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Accounting for Cryptocurrencies*

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ABSTRACT

This paper explores U.S. public firms' cryptocurrency holdings and accounting practices from 2013 to 2022 against the backdrop of the recently enacted crypto accounting rule, ASU 2023-08. Descriptive analyses suggest exponential growth in corporate crypto holdings and significant variation in crypto accounting practices, underscoring the rule's necessity. Hypothesis tests using the pre-rule data reveal three insights with direct relevance to the rule. First, firms appear to view crypto assets more akin to investments than intangible assets, consistent with the rule's mandate of the fair value model. Second, Big 4 auditors steer firms toward the impairment model and less detailed presentation choices. This conservative approach is unlikely to meet the new rule's goal of providing the most decision-useful information. Third, increased

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liquidity of crypto markets prompts the use of the fair value model and a more detailed presentation, consistent with the rule's focus on more actively traded tokens. However, within our sample, we find some evidence consistent with fair value reporting increasing stock return volatility and no evidence that it enhances earnings informativeness.

JEL codes: M40, M41, M42, M48

Keywords: cryptocurrency; ASU 2023-08; fair value model; Big 4 auditors; liquidity

1. Introduction

Cryptocurrencies are decentralized digital currencies that rely on cryptography for security and blockchain for recordkeeping. Cryptocurrencies have been controversial since Bitcoin (BTC) was introduced in 2008. Advocates praise cryptocurrencies for democratizing financial markets, keeping institutions honest and records traceable, and providing an inflation-proof store of value, while skeptics disdain cryptocurrencies for being environmentally unfriendly and intrinsically worthless. While initially modest, the cryptocurrency (or "crypto") market exhibited exponential growth during the COVID-19 pandemic, peaking at $3 trillion in November 2021. Following a sharp decline in 2022 and continued volatility through 2023, the market rebounded in 2024 and has surpassed $4 trillion in 2025. Despite ongoing controversy and price volatility, crypto's appeal increasingly expands beyond individuals to include more corporate and institutional participants.

This growing interest raised a practical question about how public entities should account for and report their crypto holdings in regulatory filings. As these holdings fit U.S. GAAP's definition of "assets" by carrying "probable future economic benefits," reporting entities must provide decision-useful information about them as per the Financial Accounting Standards Board's (FASB's) Conceptual Framework (FASB [2008]).[1] However, cryptocurrencies are unlike other codified assets because they (1) function as currencies but lack the governmental or commodity backing necessary to be considered cash, (2) lack the maturity and stability necessary to be considered cash equivalents, (3) entitle holding entities to economic benefits like investments but typically do not attach ownership interests or contractual rights necessary to be considered financial instruments, and (4) lack physical substance, like indefinite-lived intangible assets, but also stand apart by often being actively traded (FASB [2022]).

Given the uniqueness of crypto assets, the FASB ultimately issued a new rule—Accounting Standards Update (ASU) 2023-08—on December 13,

[1] For brevity, we use "crypto assets" as an umbrella term for all digital assets utilizing cryptography technology (i.e., including altcoins beyond BTC) and "crypto accounting" as shorthand for the accounting of such assets.

2023, to provide accounting and disclosure guidance. However, the path to establishing such a rule was not straightforward. Initially, only a few U.S. public firms were known to hold cryptocurrencies, so related rule-setting was low on the FASB's priority list. As corporate interest rose, the Big 4 and American Institute of Certified Public Accountants (AICPA) issued non-authoritative guidance between 2018 and 2019 recommending crypto holdings be classified as indefinite-lived intangible assets and accounted for using the impairment model under Accounting Standards Codification (ASC) 350, *Intangibles—Goodwill and Other* (Deloitte [2018], EY [2018], KPMG [2018], PwC [2018], AICPA [2019]). However, financial statement users (e.g., analysts and investors) voiced concern that the impairment model fails to provide sufficient information to evaluate firms with material crypto holdings, thus not meeting the objective of the FASB's Conceptual Framework (White [2021]).

In 2021, the FASB released an agenda consultation to solicit public comment on currently debated topics, resulting in crypto accounting rule-setting as a key project. Most commenters, including the Big 4 and the AICPA, advocated for the fair value model, and in October 2022, the Board reached a tentative decision aligned with this view (Williams-Alvarez [2022]). The FASB made this decision official through the issuance of ASU 2023-08, covering fungible tokens secured through cryptography and residing on blockchain. While the new rule maintains the classification of these tokens as indefinite-lived intangible assets, it mandates the fair value model following ASC 820, *Fair Value Measurement*.

