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## The Future of Banking: Consumer Protection and Contagion Risks of Cryptocurrency

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# The Future of Banking: Consumer Protection and Contagion Risks of Cryptocurrency

## Abstract

The emergence of digital assets in the financial services industry in the 21st century raised concerns pertaining to consumer protection, regulatory oversight, and the safety and soundness of the United States financial system. In the efforts to foster digital assets in financial markets, lawmakers at both state and federal governments have begun spearheading regulatory initiatives aimed at protecting investors and consumers. This paper considers historical and current issues surrounding cryptocurrency, as well as existing policy and regulatory responses at the federal level. Among a wide array of policy issues regarding digital assets, this paper examines the consumer protection and contagion risks of cryptocurrency and their implications on U.S. financial stability. Employing the case study on the collapse of FTX cryptocurrency exchange in November 2022, this paper conducts a regression analysis between the market capitalization of FTX and other major cryptocurrency exchanges to illustrate their contagious and integrative relationships in the cryptocurrency market.

## Keywords

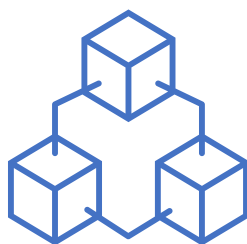
technology policy, digital assets, cryptocurrency, financial regulation policy, financial technology

## Disciplines

Economic Policy | Public Policy | Science and Technology Policy

## Comments

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# THE FUTURE OF BANKING

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Consumer Protection and Contagion Risks of Cryptocurrency

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Spring 2023

## **Abstract**

*The emergence of digital assets in the financial services industry in the 21st century raised concerns pertaining to consumer protection, regulatory oversight, and the safety and soundness of the United States financial system. In the efforts to foster digital assets in financial markets, lawmakers at both state and federal governments have begun spearheading regulatory initiatives aimed at protecting investors and consumers. This paper considers historical and current issues surrounding cryptocurrency, as well as existing policy and regulatory responses at the federal level. Among a wide array of policy issues regarding digital assets, this paper examines the consumer protection and contagion risks of cryptocurrency and their implications on U.S. financial stability. Employing the case study on the collapse of FTX cryptocurrency exchange in November 2022, this paper conducts a regression analysis between the market capitalization of FTX and other major cryptocurrency exchanges to illustrate their contagious and integrative relationships in the cryptocurrency market.*

## **Introduction**

Technological advancements over the years have resulted in complex financial markets where digital assets, such as cryptocurrency, are able to modernize the nature of financial investments. Cryptocurrency is a type of digital asset that is secured through cryptography to prevent it from being counterfeited or double-spent, and it runs on a decentralized structure that is separated from governmental or central authorities (Frankenfield 2023). An initial attempt at digitizing the financial system emerged on October 31st, 2008, when an individual with the pseudonym “Satoshi Nakatomo” unveiled a type of electronic cash called ‘Bitcoin’ (Vigna 2021). Cryptocurrency became popularized as an attractive financial instrument for investors and consumers in financial markets, and its market reached a valuation peak of almost \$3 trillion by November 2021 (Bennett et al. 2023). Within the realm of financial systems, other digital assets that have entered financial markets include stablecoins, smart contracts, decentralized applications (dApps), decentralized exchanges (DEXs), non-fungible tokens (NFTs), and decentralized autonomous organizations (DAOs), as well as the innovation of Web 3.0 applications (Bennett et al. 2023). Cryptocurrency is not a fiat currency as it is not recognized by the government as U.S. money nor digitally issued by the central bank (Internal Revenue Service (IRS) n.d.). Fiat currency

refers to money that is issued and backed by the government, and it is not backed by physical commodities like gold or silver (Chen 2023).

From a global standpoint, other economies around the world have begun exploring and considering the inclusion of digital assets, such as cryptocurrency, in their financial systems. As of February 2023, the United States is one of the 114 countries around the world that are considering introducing their own central bank digital currencies (CBDCs) in an effort to keep up with the boom of the cryptocurrency in financial markets (Siripurapu and Berman 2023). Currently, El Salvador and the Central African Republic (CAR) are the only countries that have officially adopted Bitcoin as a legal tender, with other countries also becoming more willing to adopt a variety of cryptocurrencies as legal tender in their economies (Berman 2022).

This paper considers the implications of consumer protection and contagion risks of crypto in the U.S. financial system. This paper examines existing regulatory regimes on crypto, as well as stakeholders that govern digital assets in the financial market. Using the case study of the collapse of FTX cryptocurrency exchange in November 2022, this paper finds that crypto volatility continues to persist in the U.S. financial system. There is a great need for more robust public policy responses in order to protect crypto investors and consumers, while also harnessing the technological advancement that digital assets bring to financial markets.

## **Overview of the Cryptocurrency Mining and Transaction Processes**

Unlike the U.S. currency that is recognized by the federal government and physically printed at the Bureau of Engraving and Printing (BEP), cryptocurrency operates in a separate environment. Cryptocurrency is generated through a mining process, which involves utilizing computer processing power to solve complex mathematical problems that reward coins; however,

crypto users can also buy currencies from brokers and store and spend them through encrypted wallets (Cointelegraph n.d.). Cryptocurrency operates on software networks that involve different computers that are linked to one another and run separate copies of the same program, and these networks are decentralized in the sense that there isn't a central computer that governs the network (Vigna 2021). These networks are responsible for processing transactions and maintaining the database that records and stores those transactions (Vigna 2021).

During the crypto transaction process, transactions are bundled into blocks, and then they get connected in a long chain in chronological order, which illustrates how the term 'blockchain' was coined for the operating software for crypto (Vigna 2021). These transactions are secured and verified through cryptography, which is a scientific technique that transforms data and prevents it from being accessed by unauthorized parties (Cointelegraph n.d.; National Institute of Standards and Technology n.d.). From a broader standpoint, a blockchain is a digital ledger of transactions that is distributed across a decentralized network of computer systems (Hyatt 2021). Crypto transactions are recorded on a shared ledger that is publicly available—that is, any member of the public can view Bitcoin (BTC) and Ethereum (ETH) transactions (Hyatt 2021). Thus, blockchain technology operates as a digital system that stores the history of previous transactions (Bashynska et al. 2019). While blockchain technology offers a unique platform for transactions of digital currency, crypto transactions can be slow, costly, and inefficient depending on the volume of a crypto network at a given day or time and come with hidden fees, such as cryptocurrency's network fees (Carmona 2022).

