# Wagner Road Capital Management

## What is the future of fintech?

July 13, 2022

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# Introduction

The past year has been difficult for many financial technology ("fintech") firms. The biggest challenge is not just from mismanagement (although there *has* been some of that), but fading tailwinds that generated extra growth during the pandemic. Since the pandemic started, we've had:

- stimulus checks to individuals;
- government support and stimulus for businesses;
- a massive increase in the Fed balance sheet;
- and historically low interest rates.

These short-term trends are in the process of reversing. The growth effects of the stimulus payments have lost momentum and contributed to inflation. The growth effect of the Fed's economic support has also subsided, and it has become another contributor to inflation, which recently hit a 40 year high.[1] This has led the Fed to change directions, and it is now committed to fighting inflation by raising interest rates and shrinking its balance sheet.

The market does not like contractionary policy. Rising interest rates hits growth companies twice as hard: the pace of expected growth slows down while future growth also becomes less valuable. Combining these effects with the removal of other stimulus slows down growth even more. Since most fintech firms are growth-oriented businesses (or otherwise connected to economic growth), their stock prices have been severely punished over the past year.

There are a few big questions related to these fallen stocks:

1. Was the decline in stock prices justified? (Were these stocks overpriced before?) Has the market overreacted?
2. How does the pandemic and the response to the pandemic affect the long-term trends for these companies?

The first set of questions is more philosophical. It's easy to find examples of stocks that were obviously overpriced during the pandemic. Thinking about why that happened is more interesting. Higher growth naturally generates higher growth expectations, and extreme disruptive events (like a pandemic) create more uncertainty around how long

[1] In oversimplified terms, when demand goes up and supply doesn't change, prices will go up too. On the other side, supply chain disruptions have limited supply, also causing prices to rise.

the extra growth will last. These expectations alone are enough to push valuations too high. When added to the stimulus factors above, stock prices can go *way* too high.

But it works the other way as well. A temporary boost in growth makes a difficult comparison for the next year. As growth naturally slows, expectations must be readjusted. When expectations get readjusted, valuations usually follow, and removing stimulus compounds this problem—the question now is about how long the slower growth will last.

I think it's helpful to consider long-term trends against short-term headwinds. The unusual economic conditions over the past few years have changed market perceptions *and* short-term business performance (in both directions), but the big long-term themes driving the fintech sector will continue to move forward. From that perspective, it seems like a good time to review some of these trends. There are three big ideas in fintech that I'm currently thinking about:

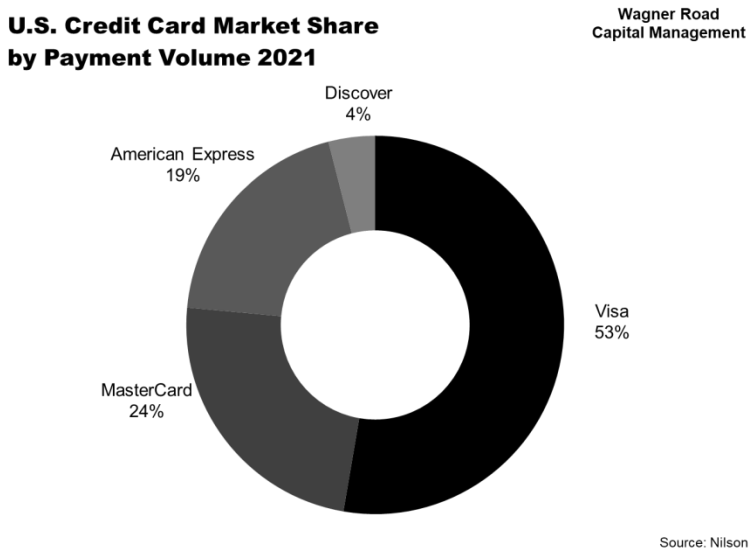
- Cash or card
- Online and mobile
- Centralized or decentralized

What all three of them have in common is the increasing digitization of money and money transfer systems.