This paper examines crypto accounting practices prior to the issuance of ASU 2023-08 and illuminates key issues relevant to the new rule. We construct a sample of U.S. firms disclosing crypto holdings from 2013Q4 to 2022Q4, excluding investment companies (governed by ASC 946, *Financial Services–Investment Companies*) and crypto custodians (affected by the SEC's Staff Accounting Bulletin No. 121 (SAB 121) issued during the sample period.[2,3] Our final sample consists of 646 firm-quarter observations where firms had discretion in choosing between the fair value and impairment models for crypto accounting throughout the sample period, making them the most directly impacted by the ASU. Using this sample, we document the evolution of disclosed corporate crypto holdings in the United States, explore variation in firms' accounting practices, test three hypotheses related to these choices, and study the market implications of fair value reporting.

[2] Specifically, we search for crypto-related keywords within the footnotes of financial statements included in quarterly filings, as our initial screening reveals that firms with crypto involvement almost always disclose and discuss their holdings, if any, in financial statement footnotes. Section 3 provides additional details of our sample construction.

[3] Investment companies are required to apply the fair value model to their crypto assets in accordance with ASC 946, and crypto custodians (i.e., non-investment companies holding crypto on behalf of customers) are required by SAB 121 to recognize such holdings at fair value when the rule was in effect between 2022Q2 and 2024Q4. The internet appendix summarizes the trends in crypto holdings for these firms.

We first analyze trends in crypto holdings. As our sample firms could apply either the fair value or impairment model, they did not consistently disclose fair value as expected. Our best estimates indicate that the fair value of these holdings began at $16.4 million in 2013Q4, remained modest through 2020Q2, but then soared to $534.9 million in 2020Q3 and peaked at $12.4 billion in 2022Q1. This trend reflects a compound annual growth rate (CAGR) of 546% from 2019Q4 to 2022Q4, far exceeding the corresponding CAGR of sample firms' holdings of investments, non-crypto intangible assets (excluding goodwill), and goodwill (44%, 103%, and 28%, respectively) and that of the average BTC price (31%). Thus, the surge cannot be explained by price appreciation alone. Further analysis suggests that this growth is also driven by an increase in both the number of public entities entering the space (with the quarterly count rising from two to 58 during our sample period) and the quantities of crypto assets held (with the inferred number of BTC rising from around 20,000 to almost 200,000).

Next, we summarize three crypto accounting choices targeted by ASU 2023-08: the recognition model used, crypto asset presentation on the financial statements, and the associated disclosure granularity in footnotes. While the rule addresses each of these choices by mandating the use of the fair value model, separate presentation of crypto holdings on the balance sheet and clarification of where crypto income appears on the income statement, and detailed disclosure of cost and quantities held for significant in-scope tokens, studying how and why firms made such choices when they had discretion sheds light on the extent to which the rule aligns with firms' preferences and the factors that may continue to shape future crypto reporting.

With respect to the recognition choice, the percentage of firms adopting the fair value model (as opposed to the impairment model) starts at 50% in 2013 but declines to 5% by 2022, likely driven by the non-authoritative guidance issued by the Big 4 and the AICPA. Regarding presentation and disclosure choices, we find that the majority of firms (79%) present the crypto asset and/or its related income as explicit items on their financial statements, and this choice has increased over our sample period from 53% in 2014 to 80% in 2022. Disclosure of the type of crypto assets held is also common, occurring in 87% of firm-quarter observations, although this has decreased slightly over the sample period.

We continue our main analyses with tests of three hypotheses related to these accounting choices.[4] Our first hypothesis aims to gauge firms' unguided accounting treatment of crypto assets. We rely on the fact that ASC 105, *Generally Accepted Accounting Principles*, requires firms to "first consider

[4] For all three hypotheses, we focus on the choices related to the recognition model used and crypto asset presentation on the financial statements because of the lack of variation in footnote disclosure granularity and unclear predictions. For the first hypothesis, we study only the recognition choice as there is no reason to expect that experience with a particular asset class influences whether firms separately present crypto assets on their financial statements.

accounting principles for similar transactions or events within a source of authoritative GAAP for that entity" when there is no specified guidance under U.S. GAAP (ASC 105-10-05-2). In testing the hypothesis, we consider two asset types that may be viewed as similar to crypto assets: investments (e.g., marketable securities) or non-crypto intangibles (e.g., goodwill). We find that firms are more inclined to adopt the fair value model for crypto assets if they hold a higher level of investments, particularly in the period prior to the non-authoritative guidance issued by the Big 4 and the AICPA ("pre-guidance period"). In contrast, we do not find any evidence that firms are more likely to adopt the impairment model in the pre-guidance period if they hold a higher level of non-crypto intangible assets. Combined, our evidence suggests that firms view crypto assets as being more akin to investments than intangible assets, which aligns with ASU 2023-08's mandate of the fair value model.