Cryptocurrency is volatile as they often undergo fluctuations in its prices; however, given that it is still relatively new in financial markets, there isn't a definite reason behind its volatility (Khan and Hakami 2021). Cryptocurrency is still in its stage of emerging into financial markets,

and it continues to be in the process of development as a technology (Khan and Hakami 2021). Moreover, most cryptocurrencies are digital assets that are not backed by any other physical commodity or currency, so their price is dependent on their supply and demand (Khan and Hakami 2021). There are also speculative bets that investors take that contribute to the uncertainty of crypto in financial markets (Khan and Hakami 2021).

### **Existing Federal Regulations on Cryptocurrency**

While there is a limited number of regulatory policies pertaining to cryptocurrency, there are a few existing regulations for cryptocurrency that are covered under federal financial regulation and banking laws. Among other federal rules and laws, prominent federal regulations pertaining to crypto are 1) the Bank Secrecy Act and 2) Title III of the USA PATRIOT Act. Congress has been encountering legislative gridlocks in its efforts to pass crypto regulations and legislate around emerging crypto issues, and there have been increasing lobbying efforts within the crypto sector as crypto advocates seek to meet the needs of their industry. From April through the end of June 2022, the crypto industry and advocates spent at least \$6.8 million in their efforts to lobby Congress and the federal government, which marks a 31-percentage increase from the preceding quarter (Reilly 2022). They also spent at least \$12.1 million in the first half of 2022, which is 17 percent greater than the \$10.3 million that they spent in 2021 (Reilly 2022).

#### **Bank Secrecy Act and Title III of the USA PATRIOT Act**

The Bank Secrecy Act (BSA), which is also known as the “Currency and Foreign Transactions Reporting Act of 1970,” requires financial institutions in the U.S. to assist federal agencies to detect and prevent money laundering and terrorist financing (Financial Crimes

Enforcement Network (FinCEN) n.d.; Green 2022). The BSA obligates those institutions to “keep records of cash purchases of negotiable instruments, file reports of cash transactions exceeding \$10,000 (daily aggregate amount),” and report suspicious activities that resemble criminal acts, such as tax evasion and money laundering (FinCEN n.d.). The BSA is also identified as an anti-money laundering (AML) law (FinCEN n.d.).

On the other hand, Title III of the USA PATRIOT Act, which is also referred to as the “International Money Laundering Abatement and Financial Anti-Terrorism Act of 2001,” is aimed at strengthening existing AML regulations (Dolar and Shughart II 2011, 20). This law includes terrorist financing as part of the “focus of the money laundering,” increases the number of financial and non-financial institutions subject to AML measures, and introduces new requirements that would be applicable to national and international components of their scope (Dolar and Shughart II 2011, 20). For example, in the case of Bitcoin, the federal government is able to “police” it through the USA PATRIOT Act and the BSA and requires Bitcoin exchanges to be registered as a money-services business under the U.S. Department of Treasury (Grant and Hogan 2015, 31). Thus, the U.S. Department of Treasury’s Financial Crimes Enforcement Network (FinCEN) is responsible for administering the BSA and collecting and sharing intelligence related to financial crimes (Green 2022).

#### *FinCEN’s Regulatory Oversight and the Anti-Money Laundering Act of 2020*

In 2013, FinCEN issued a guidance that defined cryptocurrency exchanges as a money transmitter, which subjects them to BSA and Title III of the USA PATRIOT Act, and the agency also obligates money services businesses to register with the agency and execute the AML compliance program (Green 2022; Lemire 2022). Under the 2019 guidance from the agency,



crypto mixer or tumbler service providers are also required to follow the BSA (Lemire 2022). Moreover, with the passage of the Anti-Money Laundering Act of 2020 in January 2021, which is developed on top of the existing AML statutory framework from the BSA, businesses that are involved in exchanging or transmitting virtual currencies qualify as regulated entities (Rosen and Miller 2022; Lemire 2022).

### **Stakeholders of Cryptocurrency Regulations and Policies**

The responsibility and relevance of the Treasury's FinCEN in regulating cryptocurrency were identified in the previous section. The role of Congress has also been previously discussed as it is responsible for conducting legislative processes that produce reforms or proposals for crypto regulations, with two of the most notable financial regulation bills that were passed in Congress being the BSA and Title III of the USA PATRIOT Act. Thus, cryptocurrency exchanges are prominent stakeholders in the crypto regulatory and policymaking sphere as their operation can be directly impacted by the passage of bills from Congress and regulations from the executive branch. However, the regulatory sphere of crypto also revolves around other agencies at the federal level. This section identifies members of the U.S. public as a stakeholder in crypto regulations and policies and explores different federal agencies that are responsible for executing regulations pertaining to digital assets. While this section does not provide an exhaustive list of every stakeholder in crypto regulations and policies, it specifies the roles and implications of prominent stakeholders for the regulatory sphere for digital assets.

### Members of the U.S. Public

Even though the emergence of digital assets paved a new avenue for the U.S. financial system to allow alternative methods of exchanges and financial investments, the public remains skeptical of their risks and implications. In 2021, 45 percent of Americans believed that investing in digital currency is highly risky; however, by the end of 2022, that number went up to 60 percent, with another 26 percent of Americans expressing that investing in digital currency is moderately risky (DeVon 2022). Younger generations have shown to be more likely to consider investing in crypto than older generation counterparts as approximately 38 percent of the people from Generation Z indicated that crypto investing is highly risky, which is comparatively lower than approximately 80 percent of baby boomers and the silent generation who expressed investing in crypto to be high risk (DeVon 2022). Moreover, 2022 was the year when the cryptocurrency markets collapsed, with the price of Bitcoin, which was valued at \$68,000 in November 2021, dropping to under \$17,000 in 2022 (Berman 2022).

While investors invest in crypto for a wide array of purposes, they often do so in the form of speculative investments—that is, they speculate on the price of assets that they’ve invested in and hope that they will be worth more in the future (DeMatteo 2022). There are also investors who engage in crypto investments through decentralized finance (DeFi) to earn interest that can generate passive income yields (DeMatteo 2022). Despite the risks and implications that are attached to digital assets in the realm of financial markets, social media platforms have contributed to the rise of crypto in its popularity, which in turn, influences the public’s perception of crypto. For example, Bitcoin’s popularity has intensified through celebrities who invest in Bitcoin, as well as active Bitcoin communities on major social media platforms, such as Twitter, TikTok, and Reddit (Stieg 2021).