## Cash or Card

The most obvious trend in fintech is the transition from using cash to using cards. I would mark the beginning of this transition at 1958, when Bank of America launched BankAmericard, which later became Visa. Like most major industry changes, similar products all appeared around the same time. American Express also launched a credit card. MasterCard came later, in 1966, while Discover was founded by Sears in 1985.[2] Other cards were introduced during this time period, but none of them came close to the popularity of the big four. Visa is by far the largest card network in the US.[3]

[2] Good summaries on the history of credit cards can be found at NerdWallet and creditcards.com.
[3] I prefer looking at total payment volume over number of cards issued or number of transactions.




The model of how a credit card transaction happens is somewhat complicated. There are many service providers that can be part of each step of the process, but from my perspective, the most interesting part is the credit card network, which serves as the connection between buyers, sellers, and banks. Here is a very simplified explanation of how these transactions are conducted:

- The *credit card issuer* or *issuing bank* is the bank that issues the card. It is responsible for managing the customer's credit account and ensuring that credit card debt can be repaid. An issuing bank could be almost any bank, such as Bank of America, Citibank, etc.
- The *credit card network* is the system that processes credit card transactions. In the US, these networks include Visa, MasterCard, American Express, and Discover.[4] American Express and Discover are also the issuing banks for their own card networks.
- The *merchant* is the store accepting a payment.
- The *acquiring bank* is the merchant's bank.

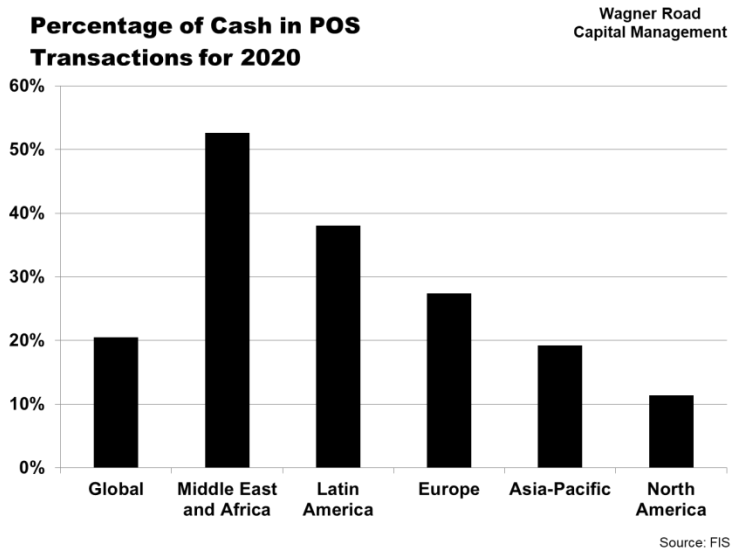
When a customer uses their credit card to make a purchase, the payment is processed through the credit card network between the merchant's bank (the acquiring bank) and the customer's bank (the issuing bank), where the credit card processor collects a fee. The issuing bank and acquiring bank *also* collect fees. But the customer doesn't directly see any of these fees—they are subtracted from the amount that the merchant receives. These credit card fees, generally known as interchange fees, are about 2% of the

[4] All four of these credit card networks are attached to publicly traded companies.

transaction in the US.[5] The fees are effectively paid by the merchant, and they are the price for having access to the credit card network.[6]

Each credit card network charges slightly different fees and focuses on a different set of customers. For example, American Express is known for serving a more affluent demographic, while Discover generally has less wealthy users. And since this is a mature, well-established industry with only four major companies in the US market, the opportunities for expansion are not based on big changes in market share. They are more in the overall change from cash spending to card spending.

The credit card networks have enabled other parts of the payments industry to build on top of it and become the backbone for the rest of the industry. This puts them in the position of a strong, durable intermediary. As people switch from using cash, they become part of the card network. And this transition is not quite finished. In 2020, 20% of all global POS transactions were still made by cash (a statistic certainly affected by the pandemic), with differences among regions. Since this data covers sales on a POS, I see the remaining cash transactions as a potential opportunity for card networks.