Our second hypothesis posits that, in the absence of an official rule, Big 4 auditors guide crypto-holding firms toward more conservative accounting and disclosure approaches. Theory predicts that larger auditors tend to be more risk averse because they have "more to lose" in the event of an audit failure (DeAngelo [1981], p. 185), leading them to favor conservative accounting and disclosure approaches by their clients. Empirical evidence supports this prediction (Basu, Hwang, and Jan [2001], Stuber and Hogan [2021]). Consistent with the hypothesis, we find that clients of Big 4 auditors are more likely to apply the impairment model to their crypto holdings. They are also less likely to disclose crypto holdings as a separate line item on their financial statements, even after controlling for the level of crypto assets and income, indicating that the result is unlikely due to immateriality. These findings underscore the pivotal role of a standard setter in crafting authoritative rules to enhance the informativeness of crypto reporting, an objective innate to the FASB's conceptual framework.[5]

Our third hypothesis posits that liquid crypto markets facilitate fair value reporting, either by easing fair value determination or by enhancing informativeness. Liquidity is a crucial aspect of cryptocurrencies. While major tokens like BTC and ETH (Ethereum) are actively traded, many altcoins are thinly traded. Under ASU 2023-08, firms holding in-scope crypto assets must determine fair value based on guidelines under ASC 820. This involves prioritizing quoted prices for identical assets in active markets when feasible, and the presence of liquid markets makes it easier to obtain prices. Moreover, theory predicts that the informativeness of fair value accounting increases with an asset's liquidity (Allen and Carletti [2008], Plantin,

[5] It is important to acknowledge that Big 4 auditors likely guided their clients toward the impairment model before ASU 2023-08, at least in part, because their interpretation of U.S. GAAP suggested that crypto assets were best categorized as indefinite-lived intangible assets (consistent with their non-authoritative guidance issued in 2018–2019). However, this interpretation was unlikely to have a significant influence on firms' decision to disclose crypto assets as a separate line item on their financial statements.

Sapra, and Shin [2008]). Consistent with theory, our results provide some evidence that firms are more inclined to adopt the fair value model for their crypto holdings when market liquidity is higher. However, this result is limited to the pre-guidance period, which is not surprising given that firms then had more discretion on the recognition choice. Our evidence also suggests that the propensity to report crypto assets as a separate line item on financial statements increases with liquidity. Our results are in line with ASU 2023-08's delineation of crypto assets, as the rule covers fungible tokens that tend to be more liquid, while excluding less liquid non-fungible tokens and entities' self-issued tokens.

We conclude with two tests examining the market implications of fair value reporting. A key concern in the debate between fair value and historical cost accounting models is that, while a fair value approach may better reflect changes in assets' underlying economics, it can also amplify volatility in reported earnings and stock prices (e.g., Barth [1994], Barth and Landsman [1995], Barth, Beaver, and Landsman [2001], Landsman [2007], Laux and Leuz [2009]). Speaking to this concern, evidence from our first test suggests that firms using the fair value model for their crypto assets in a given quarter experience higher stock return volatility.

Our second test assesses whether the choice of accounting model enhances the earnings response coefficient (ERC) at quarterly earnings announcements. This test is complicated by the fact that crypto-holding firms in our sample are often small and lack analyst coverage, limiting our ability to measure earnings surprises relative to market expectations prior to earnings announcements. In the subset of sample firms with analyst coverage, we find no significant average ERC or any moderating effect from the use of the fair value model.[6] This result should be interpreted with caution since the market does not appear to rely heavily on earnings reports to price crypto-holding firms to begin with, at least in our sample.

Our study represents the first comprehensive analysis of crypto accounting in the literature. Using regulatory filings, we identify all U.S. firms with disclosed crypto holdings to track the growth of these holdings and the progression of crypto accounting choices leading to the issuance of ASU 2023-08. The exponential growth and inconsistent accounting treatment revealed by our data suggest that the FASB's rule-setting efforts were warranted.[7] Our study extends beyond descriptive analyses to offer insights

[6] As a robustness check, we rerun this test using earnings surprises calculated relative to the prior quarter for the full sample. While the average ERC remains insignificant, we find a significantly negative coefficient estimate on the interaction between earnings surprise and fair value usage. We caution against strong inferences from this test given the lack of average ERC and the inability to measure earnings surprise relative to market expectations.

[7] Although the overall count of U.S. public entities disclosing crypto holdings, 128 firms in our sample, appears modest, the FASB has initiated rule-setting efforts in other areas that involve limited numbers of firms engaging in emerging transactions of sufficient interest. Comparable studies examining these areas include Zechman [2010] on synthetic lease accounting

that remain relevant post-ASU 2023-08 and help inform future crypto rule-setting. In an earlier study, Luo and Yu [2024] analyze annual filings of 40 global firms in 2020 with known exposure to cryptocurrencies to illustrate how firms' crypto accounting practices differ between IFRS and U.S. GAAP.

Before ASU 2023-08 was issued, firms gravitated toward the impairment model following interpretive guidance issued by the Big 4 and the AICPA. Our results reveal discord between this model and firms' unguided accounting view of crypto assets as more akin to investments than intangible assets. Therefore, the new rule's mandate of the fair value model aligns better with this view, aiding compliance. Additionally, private entities' non-authoritative guidance for new assets, constrained by current standards, may not prioritize the goal of providing decision-useful information. Our results also show that liquidity plays a role in shaping firms' crypto accounting choices. Even with the new rule, firms maintain flexibility in determining fair value for in-scope tokens under ASC 820, akin to the discretion firms had in determining impairment triggers under ASC 350. Fair value determination for thinly traded non-fungible tokens and self-issued tokens excluded by the new rule presents even greater challenges.

