could take days before the new account is ready to trade.

"In decentralized finance, it's dramatically different," Harvey said. "You have a wallet, and you go to an exchange, you connect your wallet, and you're ready to go. Indeed, this is a feature of the so-called Web 3.0 experience. So, with Web 3.0, there's no username or password. You connect your wallet and you're ready to go. You're ready to buy. You're ready to receive funds. You're operational. And Web 3.0 is not possible without decentralized finance."

The Dark Side

So DeFi will defeat oppressive centralization and inefficiency and save the financial galaxy, right? Not so fast. DeFi may also create new types of risks as well as variations on old ones. Harvey has identified five in particular: smart-contract risk, oracle risk, custodial risk, environmental risk, and regulatory risk.

Smart-Contract Risk: A smart contract is an automated, self-executing agreement between parties. It's an algorithm on a blockchain platform that allows transactions to occur without centralized mechanisms or intermediaries.

Because DeFi is open source, smart contracts are more vulnerable to cybercriminals than are conventional systems protected by layers of security around a proprietary source. The nature of smart contracts makes them prone to various flaws: logic errors, economic exploits (exploiting mispricing, for example), flash loan attacks, and governance risk (for contracts with changing parameters). As more flaws are exposed, security will improve. "But right now, it is very risky," Harvey concluded.

Oracle Risk: Smart contracts depend on outside information, such as a price feed from a stock exchange. The third-party services that provide the connection are called blockchain oracles. If the connection is disrupted, certain steps that are required in a transaction requires cannot be taken and the contract may fail.

Scaling Risk: Current DeFi platforms use a consensus method with slow transaction speeds. Ethereum — "the main technology for decentralized finance," in Harvey's words — can process 15 transactions a second. Visa can process 65,000 a second. And the scaling problem is much worse with bitcoin. "In bitcoin, you can only do transactions between people," he said. "There's no way in bitcoin to have a smart contract with the current version."

While some believe DeFi will never match the scale of conventional financial networks, Ethereum is already preparing to migrate to a new and faster consensus method. Meanwhile, horizontal scaling and other novel approaches are being developed to reduce transaction costs.

"The scaling issue is a real problem today, and people complain about the transactions costs rising from the Ethereum blockchain," Harvey said. "And that is true — they are high — but all of these initiatives suggest that those costs will dramatically decrease in the future."

Custody Risk: Self-custody in the form of a digital wallet protects access to crypto assets through a user's private key. But a misplaced or stolen key can be disastrous. "If you lose your private key, then you lose your cryptocurrency," Harvey said. "And the private key is a long random number, 256 bits." Horror stories involving missing private keys have generated scary headlines and major financial losses. To address those concerns, third-party services have stepped in to protect private keys and help users safeguard their access.

Regulatory Risk: "Regulators are struggling today as to what to do with this new space," Harvey said. "I think they understand the challenge." But finding the right regulatory balance will be tricky. "If you want to eliminate all risk and be very harsh in the regulations, that means that the technology is going to go offshore," he explained. "This technology is not a national technology. It is a global technology. So you can run it as easily out of New York as the Cayman Islands."

In short, regulators face a conundrum. "If you're too harsh, you kill innovation," Harvey said. "If you're too lenient, then you have the Wild West and people are exploited."

Building a New Financial City

Many observers, Harvey among them, believe DeFi creates an opportunity to gain a first-mover advantage in an emerging new order. “And these opportunities are rare in history,” he said. “This is not a renovation of our current financial system. It is a rebuild from the bottom up, and we are very early in, maybe 1% in, where we see the scaffolding of a new city.”

But ironically this new financial system may resemble a much more ancient form of finance: barter. “The barter system was disrupted when money was introduced, and market exchange became much more efficient,” Harvey said. “Decentralized finance redefines money, so we can tokenize any asset.”

For example, a digital wallet can have a token linked to the US dollar, a token linked to gold, and a token linked to Apple stock. “And when I go to pay for something, I choose,” he explained. “Maybe I’m getting some groceries and I decide to pay with some of my Apple stock. And maybe the grocer doesn’t want that. They want something else. No problem. Seamlessly, the Apple stock is sent to a decentralized exchange and transferred into whatever the grocer wants. That is barter in a much more efficient way.”

And if anyone thinks opting out of DeFi is a viable option, Harvey says think again. “Some of the companies in your portfolio of traditional finance have a bullseye painted on them,” he said. “And if [DeFi] progresses at the same speed that it’s progressed over the last few years, that could lead to a substantial degradation of the value of certain names in your portfolio. So think about it. Even though you’re not in, you’re exposed in a negative way.”

So, may the decentralized force be with us.

For more from Campbell Harvey, don’t miss “An Investor’s Guide to Crypto (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4124576).”

If you liked this post, don’t forget to subscribe to the *Enterprising Investor (http://blogs.cfainstitute.org/investor/follow-the-enterprising-investor/)*.

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