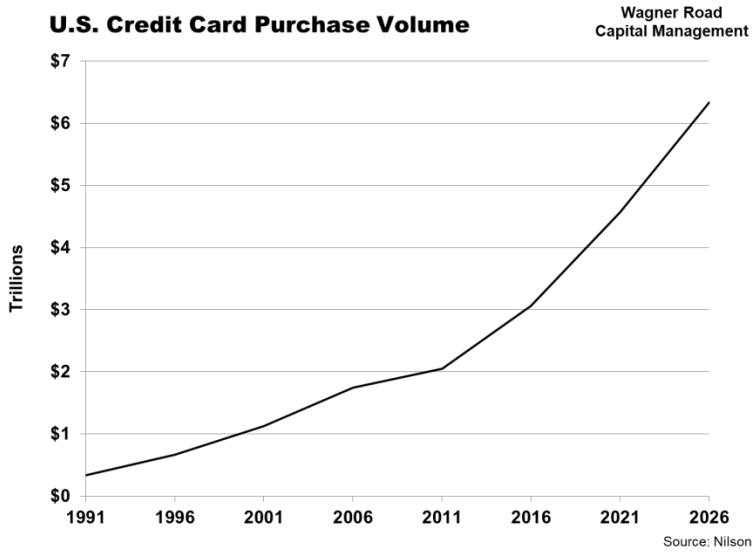



On a regional level, there is still space for growth in credit card networks, but there is a much wider difference among individual countries, with developing nations generally using more cash. In 2021, US POS payments were only 11% in cash. And while the market in the US has matured, there is still more spending growth expected. These

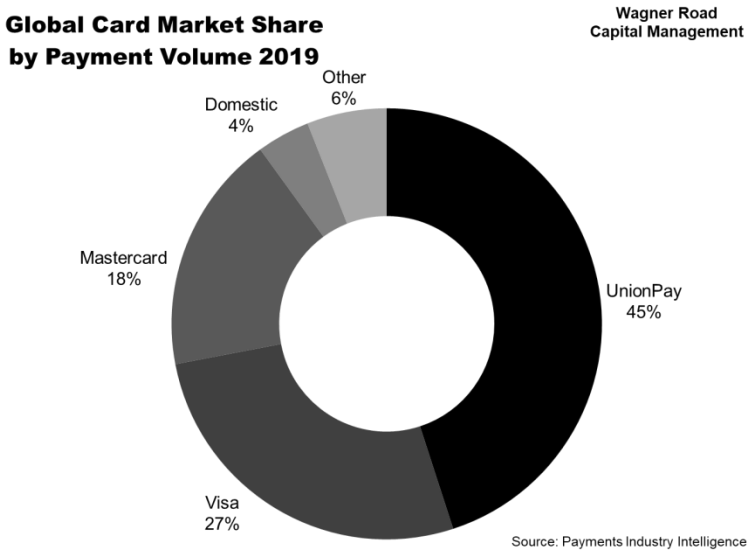
[5] There are other fees that come as part of a credit card transaction, but interchange fees are the largest part of the total and the most widely criticized. A good source of more details about the credit transaction process and interchange fees can be found in a medium article by Prince Jain. Another approachable explanation of the industry is available on the Business Breakdowns podcast.

[6] It can be argued that consumers are ultimately paying these fees through higher average prices, and buyers who use cash are losing out because they do not get the perks of using a card.

networks can still grow even without stealing market share from other credit card companies.




Worldwide, the market dynamics are similar. A small number of large stable companies dominate in market share. The largest is UnionPay, which is by far the most powerful card network in China.




The global picture is similar to the US, but there is more intense competition in markets where cash is a larger percentage of transactions. Going forward, I expect these companies to be competing more in other service categories, such as B2B payments, and no single card network should overwhelm the others.

## Online and Mobile

When we move from in-store to online, using cash becomes inconvenient and often impossible. The first online credit card transaction most likely happened in 1994. Since then, the rise of ecommerce has created a new market for payment systems that includes online payment platforms and digital wallets.

There are many different online payment service providers with different degrees of overlapping services. Some of them only serve as the gateway that enables transactions, some of them process transactions, and some of them also hold a balance to make payments with. The most interesting part of this market is the biggest intermediaries. For US based online payment services, that's PayPal, Stripe, and Square.[7] Each of these companies has a different flavor.