Finally, our market-based tests suggest a potential cost without clear offsetting benefits: while the fair value approach under ASU 2023-08 is intended to enhance earnings informativeness, we fail to find evidence of such an effect within our sample. At the same time, we observe increased stock return volatility for firms using the fair value model. These findings underscore the need for continued evaluation of the rule's impact, especially if its scope expands in the future.

2. *Background*

2.1 OVERVIEW OF THE CRYPTOCURRENCY MARKET

Cryptocurrencies were born in the wake of the financial crisis. The Great Recession of 2007–2009 devastated the global economy and shook people's faith in banks, particularly their role in the financial system. In October 2008, one month after Lehman Brothers filed for bankruptcy, a person or an organization going by the pseudonym Satoshi Nakamoto issued a white paper that introduced BTC as the world's first cryptocurrency (Nakamoto [2008]). BTC significantly differs from fiat currencies in that it relies on cryptography for security and blockchain (a distributed ledger technology) for recordkeeping.[8] These features allow BTC to circumvent the central-

using a sample of 120 firms, Naughton [2019] on pension accounting using a sample of 624 firms, and Ke, Petroni, and Safieddine [1999] on insurance company accounting using a sample of 45 insurers.

[8] In technical terms, a blockchain is a distributed, append-only ledger of provably signed, sequentially linked, and cryptographically secured transactions that is replicated across a network of computers. Updates are determined by a software-driven consensus mechanism; specifically, BTC uses "proof-of-work," commonly referred to as "mining."

ized control of money as transactions are posted on a single ledger and visible to all, thus requiring no backing of any government or bank. After BTC began to gain traction, other crypto tokens started emerging. Today, there are millions of tokens in circulation.

For years, only niche groups participated in the "mysterious" crypto market. Early participants were primarily drawn from three communities: the creators and original investors, true believers of decentralization, and speculators. The crypto market did attract occasional institutional and corporate interest during its formative years. For example, in 2013, Digital Currency Group launched the Grayscale BTC Trust, the first publicly traded BTC fund in the United States. In 2014, both Overstock and Microsoft (via its Xbox Store) forayed into the crypto space by accepting BTC as a form of payment. Despite these rare exceptions, mainstream investors appeared to have largely dismissed crypto assets as speculative tools that lack investment value.

However, starting in 2020, a growing number of institutions and corporate investors began to allocate a percentage of their portfolios to crypto assets. A combination of factors likely contributes to the rising interest. First, the "medium of exchange" role of crypto has become more widely accepted in recent years, as businesses increasingly allow crypto as a form of payment globally. In the United States, an expanding list of major retailers (e.g., Home Depot, Starbucks, and Whole Foods) and small local businesses accept major cryptocurrencies as payment, often via third-party app providers. The online payment giant PayPal also launched a service in 2020 that allows its customers to use crypto with millions of merchants, and Google entered a partnership with Coinbase to accept crypto payments for its cloud services in 2022. Many emerging markets exhibit even greater enthusiasm for crypto adoption, with Vietnam and India being frontrunners (Chainalysis [2021]) and El Salvador going so far as to recognize BTC as a legal tender.

Second, the "store of value" role of crypto has also been accentuated. In response to the COVID-19 pandemic, the Federal Reserve (or "Fed") took steps to support the economy by increasing the money supply through reductions in the Fed Funds rate and purchases of Treasury and mortgage-backed securities. In comparison, BTC, the leading crypto asset, is capped at 21 million. The Fed's quantitative easing measures raised investors' risk appetite by driving them to seek higher returns from riskier investments like crypto assets (Dong, Fang, and Lin [2022]). Consistent with this, surveys also highlight a rising institutional interest in crypto assets during the pandemic. A 2021 study by Fidelity Digital Assets found that "more than half" of the surveyed institutions reported already owning crypto assets, with more expected to invest soon, citing "the market conditions of 2020 as a catalyst" (Fidelity Digital Assets [2021]).

Even as the Fed reversed course by raising interest rates and tightening liquidity in 2022, institutional interest in crypto assets remained resilient. The 2022 Fidelity Digital Assets study cited "increased familiarity,

improved perception, and more digital asset investments" (Fidelity Digital Assets [2022]).[9] The launch of spot BTC exchange-traded funds (ETFs) in January 2024 by major players like BlackRock and Fidelity marked a milestone in institutional adoption, signaling both confidence in this market and the growing integration of crypto assets into traditional finance.