### *U.S. Securities and Exchange Commission*

The U.S. Securities and Exchange Commission (SEC) is one of the regulatory agencies within the federal branch that is responsible for regulating the capital markets and securities industry in the United States (Phillips 2021). While crypto remains a modern financial technology, the SEC has insisted on designating crypto as securities and applying existing securities laws to digital assets, obligating retail investors to report realized gains and losses from crypto investments on their annual tax forms (Hyatt 2021). Specifically, the agency has the authority to regulate market participants who engage in transacting digital assets that are labeled as securities (Phillips 2021). The SEC has been involved in warning the general public about investing in crypto asset securities, with its Office of Investor Education and Advocacy urging investors to be “cautious” when considering such investments and warning them that there may be entities offering crypto asset investments or services that are not compliant with applicable laws (Securities and Exchange Commission (SEC) 2023). Thus, federal policies and regulations on crypto could influence the SEC’s regulatory capacity over securities that involve crypto and digital assets.

### *Internal Revenue Service*

The Internal Revenue Service (IRS) oversees taxation on crypto investments, and it insisted on cracking down on individuals who avoid crypto taxes (Hyatt 2021). The IRS identified digital assets as a type of property under the federal taxation system and indicated that general tax principles for property transactions are also applicable to transactions that involve the use of digital assets (IRS n.d.). The agency identifies digital assets as “any digital representation of value which is recorded on a cryptographically secured distributed ledger or any similar technology” (IRS n.d.). Under the IRS definition, digital assets include convertible virtual currency and crypto, stablecoins,

and non-fungible tokens (NFTs). The NFTs are unique in comparison to other digital assets in the sense that they are tied to ownerships in art and stablecoins that are pegged to a real-world asset (Dore 2022). Previously, tax returns included a yes or no question on virtual currency that asked filers to disclose their taxable crypto activity; however, in 2022, the IRS replaced the term ‘virtual currency’ on its tax rule with ‘digital asset’ (Dore 2022).

### Commodities Futures Trading Commission

The Commodities Exchange Act (CEA), which was originally passed in 1936, tasks the Commodities Futures Trading Commission (CFTC) with the responsibility of regulating the trading of commodities futures in the U.S. (Commodities Futures Trading Commission (CFTC) n.d.). Currently, the CFTC classifies Bitcoin and Ethereum as commodities, and it oversees cryptocurrency derivatives that are legally traded on public exchanges (Hyatt 2021). The agency can also crack down on fraudulent activities and misconduct within its scope, although it does not have any regulatory authority over spot markets (Lang and Prentice 2022). While the CFTC is a regulatory agency that resembles the SEC, the former holds a different jurisdictional responsibility than the latter. The voice of the CFTC is critical in federal policymaking on digital assets, as it oversees derivatives markets that may involve the use of crypto.

### Federal Deposit Insurance Corporation

The Federal Deposit Insurance Corporation does not insure crypto assets, as it only “insures deposits held in insured banks and savings associations and only in the likely event of an insured bank’s failure” (Federal Deposit Insurance Corporation (FDIC) 2022). However, in 2022, FDIC-supervised institutions that intend to engage in or are currently engaged in activities that involve

digital assets were asked to notify the FDIC (FDIC 2022). The FDIC indicated that it is concerned about the rapid evolution of crypto assets and crypto-related activities and expressed that crypto-related activities pose safety and soundness risks and consumer protection risks (FDIC 2022). Despite the FDIC's little to no authority in overseeing crypto companies and activities, its operation could be impacted through crypto activities that involve or impact insured institutions under its oversight.

### *Federal Reserve*

While digital currency is yet to be recognized by the federal government as a legal tender, the Federal Reserve has begun exploring the potential benefits and risks of central bank digital currencies (CBDCs) on the U.S. financial and monetary stability. However, officials at the Federal Reserve insisted that it will not be issuing a digital dollar without support from Congress and the executive branch (Reilly 2022). On August 16, 2022, the Federal Reserve submitted a letter to supervisory and examination staff at each of the Federal Reserve Banks, in which it asserted that the crypto-asset sector “presents potential opportunities to banking organizations, their customers, and the overall financial system” (Federal Reserve 2022). The Federal Reserve also recognized that crypto-related activities could “pose risks related to safety and soundness, consumer protection, and financial stability,” such as money laundering and illicit financing schemes that could occur through crypto-assets (Federal Reserve 2022). Thus, the Federal Reserve's role in conducting monetary policymaking for the U.S. economy and financial system needs to be considered in the rulemaking and policymaking processes pertaining to digital assets.

### Consumer Financial Protection Bureau

The Consumer Financial Protection Bureau (CFPB) has been examining consumer protection issues pertaining to crypto. In 2021, CFPB Director Rohit Chopra said that the agency is “actively monitoring and preparing for broader consumer adoption of cryptocurrencies” and indicated that the agency will be working with the members of the Financial Stability Oversight Council (FSOC) on issues related to stablecoin (Chopra 2021). Even though the CFPB does not have extensive regulatory oversight nor authority over crypto, it is a critical stakeholder in providing inputs to the policymaking sphere on consumer protection issues and risks of digital assets.

#### **Issues at Stake**

##### Consumer Protection Risk

While discussions surrounding crypto regulations and policies have begun at both federal and state governments, there are yet to be robust consumer protection measures that are directly aimed at protecting investors against fraud in the crypto market. The CFPB reported that from October 2018 to September 2022, there have been over 8,300 complaints related to cryptocurrency (CFPB 2022). It found that among 40 percent of the crypto-asset complaints that were handled by the agency since October 2018, prominent issues that were present in those complaints were related to fraud and scams (CFPB 2022). Twenty-five percent of complaints that were received by the agency pertained to various transactional issues, and 16 percent of complaints were associated with “assets not being available when promised” (CFPB 2022).

The CFPB found that consumers have previously reported complaints that are composed of a wide range of scam types, such as romance scams where scammers “play on victim’s emotions

to extract money” (CFPB 2022). The agency identified some scammers to have utilized so-called “pig butchering,” which involves fraudsters posing as financial successes, attempting to gain confidence and trust from the victim, and instructing victims about setting up crypto-asset accounts (CFPB 2022). Moreover, the agency found that older consumers can also be vulnerable to crypto-asset frauds and scams, as they report a higher rate of complaints related to crypto fraud and scams (CFPB 2022).