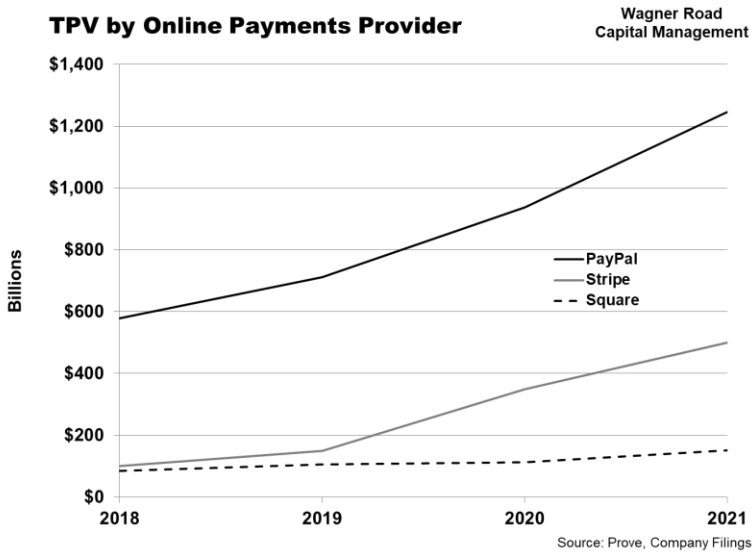
PayPal, the oldest and largest of the three, was founded in 1998 by Peter Thiel and Max Levchin. The goal of the service was simply to make online payments safer and faster. It was so successful that eBay bought the company a few months after it went public in 2002. In 2015, PayPal split from eBay and became a publicly traded company.

Stripe, still a private company, was founded in 2009 by John and Patrick Collison (and later received funding from Peter Thiel, who is still an investor). The big idea behind Stripe is to make it easier for businesses to integrate online payments into their online sales. There are questions about whether it actually does this better than PayPal (using Stripe's custom features requires some developer skills), but the most common recommendations for retailers say that Stripe serves larger businesses that want customized payment options, while PayPal is better for smaller businesses.[8]

Square's origin is more physical. It was founded in 2009 by Jack Dorsey and Jim McKelvey as a way for small businesses to accept credit cards (similar to PayPal's online focus). After securing a strong position in this market, it has since moved more into the online space, building other services around its first product. Square went public in 2015.[9]

Since PayPal, Stripe, and Square are not always direct competitors, coming up with market share cannot be fully accurate, but total payment volume makes a good comparison.[10]

[7] The holding company for Square has been renamed to Block, but Square still exists as a product. To avoid confusion, I will use the Square name.
[8] Both Forbes and NerdWallet have articles describing these differences.
[9] Marc Rubinstein at Net Interest wrote a very good explanation of Square's background and potential.
[10] Some figures for TPV may include other services, but the relative sizes are close.




Growth in online payments should continue to be healthy. It is largely connected to the transition to ecommerce sales, an industry that is projected to grow by almost 50% globally over the next four years.

A natural extension of online payments services is the peer-to-peer (P2P) payment networks. These payment networks allow users to transfer money without having to hand out cash or write checks. In the US, the 3 major P2P networks are Venmo, Cash App, and Zelle, and they are controlled by some familiar names.