2.2 CRYPTO-RELATED FEDERAL REGULATION AND ACCOUNTING RULE-SETTING

Before 2017, regulators saw little need to provide guidance on crypto assets given the limited market scope and lack of mainstream interest. However, the growing popularity of cryptocurrencies has put these assets on oversight agendas worldwide. In March 2022, President Biden signed an executive order directing federal agencies to coordinate their efforts to draft crypto regulations. This led to the White House releasing its first regulatory framework for digital assets in September 2022. Since then, regulatory momentum has accelerated. In January 2024, the SEC approved the first spot Bitcoin ETFs. On March 6, 2025, President Trump signed an executive order to establish a "Strategic Bitcoin Reserve" and a "U.S. Digital Asset Stockpile," aiming to position the United States as "a leader among nations in government digital asset strategy" (White House [2025]). On July 18, 2025, he signed the Guiding and Establishing National Innovation for U.S. Stablecoins Act (GENIUS Act) into law, marking the first major federal legislation to regulate stablecoins. These developments point to a more active and coordinated U.S. regulatory approach as crypto markets continue to evolve.

Progress in establishing accounting standards for crypto assets had also been limited until recently. In fact, on three separate occasions, the FASB rejected requests to set accounting rules for digital assets, citing that they were not pervasive enough to warrant explicit guidance (White [2020]). In the absence of definitive rules, the Big 4 and the AICPA issued nonauthoritative guidance suggesting the use of an impairment model for crypto assets. However, as corporate crypto holdings and average crypto prices rose, the limitations of the impairment model became increasingly evident, especially when the gap between fair values and book values widened or the fair value information was absent.

In response to the growing calls for crypto accounting rules, the FASB released an agenda consultation in 2021 to seek public input on accounting treatment for crypto assets, which culminated in the issuance of ASU

[9] The 2021 study surveyed 1,100 institutional investors, with 408 from the United States, 393 from Europe, and 299 from Asia for the first time. Notably, 52% of investors reported investing in digital assets, with a year-to-year increase of 6% in the United States (from 27% to 33%) and 11% in Europe (from 45% to 56%), respectively. In the 2022 study, with a similar pool of institutional investors surveyed, ownership further increased by 9% to 42% in the United States and by 11% to 67% in Europe, respectively. In both years, institutional ownership of digital assets concentrated in BTC and ETH.

2023-08. Under the new rule, in-scope crypto assets are to be measured at fair value following ASC 820, and changes in fair value are to be recognized through net income. Anticipated changes also include separate line presentation of crypto assets on balance sheets and granular disclosure of the cost and quantities of significant crypto assets held. While the rule marks an important first step in promoting consistency and comparability in accounting for in-scope crypto assets, firms retain discretion as the rule does not specify the exchange from which to acquire a quoted price for determining fair value, when to acquire the price, and the degree of transparency in crypto-related disclosures supporting fair value measurement.[10] Furthermore, ASU 2023-08 does not apply to the full universe of digital assets, currently excluding non-fungible tokens, tokens that provide enforceable rights or claims on underlying goods, services, or other assets, and tokens created or issued by the reporting entity or its related parties.

3. Sample Construction and Descriptive Summary

Table 1, panel A, outlines the procedures used to construct a sample of firms with reported crypto holdings. To begin, we develop a list of crypto-related keywords through reading a sample of filings.[11] We then search for these keywords in financial statement footnotes within quarterly SEC filings pertaining to fiscal periods from 2008 to 2022, which we obtain from the SEC's Financial Statement and Notes data sets. This search yields an initial sample of 7,214 firm-quarters.

We expect firms holding crypto assets to disclose them in at least one footnote, particularly during the latter part of our sample period (2013–2022), following regulatory guidance from the Public Company Accounting Oversight Board (PCAOB) and the SEC urging auditors to verify public entities' disclosure of their crypto involvement (PCAOB [2020], SEC [2021]). While disclosure practices may have been less consistent before this guidance, this is less concerning, as corporate crypto holdings during that time were modest. We carefully analyze all footnotes with keyword hits, systematically categorizing them into those expected to have high relevance

[10] There are three salient challenges. First, unlike stock markets, crypto markets lack centralized trading venues with concentrated volume (Deloitte [2023]). Crypto markets also lack centralized quoted prices like the National Best Bid and Offer (NBBO), so it is not uncommon to observe variation in crypto prices across exchanges and trading venues at the same time. Second, crypto markets never close, offering firms wider latitude in their choice of price on a given day. Relatedly, the SEC's inquiry led to restatements by two crypto mining firms for not using the intraday low price to determine impairment loss. Third, liquidity varies significantly across crypto assets and is sometimes unpredictable.

[11] Specifically, these keywords include BCH, Binance, Binance coin, Bitcoin, Bitcoin Cash, blockchain, BNB, BTC, crypto(s), crypto currency(ies), cryptocurrency(ies), decentralized finance, digital asset(s), digital currency(ies), digital security(ies), digital token(s), distributed ledger, distributed ledger technology(ies), DLT, Doge, Dogecoin, ETHE, Ether, Ethereum, GBTC, Grayscale, Litecoin, LTC, NFT, non-fungible token(s), Ripple, stable coin(s), stablecoin(s), Tether, USD Coin, USDC, USDT, virtual currency(ies), and XRP.