Similarly, the Federal Trade Commission (FTC) reported statistics in 2022 on consumer protection issues that were seemingly complementary to numbers that the CFPB released regarding complaints related to consumer protection issues in the crypto market. The FTC found that consumers have reportedly lost over \$1 billion to fraud involving crypto from January 2021 to March 2022, and crypto has been becoming “the payment of choice for many scammers, with about one out of every four dollars reported lost to fraud paid in cryptocurrency” (Federal Trade Commission (FTC) 2022). The agency also found that a total of \$575 million of consumers’ money have been to “bogus” crypto investment opportunities and such opportunities composed many of the crypto losses that were reported by consumers (FTC 2022). While the agency is separate from other regulatory agencies, such as the SEC and the CFTC, the FTC has previously enforced its ability to investigate crypto exchanges (Cooper 2022). For example, the agency, through the Federal Trade Commission Act, sued a Bitcoin investment fund in 2018 for unfair and deceptive acts and practices (Cooper 2022). Despite efforts by federal agencies to crack down on fraudulent activities in the crypto market, consumer protection issues continue to pose risks to the overall health of the U.S. financial system.

### Contagion Risk

Because most of the cryptocurrencies are not backed by physical commodities nor pegged to government-recognized currencies like the U.S. dollar, it remains a volatile financial asset in financial markets. Thus, when a crypto exchange experiences price fluctuations or fails, its effect is contagious in the sense that it spreads to other crypto exchanges in the financial market. In general, within the realm of economics, ‘market contagion’ refers to an economic crisis being spread from one financial institution to another as many financial markets and institutions are interdependent from one another (Ozair 2022). The contagion effect can take place at a national level where an economic crisis took place or at the international level where an effect of an economic crisis could spread to another nation. Celik (2012) examined the contagion effect of the U.S. subprime crisis on 10 emerging and 9 developed markets from years 2005 to 2009, and it found that contagion did take place for most of the developed and emerging countries during the crisis (Celik 2012).

Ferreira and Pereira (2019) found that there was increasing integration between the main cryptocurrencies following the bubble that took place in the crypto market in December 2017 (Ferreira and Pereira 2019). The study also found that there was a contagion effect between Bitcoin returns and the returns of most other cryptocurrencies—that is, many of the cryptocurrencies were “more sensitive to changes in the price of Bitcoin” (Ferreira and Pereira 2019, 5). The contagion effect in the crypto market can occur through different avenues, such as regulatory crackdowns through the government’s adoption of stringent rules that could lead to a decline in the value of a given cryptocurrency (Singh 2023). The effect can also take place through market manipulation, which involves several traders engaging in a coordinated purchase or sale of a cryptocurrency that



could inflict an abrupt price change that spreads across other cryptocurrencies in the market (Singh 2023).

### *Other Issues at Stake*

The scope of this paper revolves around consumer protection and contagion risks that crypto poses to financial markets and U.S. financial stability. However, there are other issues within the context of crypto in financial markets, such as:

- *Environmental Risk*: The White House's Office of Science and Technology Policy (OSTP) found that in 2022, about 110 to 170 million metric tons of carbon dioxide emissions have been generated through crypto-asset mining, with the U.S. making up about 25 to 50 million metrics tons of it (White House 2022).
- *Crypto as a Retirement Asset*: Crypto has emerged in financial markets as a retirement investment asset. For example, Fidelity Investments has started to offer Bitcoin in its investment menus for some of its 24,500 401(k) plans (Tergesen 2022). Regulators have previously warned about allowing cryptocurrency as an investment asset for retirement savings, with the U.S. Department of Labor previously cautioning employers to be careful in considering cryptocurrency options as part of investment menus for 401(k) plans (Tergesen 2022).

### **Case Study: Collapse of FTX Cryptocurrency Exchange**

This paper considers the collapse of FTX cryptocurrency exchange to examine its contagion effect and overall implications for the macroeconomy and protection of investors and consumers in financial markets. The following sections provide data and multiple regression

analysis pertaining to the collapse and its correlation to other cryptocurrency exchanges in financial markets. While the analysis might be indicative of the effects of other cryptocurrency exchanges in financial markets, it is insightful in examining potential consumer protection and contagion issues that arise in the realm of digital assets.

### *Brief Overview of the FTX Collapse*

FTX cryptocurrency exchange was founded in May 2019 by Sam Bankman-Fried, who was a former Wall Street trader, and Gary Wang, who was an ex-Google employee (Al Jazeera 2022). When Bankman-Fried was the CEO of FTX, he also had quantitative trading firm Alameda Research, which held a position that was valued at \$5 billion in FTX token called ‘FTT’ (Reiff 2023). Alameda Research’s balance sheet had a large proportion of FTT tokens from FTX instead of an independent asset like a fiat currency or another crypto, illustrating that the relationship between FTX and Alameda was unusually close (Allison 2022). By June 30, the company had assets that totaled up to \$14.6 billion, with its single biggest asset consisting of \$3.66 billion of ‘unlocked FTT’ and \$2.16 billion of ‘FTT collateral’ (Allison 2022). Alameda Research also held FTX tokens as part of its \$8 billion of liabilities, with \$292 million of ‘locked FTT’ and \$7.4 billion of loans (Allison 2022).

There were leverage and solvency concerns surrounding FTX-affiliated firm Alameda Research (Reiff 2023). The SEC indicated that Bankman-Fried improperly diverted customer assets from FTX, and he allegedly utilized those funds from customers to make real estate purchases, political donations, and undisclosed investments (Goswami 2022). Thus, a large proportion of customers’ money was used to pay off risky bets that Alameda Research made during its operation (Chow 2022). The FTX collapsed after it filed for bankruptcy on November 11, 2022