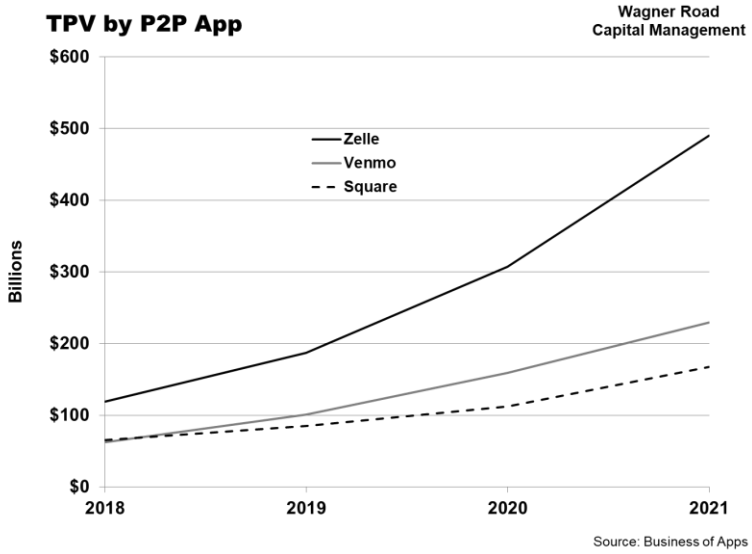
Venmo was founded in 2009 as a way for people to send money or split bills. It adds a social media aspect to money transfers, allowing users to share their reasons for sending money. Originally intended to be a PayPal competitor, it was bought by PayPal in 2013. Venmo is only available in the US.

Cash App is Square's answer to PayPal. It was developed in-house by Square in 2013 after the company passed on purchasing Venmo (a deal that PayPal later found attractive). It has a wider set of features than Venmo, offering banking services and the ability to invest in stocks or buy Bitcoin. This makes the network attractive for consumers who are not served by the traditional banking system. It is only available in the US and the UK.

Zelle, a P2P network that started in 2011 and re-launched in 2017, is the banking industry's response to Venmo. It is jointly owned by 7 different banks and directly integrated with the banking system. This network quickly became the largest P2P payment app by total payment volume, but a significant portion of this growth came from moving existing bank customers over from more traditional transfer networks. With limited services and no direct way of generating revenue, I consider Zelle to be more of

a defensive move for the banking system than an aggressive entry into this type of money transfer. It is only available in the US.[11]

All three P2P networks are growing at explosive rates, advancing on strategic partnerships, and expanding their use cases. The best measure of how these three services are currently positioned is by total payment volume:[12]




In the big picture, this market is still in growth mode, projected to grow by an average of about 17% each year through this decade. With such fast growth, there is room for all of them to be successful, even if the leader changes over time.

But competition in the payments industry is not limited to payment providers and P2P networks. There are also "digital wallets" that allow users to choose their payment method the same way that a "real" wallet may have several different credit cards. Two of the most well-known digital wallets, Apple Pay and Google Pay, have accelerated the transition into digital payments through mobile phones.[13] I don't have much to say about these services other than emphasizing the continued relevance of card networks—I've seen investors joke that all of these new payment methods are just different ways of paying through a card network, a sentiment that is somewhat true. Online payment services and digital wallets often link directly to a card, and consumers love the ability to keep earning rewards points.

[11] There are good summaries of Zelle's story, purpose, and impact on Productmint and Applico.
[12] Some figures for TPV may include other services, but the relative sizes are close. Sometimes other comparisons are used, such as total app downloads, which may give hints towards how likely TPV will rise and how fast. TPV is a cleaner snapshot for current market position.
[13] Digital Trends has a pretty comprehensive comparison of the different services. PayPal maintains a strong position here too.

The online and mobile payment space is also still evolving. Both Square and PayPal are openly maintaining their goal of creating a payments ecosystem that is similar to China's "super apps".[14] AliPay and WeChat are a combination of many difference services—such as payments, banking, commerce, social media, etc.—and this keeps users from switching apps to fill another need, while also expanding the set of potential customers.

The US is unlikely to reach the same level of integration as China's super apps (regulators will prevent it), but I expect to see more consolidation within different categories with many different leaders. For example, some US social media companies already offer commerce, and payment apps have reportedly considered moving more into social media and commerce. There is still a long way to go.

## Centralized or Decentralized

Any description of decentralized technologies will always be oversimplified (and it will always attract the attention of cryptocurrency superfans who insist on explaining the nuance), but it's important to be aware of this trend. *I have no interest in ever investing in this area*, but it has the potential to be a threat (or an opportunity?) for companies that I follow. My view is more focused on the challenges of wider adoption.