TABLE 1
Sample Selection

Panel A: Sample selection

	Firms	Firm-Quarters
Initial search results	828	7,214
Less:		
Systematically excluded	(451)	(4,916)
Systematically included, with no crypto holdings	(225)	(1,540)
Fair value model required (applying ASC 946 or SAB 121)	(24)	(112)
Total used in tests of H1 and H2	128	646
Less:		
Crypto liquidity information unavailable	-	(2)
Total used in tests of H3	128	644
Less:		
Returns information unavailable	(11)	(44)
Total used in market tests	117	600

Panel B: Summary of data sources

Data Source	Firm-Quarters	Percentage
Compustat	407	63%
Hand-collected	239	37%
Total used in tests of H1 and H2	646	100%
Compustat	405	63%
Hand-collected	239	37%
Total used in tests of H3	644	100%
CRSP	240	40%
Hand-collected	360	60%
Total used in market tests	600	100%

Panel A summarizes the sample selection process. The "Initial search results" includes filings identified using a "bag of words" approach based on a list of crypto-related keywords detailed in section 3. "Systematically excluded" refers to filings with keyword-containing footnotes classified as having low relevance to crypto holdings. "Systematically included, with no crypto holdings" refers to filings with keyword-containing footnotes classified as having high relevance to crypto holdings, but our manual review revealed that the firm did not report any crypto holdings. In addition, liquidity data required to test H3 in table 5 are unavailable for two quarters. Firm stock return data used in the market tests reported in tables 6–7 are unavailable for 11 firms and 44 firm-quarter observations. Panel B summarizes data sources for financial statement variables (i.e., Compustat or manually collected) and returns variables (i.e., CRSP or manually collected).

to crypto holdings (e.g., "Fair value measurement," "Goodwill and intangible assets policy," and "Use of estimates") and those expected to have low relevance (e.g., "Commitments and contingencies," "Internal use software policy," and "Long-term debt"). Appendix A provides a list of the categorized footnotes. We exclude 4,916 firm-quarters where firms only mention crypto in footnotes with low crypto relevance.[12]

Next, if a filing contains at least one footnote with high crypto relevance, we manually review the entire filing to check whether the firm holds crypto

[12] We validate this approach by manually checking nearly two thirds of the 4,916 excluded observations and find no instances of "false negatives" (i.e., crypto holdings disclosed in these footnotes or other places in the filing).

assets and discloses sufficient information to quantify these holdings. This review results in 1,540 exclusions, with reasons for exclusion categorized by table IA1 in the internet appendix. Notably, only 24 firm-quarters (1.6%) are "partial disclosers," or firms that disclose crypto holdings without specifying amounts or deem them immaterial, lacking the necessary information for measurement. Thus, within our sample, partial disclosers are infrequent, and we expect them to have minimal influence on our results. We also exclude from our sample 216 duplicates due to amended filings, 609 with some crypto-related activity (e.g., past ownership, future investment plans, holdings through unconsolidated investments) but no direct crypto holdings at quarter-end, and 691 false positives because of erroneous hits (e.g., name mismatches or typos). Finally, we exclude 112 firm-quarter observations from entities required to apply the fair value model during our sample period (i.e., investment companies and crypto custodians affected by SAB 121). The final sample consists of 646 firm-quarter observations associated with 128 unique firms, covering fiscal quarters ended December 31, 2013, through December 31, 2022.

We hand-collect data on crypto holdings from firms' financial statements, footnotes, and other disclosures. We calculate financial and stock return variables using data from Compustat and CRSP for firms covered by these databases (63% and 40% of our sample, respectively), and hand-collect data for firms not covered. We construct BTC liquidity measures using data from CoinMarketCap. We winsorize continuous variables at the 1st and 99th percentiles to reduce the influence of outliers. Appendix B defines all variables, and table 2 presents descriptive statistics.

Our sampling approach requires firms to disclose at least some information about their crypto holdings, making our sample firms more transparent than unobserved "non-disclosers"—firms that hold crypto assets but do not disclose them. We acknowledge the potential existence of such firms, which underscores the importance of accounting rules mandating disclosure of crypto holdings, and the fact that our estimates of crypto holdings represent a lower bound. Nonetheless, all firms are required to comply with SEC Regulation S-X throughout our sample period, which mandates disclosure of any item exceeding 5% of total current assets (or 10% of total assets for smaller reporting companies) in the balance sheet or footnotes. While it is possible for material crypto holdings to fall below this threshold, this requirement provides reasonable assurance that the prevalence of non-disclosers is low.