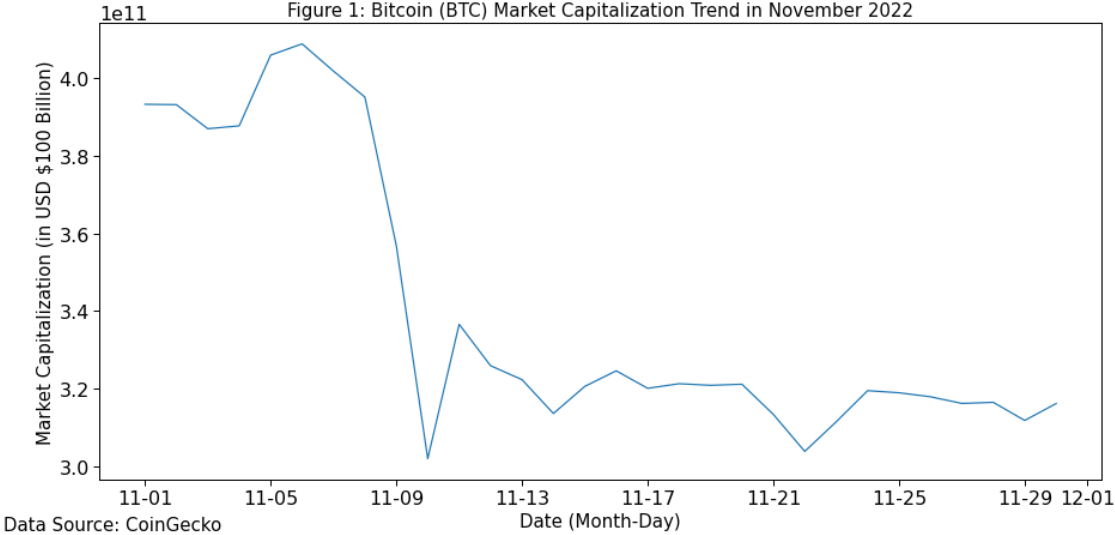
(Reiff 2023). FTX's collapse led to a loss of over \$8 billion of its customers' money, with Bankman-Fried getting arrested in the Bahamas and extradited to the U.S. in late December of 2022 (Chow 2022; Reiff 2023).

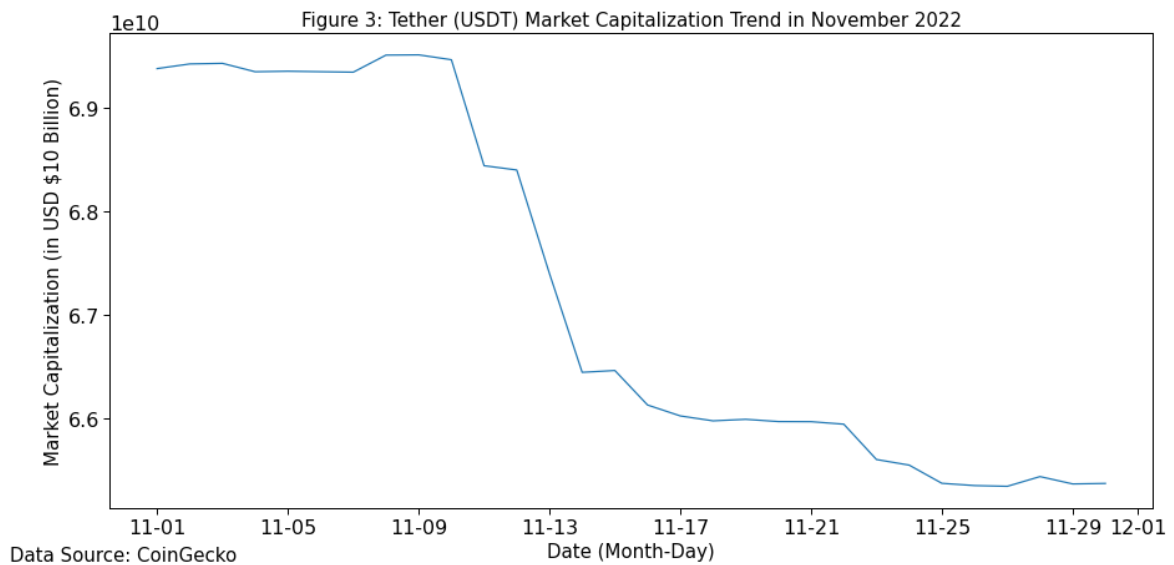
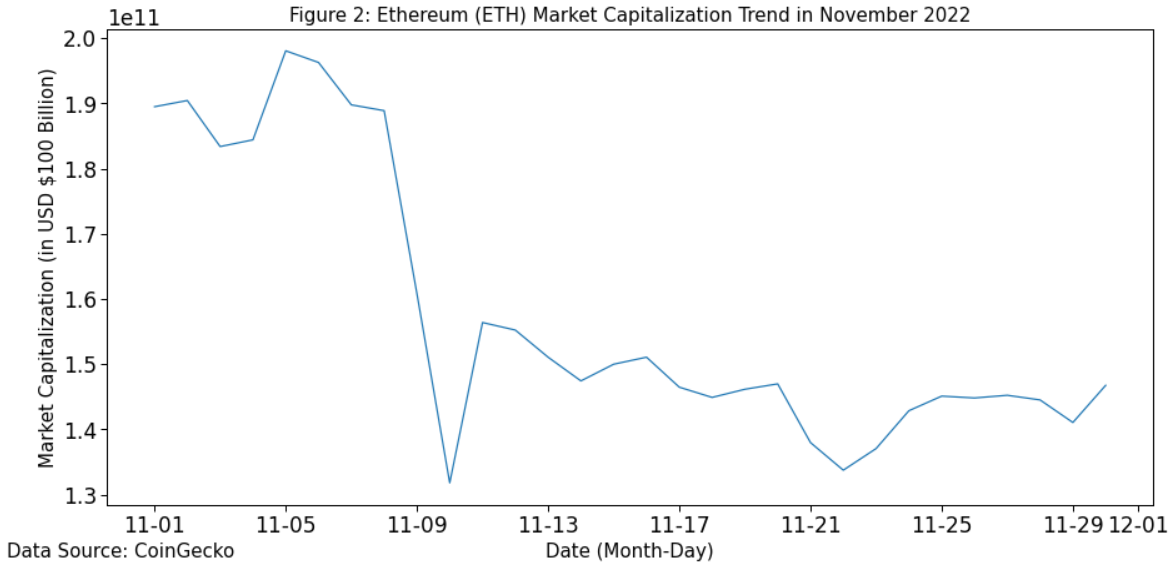
Examination of Crypto Market Volatility and Contagion Effect

This section attempts to examine the volatility of the crypto market through data on market capitalization in the crypto market. Market capitalization is used to determine a size of a company and evaluate its financial performance to other companies (Fernando 2023). In accordance with the data from CoinGecko, the market capitalization can be found by multiplying the current price of a given cryptocurrency and its circulating supply, as shown in Equation 1.

$$\text{Market Capitalization} = \text{Current Price} \times \text{Circulating Supply}$$

Equation 1





Figures 1, 2, and 3 present data from CoinGecko on trends of three cryptocurrency exchanges that had the highest market capitalization in the crypto market on March 23, 2023, which include Bitcoin, Ethereum, and Tether, with the data spanning from November 1, 2022, to November 30, 2022. The data includes November 11, 2022, which was the day when FTX filed for bankruptcy. Figures 1 and 2 show that the market capitalization of Bitcoin and Ethereum plummeted on the week of the FTX collapse. While Figure 3 exhibits that Tether experienced a drop in its market capitalization following the FTX collapse, it functions differently than other

cryptocurrencies like Bitcoin and Ethereum. Tether runs on a stablecoin that is designed to have a set value, which is typically stabilized at \$1 (Nicolle 2022). From a macroscopic standpoint, Figures 1, 2, and 3 illustrate that Bitcoin, Ethereum, and Tether began experiencing drops in their market capitalizations in the days leading up to the FTX collapse in November 2022.