The main attraction for Decentralized Finance (DeFi) is self-defined—"decentralized" means cutting out the companies that stand in-between transactions. Individuals can hold their own money online inside personal digital wallets and transfer it (or use other financial products) without needing approval for opening accounts or paying fees to financial firms. This doesn't mean that there are no fees, only that the fees don't go to businesses operating as the middleman. And the motivation more than just fees. The DeFi dream is a financial system that doesn't require trusting centralized intermediaries to function properly and doesn't rely on regulations to force market participants to stay honest.[15]

DeFi was made possible by the introduction of Bitcoin in 2008. Bitcoin itself is not equipped to enable all of the features that go along with DeFi, but the technology is a starting point. Bitcoin operates on what is called a distributed ledger blockchain, which has some important differences from traditional finance:

- A distributed ledger is maintained and validated by each participant of the network. Everyone connected to the network has a copy of the ledger. This is

[14] Square's collection of services seems to be closer to achieving this goal.
[15] Both Investopedia and The New York Times have good reviews on DeFi. A very detailed summary of DeFi was published by the Wharton Blockchain and Digital Asset Project.

different from a centralized ledger that is maintained, validated, and secured by a centralized authority.

- A blockchain is a way of storing information. When a new transaction happens on the network, it is bundled with a group of other transactions into a "block" that is "chained" to other blocks. This blockchain contains a record of all transactions that happened on the network, and its historical record cannot be changed or hidden.

The only way that changes can be made to a distributed ledger is through the consensus of more than half of the network. Bitcoin uses a concept called proof of work (PoW) to make this happen. This means that computers on the network must solve an equation to complete a transaction.[16]

Ethereum, which launched in 2015, followed Bitcoin's success with a more complete set of features. Ethereum works the same way as Bitcoin (it is a cryptocurrency), but it also includes the ability to operate "smart contracts". Smart contracts are what make DeFi possible—they are decentralized programs that run on the Ethereum network. These programs have the potential to do many different things, from tracking supply chains to trading securities or making transactions, and they operate as computer code that executes when the conditions of the contract are met. The main point continues to be the decentralized nature of the network. The DeFi applications built on top of Ethereum are intended to replace traditional finance firms by offering similar types of financial products and services. Ethereum developers are also committed to switching from a proof of work system to a "proof of stake" system that requires less energy and lowers fees.[17]

Because Bitcoin and Ethereum are volatile, businesses and consumers often find it hard to justify using either of the cryptocurrencies for normal transactions. To solve this problem, cryptocurrency transactions can happen with what are called stablecoins. Stablecoins are pegged to another asset, usually the US dollar, to ensure that the value does not swing wildly from day to day or from month to month. There are three types of stablecoins:

1. Off-chain collateralized use a currency or commodity as collateral for the value of the coin.

[16] There are many different sources describing how cryptocurrencies and DeFi works, but I have found that Investopedia provides the best explanations for people who might find the basics confusing. There are good articles on distributed ledgers, blockchain, and proof of work.
[17] The book, Etherum: blockchains, digital assets, smart contracts, decentralized autonomous organizations by Henning Diedrich does a good job of telling the story of Ethereum. Investopedia also has a short article about Ethereum.

2. On-chain collateralized use another cryptocurrency as collateral for the value of the coin.

3. Algorithmic stablecoins use an automated process to adjust the value of the coin without any collateral behind it.

And that should be sufficient for a broad introduction. The big question is whether any of these ideas are investible. It is fashionable to directly buy Bitcoin or some other cryptocurrency. These investments are now categorized as their own specific asset class, often including the promise of protection against inflation or a market collapse.

I take Buffett's approach to "nonproductive" assets. An investor who owns cryptocurrencies like Bitcoin for the purpose of getting a return on investment is just waiting for someone else to pay more. There is no business creating a return on investment and no property earning any rent. Returns are created from hype and hope. When hype and hope die, the returns die too. As we've seen over the past few months, this asset class cannot escape a market collapse, and it has not provided any protection against inflation.

But that's Bitcoin. Stablecoins are designed to be stable. These investments can be made with some expectation of a return outside of price fluctuations. The challenge here is more structural. Algorithmic stablecoins rely on people trusting that they will maintain their value, and stablecoins covered by collateral rely on the collateral being properly maintained. There are a few reasons why it is important to be cautious.