4. Analyses

4.1 TRENDS IN CORPORATE CRYPTO HOLDINGS

We begin by examining trends in disclosed crypto holdings. As noted earlier, fair value disclosures for these holdings were inconsistent prior to ASU 2023-08, as firms could choose either the fair value model or the impairment model. Our best approximations, in order of preference based

TABLE 2
Descriptive Statistics

Variables	*N*	Mean	Std. Dev.	p(25)	Median	p(75)
Dependent variables						
FV	646	0.21	0.41	0.00	0.00	0.00
LineItem	646	0.79	0.41	1.00	1.00	1.00
FirmVolatility	600	0.10	0.08	0.05	0.07	0.11
CAR	600	0.01	0.17	−0.07	−0.01	0.07
Key independent variables						
Investments	646	0.05	0.13	0.00	0.00	0.01
Intangibles	646	0.15	0.24	0.00	0.01	0.20
Big4	646	0.17	0.38	0.00	0.00	0.00
BitcoinVolume	644	26.12	16.32	9.36	29.73	33.99
UE	173	−0.18	0.94	−0.03	0.00	0.00
Control variables						
BitcoinReturn	646	0.11	0.61	−0.17	−0.04	0.17
CryptoHoldings	646	0.18	0.39	0.00	0.02	0.14
CryptoIncome	646	0.39	1.26	0.00	0.01	0.15
MVE	646	17.05	5.55	16.05	17.84	19.98
MTB	646	−24.30	586.70	0.00	1.63	6.39
ROA	646	−1.44	8.76	−0.41	−0.12	−0.01
Leverage	646	0.78	3.44	0.01	0.10	0.37
Loss	646	0.78	0.41	1.00	1.00	1.00
NFirms	646	566.20	522.84	98.00	792.00	848.00
Q4	646	0.31	0.46	0.00	0.00	1.00
Beta	600	1.20	1.31	0.32	1.18	2.00
BitcoinVolatility	600	0.04	0.01	0.03	0.03	0.04
MarketVolatility	600	0.01	0.01	0.01	0.01	0.02

This table presents descriptive statistics. The sample includes 646 firm-quarter observations from 2013 to 2022. The number of observations varies across variables due to data availability. All variables are defined in appendix B.

on availability, are the reported quarter-end fair value if the firm applied the fair value model, the inferred quarter-end fair value if the firm used the impairment model with sufficient fair value disclosure, or the carrying value.

Figure 1 illustrates the trajectory of these holdings during the sample period. The inferred fair value and book value began at $16.4 million in 2013Q4. Other than spikes in fair value in mid-2017 and mid-2018, these balances mostly stayed flat until early 2019. Fair value then soared to $534.9 million in 2020Q3, and again to $12.4 billion in 2022Q1. A dip in 2022Q2 saw the fair value decline to $4.5 billion, followed by a modest rebound to $4.6 billion in 2022Q3 and further stabilization at $4.7 billion in 2022Q4.

For the most part, book values mirrored the inferred fair values before 2019Q2. Significant disparity emerged between the two during the BTC bull run from 2016Q4 to 2017Q4, peaking in 2017Q3 when fair value was about 15 times higher than book value. They converged again during the two-year crypto winter from late 2017 through early 2019. Starting in

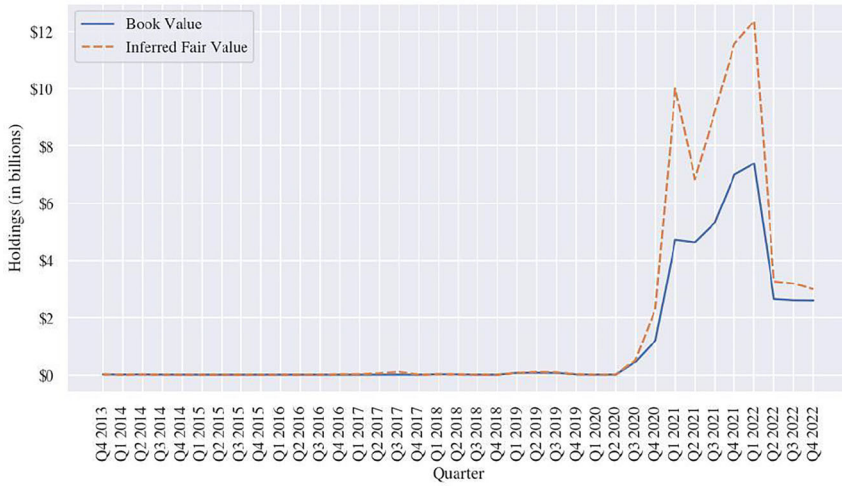

FIG. 1.—The trend of corporate cryptocurrency (crypto) holdings. This figure plots the book value of crypto holdings (the blue line) and the inferred fair value of crypto holdings (the orange line) by calendar quarter. Book value equals the carrying value of crypto holdings. In order of preference based on availability, inferred fair value is defined as: the reported fair value of crypto holdings if the fair value model was applied, the disclosed fair value if the impairment model was applied but either the amount or sufficient inputs were provided to determine the fair value, or the book value if the impairment model was applied and no inputs were provided to determine the fair value. The figure includes 646 firm-quarter observations from 2013Q4 to 2022Q4, with each fiscal quarter aligned to the calendar quarter in which it ends.