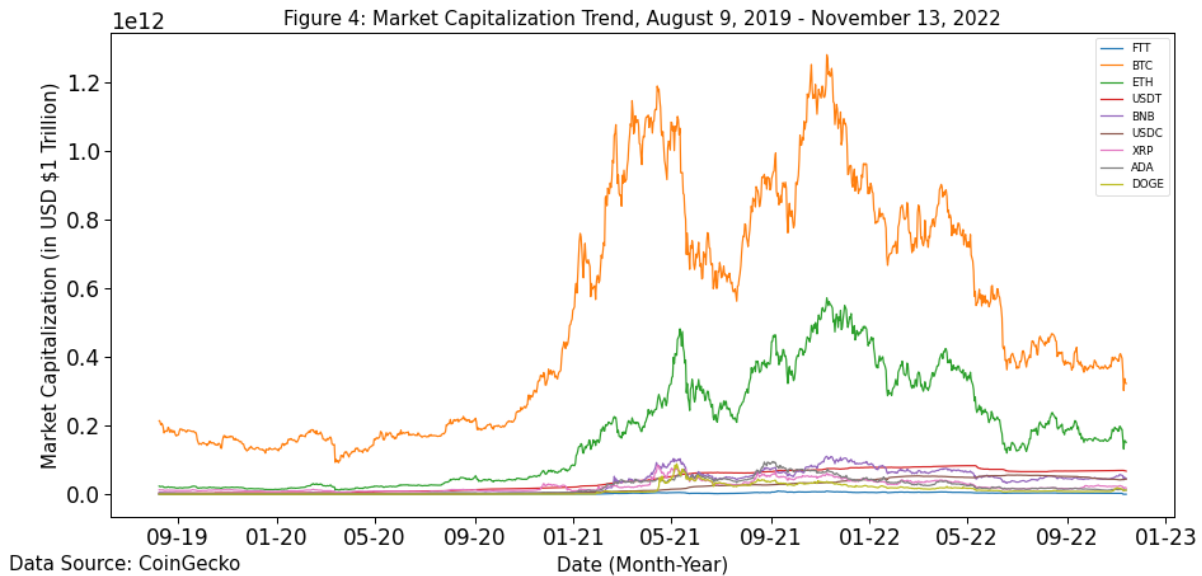


Figure 4 presents data from CoinGecko on trends of eight cryptocurrency exchanges that had the highest market capitalization in the crypto market on April 18, 2023, which include Bitcoin (BTC), Ethereum (ETH), Tether (USDT), BNB (BNB), USD Coin (USDC), XRP (XRP), Cardano (ADA), and Dogecoin (DOGE), and they are compared with FTX's (FTT) market capitalization. The data spans from August 9, 2019, through November 13, 2022, since market capitalization for FTX was zero before and after that time frame. Figure 4 illustrates that most of the cryptocurrency exchanges have undergone constant price fluctuations. Most notably, Bitcoin and Ethereum, as also shown in Figures 1 and 2, presented trends that were similar to one another. The values of cryptocurrencies in financial markets remain volatile, with Figure 4 showing that Bitcoin and Ethereum have experienced more extensive fluctuations in their prices than other cryptocurrency exchanges in the illustration.

In order to examine whether the trend of FTX was correlated or had any correlation with other cryptocurrency exchanges while it was running and operating in the crypto market, a multiple regression model has been deployed in this research to examine such correlations. The regression model considers data from CoinGecko on trends of cryptocurrency exchanges from Figure 4, and the data spans from August 9, 2019, to November 13, 2022, since market capitalization for FTX was zero before and after that time range. To test and study the relationship between FTX and other cryptocurrency exchanges after its establishment and prior to its collapse, Equation 2 provides the formula for the regression model for this research.

$$Y_{BTC} = \beta_0 + \beta_1(FTT) + \beta_2(ADA) + \beta_3(BNB) + \beta_4(DOGE) + \beta_5(ETH) + \beta_6(USDT) + \beta_7(XRP) + \beta_8(USDC) + \varepsilon$$

Equation 2

The dependent variable for the regression model is Bitcoin's (BTC) market capitalization and the independent variable is FTX's (FTT) market capitalization. Bitcoin's market capitalization has been deployed as a dependent variable as it currently has the highest market capitalization in the crypto market. The control variables are market capitalization for Cardano (ADA), BNB (BNB), Dogecoin (DOGE), Ethereum (ETH), Tether (USDT), XRP (XRP), and USD Coin (USDC). Table 1 presents a bivariate regression result, which shows that in general, for every one-dollar increase in FTX's market capitalization, Bitcoin's market capitalization increases by about

**Table 1: FTT Market Capitalization and BTC Market Capitalization, August 9, 2019 – November 13, 2022**

<b>FTX (FTT)</b>	113.334*** (1.998)
<b>Intercept</b>	2.098e+11*** (7.236e+9)
Observations	1,193
Adjusted R-squared	0.730

\*\*\*p<0.01; \*\*p<0.05; \*p<0.1. Standard errors in parentheses.