One of the biggest stories of the quarter is the total collapse of the cryptocurrency LUNA and its related stablecoin, TerraUSD (UST).[18] UST is an algorithmic stablecoin that uses LUNA to maintain its value. The way that this happens is complicated, so this is my attempt to summarize.

Traders can always exchange LUNA for UST (or UST for LUNA) at a $1 price, no matter what price either trades at. In theory, when UST rises above its designated $1 price, traders can capture the difference by exchanging LUNA for UST, and will keep doing it until UST reaches $1. When UST falls below its designated $1 price, traders can also capture that difference by exchanging UST for LUNA. To keep UST at $1, LUNA is created or destroyed by the system—if the price of UST is below $1, more LUNA will be created until UST stabilizes.[19]

[18] Other coins have also collapsed, but this is the most instructive example. There are also too many stories about traders, institutions, and exchanges drowning from over-extended crypto bets (and more kept coming as I wrote this), but I don't need to detail them because they all represent the same problem—making too big of a bet on an extremely risky asset.

[19] CoinDesk has a good explanation of how the mechanism works. The original white paper has a more complicated description.

The trouble begins when UST moves significantly below $1. This incentivizes traders to quickly exchange their UST for LUNA, vastly increasing the amount of LUNA in the system. And increasing the amount of LUNA (increasing the supply) also reduces its value. This effectively results in a "run on the bank" where traders exchange their UST for LUNA and then sell LUNA to escape the fall in price. When this happened, LUNA went from the 4th largest stablecoin to "zero" in just one week.[20]


Anyone who invested at any time before this collapse, and held to the end, lost their entire investment. Some of these investors were sitting on gains of more than 100 times their original investment. And the collapse of these cryptocurrencies is more than just the elimination of a speculative trade. The programmers developing DeFi apps for this network have also lost out. Many of these projects have halted and are unlikely to be finished. The relaunch, called LUNA 2.0, has also had a difficult start.

Perceptive market experts have outlined this tragedy as the inevitable outcome for every algorithmic stablecoin. The math works against them, and they are only backed by the promise of people believing that they have value. But collateralized stablecoins are backed by actual assets, so the risks are different.

Stablecoins that use other cryptocurrencies as collateral are usually over-collateralized, holding assets (usually Bitcoin or Ethereum) that are valued much higher than the total value of the stablecoin. If the stablecoin begins to deviate from its peg, these assets can be sold to cover the difference. The obvious challenge is that cryptocurrencies generally move in the same direction at the same time—if one is suffering from a steep decline in

[20] Both Forbes and The New York Times covered this story. Patrick Boyle also made a good video summarizing the situation.

price, then they are all suffering.[21] In a moment of crisis, this can lead to a situation where the collateral is not enough to cover the difference. Anyone who has heard about banks knows how this can end.

Stablecoins that are backed by their currency peg also have potential issues. The first is that it contradicts the very idea of having a decentralized currency. If a cryptocurrency is pegged to the US dollar, and it uses the US dollar as its collateral, then it is effectively relying on a centralized currency to maintain its value. Some of these stablecoins also rely on a centralized custodian to hold their funds.

The second potential issue with an off-chain collateralized stablecoin is when there is not enough collateral to cover a significant drop in price. This problem is very common in the finance, but it's more pronounced in the crypto world. Tether (USDT), the third largest cryptocurrency, claims to be backed by "a sum of commercial paper, fiduciary deposits, cash, reserve repo notes, and treasury bills in reserves that is equal in USD value to the number of USDT in circulation." But these claims have repeatedly been investigated and resulted in legal trouble—Tether is banned from doing business in New York, and was fined by the CFTC for misleading investors about the nature and size of its collateral. And after several years of promises, its reserves have still not been fully audited.

Despite all of these complications and concerns, cryptocurrencies are necessary for DeFi products to function. If they are better than traditional finance products, or if they become better, then people will make the switch. So far, I haven't seen that happening beyond the early adopters who are already part of the crypto world. Transaction fees remain high, and the energy costs of using most cryptocurrencies are still unreasonable. And the service providers developing cryptocurrency tools include some of the very same companies that DeFi is intended to replace—as a basic example, both PayPal and Square allow limited cryptocurrency trading, and physical cards have been developed that allow customers to buy things using Bitcoin through a card network. There are also new companies that exist to enable DeFi transactions, but I'm limiting my focus to cryptocurrency exchanges. Two of the most well-known are Binance and Coinbase. Both of them operate without a physical headquarters.

Binance is the largest cryptocurrency exchange in the world. Binance supports the BNB Chain blockchain network, a platform used to manage decentralized apps. These apps enable payments, trading, and other financial services developed and supported by a range of other service providers.

Binance itself is controversial. The company has faced regulatory challenges in at least 8 countries, with investigations covering everything from failure to register to potentially

[21] As a Morningstar report highlights, cryptocurrencies are also highly connected to growth stock returns.

facilitating money laundering. In 2019, the company pulled its US operations after regulatory scrutiny and restarted them as Binance.US, a separate company. Binance.US is slowly working through regulatory approval for every state.

Coinbase is the largest cryptocurrency exchange in the US. The company offers products that allow cryptocurrency storage, trading, and payments. Some of these are integrated with DeFi apps that enable other financial products.

Coinbase is not as controversial as Binance. It has not been loaded with the same regulatory attention, but the SEC has promised to take a closer look at the entire cryptocurrency market, and may have already taken steps to act on that promise. Outside of any rumored regulation, the company has struggled with increasing competition and a dramatic fall in Bitcoin's price and trading volume. It also spooked both customers and investors with an announcement that customer deposits might be taken away if Coinbase goes bankrupt.

Beyond legal trouble and regulatory attention, cryptocurrencies and their service providers have had a reputation for poor management, scams, and sometimes questionable security. These are all bad things, but the last one is the most troubling, because it eats at the entire foundation of the system—if the security of the system can't be trusted, then nothing else can. And early in development, both Bitcoin and Ethereum had hackable errors embedded in their code. Ethereum's debut was such a disaster that the project had to be reset after millions of Ethereum were stolen.

Hacks within a blockchain can be rolled back, but Cryptocurrency exchanges have also been the target of successful hacks. The first major Bitcoin exchange, Mt. Gox, was forced into bankruptcy in 2014 after losing more than 500,000 Bitcoin in a hack. And successful hacks are still shockingly common. A quick search brought up almost a billion dollars' worth of stolen cryptocoins just this year.

Despite all of these growing pains, blockchain technology does have real potential that someone will figure out how to capture in a way that is not so overhyped. But I'm not convinced that the decentralized dream will ever be fully realized. Cryptocurrencies and other blockchain products can still be controlled by centralized entities and individuals, whether by choice (either consciously or surreptitiously), by regulation, or by a malicious attack.[22] And in my view, the reality of centralization means that the most likely beneficiaries are the financial firms already embedded into the system. Disruption is not inevitable.

[22] A report written by Trail of Bits for DARPA provides a pretty comprehensive description of the centralization issue. Their summary: "We show that a subset of participants can garner excessive, centralized control over the entire system."

# Conclusion

The challenges that we're seeing in the economy and the stock market right now are very painful for the fintech sector. The events that created this situation are unique, but it doesn't change the long-term features that describe how payments are evolving. On an individual level, companies with strong financial and competitive positions should be able to take advantage of this period of uncertainty, even if their growth is temporarily slowed. For these firms, assuming that they are not being horribly mismanaged, the thesis hasn't changed. On a group level, the three major themes that I have just described can be summarized with a few simple phrases:

- The card networks are strong and established.
- Online and mobile payments are proven growth markets.
- Decentralized finance is still the Wild West.

As money continues to transform from physical to digital, some of these markets should continue to mature. But some of them could also begin to stall out or disappear, replaced by more robust solutions or held up by regulations. I'm confident that card networks and major payments companies will continue to grow, but I remain intensely skeptical about the promises of decentralized finance and the companies devoted to supporting it. This year's Super Bowl, flooded with crypto ads, may have marked the top of the cryptocurrency craze. The layoffs have already arrived.

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