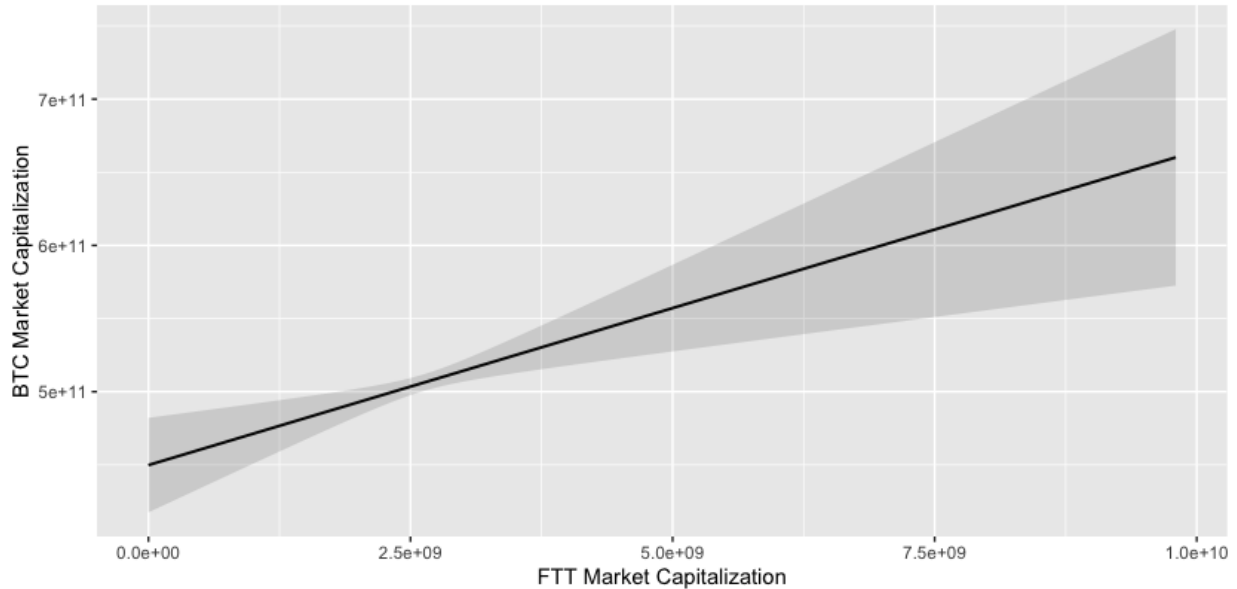
\$113.33, and this relationship was statistically significant. Table 2 is the multiple regression result that considers all of the control variables. Table 2 presents that in general, holding market capitalization for Cardano, BNB, Dogecoin, Ethereum, Tether, XRP, and USD Coin control, there is an increase of about \$21.47 in Bitcoin’s market capitalization for every one-dollar increase in FTX’s market capitalization. This relationship was statistically significant. Figure 5 visualizes the relationship between Bitcoin’s market capitalization and FTX’s market capitalization while holding other variables control, in which the relationship maintained a positive slope throughout the regression model.

**Table 2: FTT Market Cap. and BTC Market Cap. (with Controls), August 9, 2019 – November 13, 2022**

<b>FTX (FTT)</b>	21.465*** (6.202)
<b>Cardano (ADA)</b>	1.918*** (0.450)
<b>BNB (BNB)</b>	3.427*** (0.462)
<b>Dogecoin (DOGE)</b>	-8.394*** (0.562)
<b>Ethereum (ETH)</b>	0.677*** (0.102)
<b>Tether (USDT)</b>	11.592*** (0.674)
<b>XRP (XRP)</b>	2.201*** (0.656)
<b>USD Coin (USDC)</b>	-15.966*** (0.820)
<b>Intercept</b>	7.769e+10*** (8.881e+9)
<b>Observations</b>	1,193
<b>Adjusted R-squared</b>	0.910

\*\*\*p<0.01; \*\*p<0.05; \*p<0.1. Standard errors in parentheses.

Figure 5: FTT Market Cap. and BTC Market Cap. (Multivariate Regression)



While the regression test in Table 2 may not directly explain the extent to which FTX's market capitalization was contagious toward other cryptocurrency exchanges, it illustrates that the market behavior of FTX was similar to other crypto exchanges prior to its failure. Thus, this contagion effect that took place in the crypto market following the FTX collapse could be partly explained by the way in which there was correlation and integration between FTX and other major crypto exchanges in the market, as they all maintained statistically significant relationships when utilizing the time range of establishment of FTX as a crypto exchange and its failure in November 2022.

### **Major Federal Policy Updates**

While policy enactments pertaining to crypto at the federal level have been limited, there are a few major policy enactments and processes to note in the realm of financial markets and crypto. In March 2022, President Joe Biden signed Executive Order 14067, which is titled "Ensuring Responsible Development of Digital Assets" (Exec. Order No. 14067, 2022). The



Executive order put forth an outline of “the first whole-of-government approach to addressing the risks and harnessing the potential benefits of digital assets and their underlying technology” (White House 2022). Specifically, the Executive Order directed heads of various federal agencies and offices to prepare “reports, assessments, action plans, policy frameworks, legislative proposals, and technical evaluations related to digital assets,” which led to agencies working collaboratively to construct frameworks and policy recommendations that pertain to following six key priorities that were mentioned in the Executive Order: 1) Consumer and investor protection; 2) promoting financial stability; 3) countering illicit finance; 4) U.S. leadership in the global financial system and economic competitiveness; 5) financial inclusion; and 6) responsible innovation (Miller and Rosen 2022, 2; White House 2022).

The reports that were produced following the passage of the Executive Order contained different policy recommendations for addressing consumer protection issues that have arisen from the emergence of digital assets. The reports encouraged federal regulators, such as the SEC and CFTC, “to aggressively pursue investigations and enforcement actions against unlawful practices in the digital assets space,” and urged the CFPB and FTC to “redouble their efforts to monitor consumer complaints and to enforce against unfair deceptive, or abusive practices” (White House 2022). Outside of recommendations pertaining to consumer protection issues in the digital assets space, in accordance with the reports, the Federal Reserve was encouraged to continue its research, experimentation, and evaluation of CBDCs (White House 2022). The Biden Administration, following the passage of Executive Order 14067, has insisted on having the OSTP and National Science Foundation (NSF) in developing a “Digital Assets Research and Development Agenda” to initiate research on a wide range of topics pertaining to digital assets, such as “next-generation cryptography, transaction programmability, cybersecurity and privacy protections, and ways to

mitigate the environmental impacts of digital assets” (White House 2022). Thus, ensuring that crypto technologies are able to properly secure transactions and protect consumers and investors is necessary for making progress toward an inclusive financial system that fosters technological advancements like digital assets.

Among other federal policies, there had been efforts at federal agencies to put forth more extensive regulatory oversight over cryptocurrency. Most notably, the SEC recently proposed a rule on expanding its regulations that may pertain to crypto. In February 2023, commissioners at the SEC approved a proposal in a 4-1 vote that would expand the agency’s current regulations that mandate investment advisers to keep their customers’ money and securities with a ‘qualified custodian’, and the crypto will follow under this change in the safeguarding requirement for assets (Hamilton 2023). Banks, registered broker-dealers, futures commissions, and certain foreign entities can be designated as ‘qualified custodians’ (SEC 2013). A ‘qualified custodian’ is responsible for maintaining client funds and securities (SEC 2013). This proposal by the SEC is yet to be enacted, but it opened another avenue for a more robust regulatory regime on crypto in financial markets.

### **Policy Recommendations**

Among a wide array of policy options that are aimed at developing an extensive regulatory platform for crypto in financial markets in the U.S., federal policymakers could consider following policy recommendations in their process of formulating or adopting public policies and regulations that address consumer protection and contagion issues in the crypto market:

- *Reintroduce bipartisan crypto bills from the 117<sup>th</sup> Congress:* During the 117<sup>th</sup> Congress, Senators Debbie Stabenow (D-MI) and John Boozman (R-AR) introduced the bipartisan

Digital Commodities Consumer Protection Act in August 2022, which provides the CFTC with an “exclusive jurisdiction” over any account, agreement, contract, or transaction involving a digital commodity trade (S.4760). Senators Cynthia Lummis (R-WY) and Kirsten Gillibrand (D-NY) also introduced the bipartisan Lummis-Gillibrand Responsible Financial Innovation Act in 2022, which further specifies the jurisdiction of the SEC and CFTC over digital assets (S.4356). Under this bill, the CFTC, which regulates commodities markets, will be given regulatory authority over digital asset spot markets (Oshin 2022). The bill also creates a structure for the taxation of digital assets and offers an arena for state and federal regulators to jointly work on innovative financial technologies (Oshin 2022). The introduction of the Digital Assets Anti-Money Laundering Act was marked as another bipartisan crypto bill from the 117<sup>th</sup> Congress. The bill was introduced by Senators Elizabeth Warren (D-MA) and Roger Marshall (R-KS), and among other provisions in the bill, it requires the FinCEN to issue guidance on digital assets (S.5267). The bill would also apply know-your-customer (KYC) rules to crypto participants, such as wallet providers and miners, and it prohibits financial institutions from transacting with digital asset mixers (Crawley 2022).

- *Increase Federal Funding for Regulatory Agencies:* While the regulatory regime on crypto remains loose, Congress and the executive branch could direct an increased budget for federal regulatory agencies that oversee banks and financial intermediaries/institutions to increase efforts on educating the public and businesses on crypto risks. These agencies may include, but not limited to, the CFPB, SEC, CFPB, and FTC.
- *Require Stress Tests on Cryptocurrency Exchanges:* The Federal Reserve conducts a stress test on large banks on an annual basis to assess “how large domestic and foreign banks, as

well as savings and loan holding companies, are likely to perform under hypothetical recessions” (Federal Reserve 2023). Stress tests conducted by the Federal Reserve also aimed at ensuring that large banks have the ability to lend to different households and businesses even in a severe recession (Federal Reserve 2023). Conducting stress tests on existing and new crypto exchanges could help policymakers, regulators, and financial intermediaries with understanding the risks and macroeconomy implications of digital assets on the U.S. financial system and stability.

- *Explore Provisions of the European Union’s Markets in Crypto-Assets (MiCA) Proposal:*  
The European Union (EU) proposed the Markets in Crypto-Assets (MiCA) regulation on September 24, 2020 (European Council 2022). This is an EU-wide proposal that “aims to develop a European approach that fosters technological development and ensures financial stability and consumer protection” (European Council 2022). Among many other provisions, the proposal requires crypto-asset service providers to follow strong requirements in order to protect consumers’ wallets and be held accountable for the losses of investors’ crypto assets (European Council 2022). The proposal also addresses market abuse issues, such as market manipulation and insider dealing (European Council 2022). There are provisions in the MiCA that would require entities in the crypto-assets market to declare information on their environmental and climate footprints and obligate the European Banking Authority (EBA) to maintain a public register of non-compliant crypto-asset service providers (European Council 2022). Federal policymakers in the U.S. could examine loopholes in financial regulations in different states across the nation and consider exploring regulatory policies from the EU’s MiCA proposal, such as obligating crypto

exchanges to provide public reports of their environmental and climate footprints on an annual or quarterly basis.

Among these recommendations, reintroducing the bipartisan crypto bills from the 117<sup>th</sup> Congress could be the most viable and efficient approach from a public policy standpoint, as three Congressional bills that are mentioned in this section of the paper garnered support from both Republican and Democratic counterparts in Congress. While other recommendations that are put forth in this section of the paper could be insightful for policymaking and rulemaking at the executive branch, adopting and implementing such recommendations could become a time-consuming and costly process in the long run. Given the politicized nature of policymaking and legislative processes, pursuing passages of bipartisan legislation in Congress could accelerate the process of improving existing regulatory policies on crypto while federal agencies continue to evaluate the risks of crypto in financial markets.

The financial system in the U.S. may be different from other nations across the globe; however, federal policymakers could consider exploring the history and origins of crypto regulations and laws in the EU and formulate harmonized regulatory policies on crypto that foster the needs and concerns of different stakeholders. Moreover, federal policymakers could consider analyzing environmental, economic, social, cultural, and political impacts that could be inflicted upon the implementation of policy recommendations that are listed in this section of the paper. Federal policymakers could adjust or reconsider these policy recommendations later in the future if they find that there are other unknown conditions or factors in the crypto market that prompt regulatory reforms or amendments.

## **Conclusion and Implications for Future Research**

This paper explored consumer protection and contagion risks of crypto in financial markets in the United States, as well as the implications of the collapse of FTX crypto exchange in November 2022. Using the data on FTX and other major crypto exchanges, a regression analysis was conducted to examine the correlation and integrative behaviors of crypto exchanges in financial markets. The paper found that while there had been ongoing discussions on crypto regulations, the regulatory regime on digital assets remains loose. The paper provided policy recommendations pertaining to protecting consumers and mitigating the contagion effect of crypto exchanges.

While this paper primarily explored consumer protection and contagion issues in cryptocurrency, future research could involve examinations of exogenous and endogenous factors that trigger and exacerbate price fluctuations and volatility in the crypto market, such as economic conditions in the general macroeconomy. Other factors may include cultural and social changes in the realm of technology and finance that change the public's perception of crypto in financial markets. Future research could also examine existing regulations and policies on crypto from an economic standpoint, which may provide an extensive cost-benefit analysis of which crypto policies and regulations have or have not been effective.

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