2019Q2, the gap between fair value and book value widened, peaking in 2021Q1 when fair value exceeded book value by $5.3 billion.[13]

Next, we evaluate factors contributing to the observed upward trend in crypto holdings. Figure 2 visualizes these factors. Specifically, alongside the inferred fair value of crypto holdings, we plot the average BTC price, the number of public reporting entities holding crypto assets, and the inferred quantities held by these entities by calendar quarter.[14] For ease of comparison, we standardize each of these variables to have a mean of zero and a standard deviation of one. While there has been a significant increase in the BTC price, particularly toward the end of the sample period (exhibiting an impressive CAGR of 31% from 2019Q4 to 2022Q4), a substantial portion of

[13] MicroStrategy exemplified this gap, reporting $1.9 billion of BTC holdings in its 2021Q1 quarterly report while disclosing a fair value of $5.4 billion (or 2.8 times of the book value).

[14] We use the average BTC price to proxy for the overall crypto price because BTC consistently accounts for more than half of the total crypto market cap, is the most frequently held crypto by our sample firms, and exhibits high price correlation with other cryptos (e.g., the correlation coefficient between daily close prices of BTC and ETH is 0.94 during our sample period). Thus, we also infer quantities held using the inferred fair value of holdings and the quarter-end BTC price.

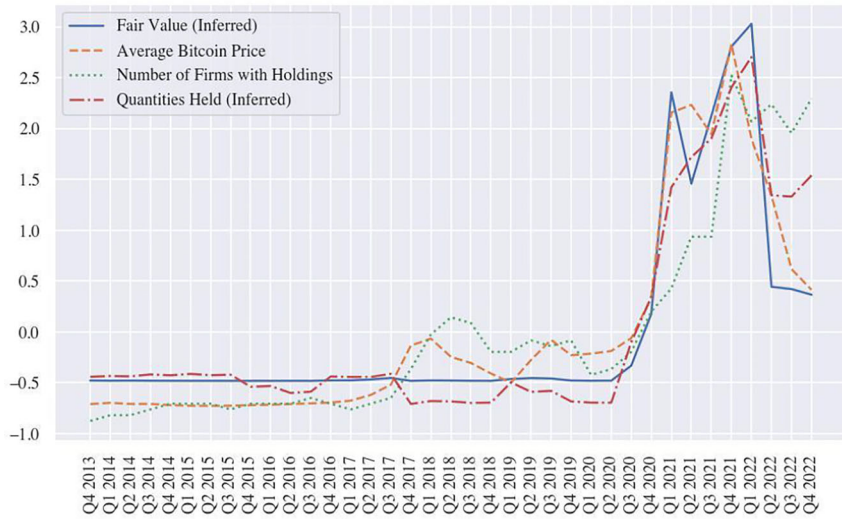

FIG. 2.—Contributing factors to rising corporate crypto holdings. This figure plots four data series by calendar quarter: (1) the total inferred fair value of crypto holdings as of the fiscal period end, (2) the Bitcoin (BTC) closing price as of the fiscal period end dates, averaged across all sample firms in that quarter, (3) the number of sample firms that report holding crypto assets, and (4) the inferred quantities of crypto held by those firms. The inferred quantity held for each firm-quarter is determined using the inferred fair value and the closing BTC price as of the last day of the firm's given fiscal quarter. Each variable has been standardized to have a mean of zero and standard deviation of one for ease of comparison; accordingly, the y-axis of this plot indicates the number of standard deviations from the mean. The figure includes 646 firm-quarter observations from 2013Q4 to 2022Q4, with each fiscal quarter aligned to the calendar quarter in which it ends.

the trend is also attributed to the growing number of public entities holding crypto assets (rising from two in 2013Q4 to 58 in 2022Q4) and a surge in the inferred quantity of BTC held (rising from 21.8 thousand in 2013Q4 to 180.8 thousand in 2022Q4).

To assess how crypto holdings compare with other assets in our sample, we perform two additional analyses. First, figure 3 presents the average crypto-to-assets, investments-to-assets, and non-crypto intangibles-to-assets by calendar year. We base the calculations on book values to avoid inflating these ratios. As shown, crypto holdings as a percentage of assets spikes during BTC price rallies and declines during price dips. From 2020 to 2022, the average crypto-to-assets ranges from 10.1% to 20.1%, compared with 3.1% to 4.4% for investments and 11.4% to 14.9% for non-crypto intangibles.[15] Second, we compare crypto holdings with investments, non-crypto

[15] These percentages partly reflect the fact that crypto-holding firms in our sample may not hold material investments or non-crypto intangibles. If we reconstruct the plot by restricting the sample to firms holding all three types of assets, crypto assets appear less material in the first half of the sample period but remain highly material in the second half.

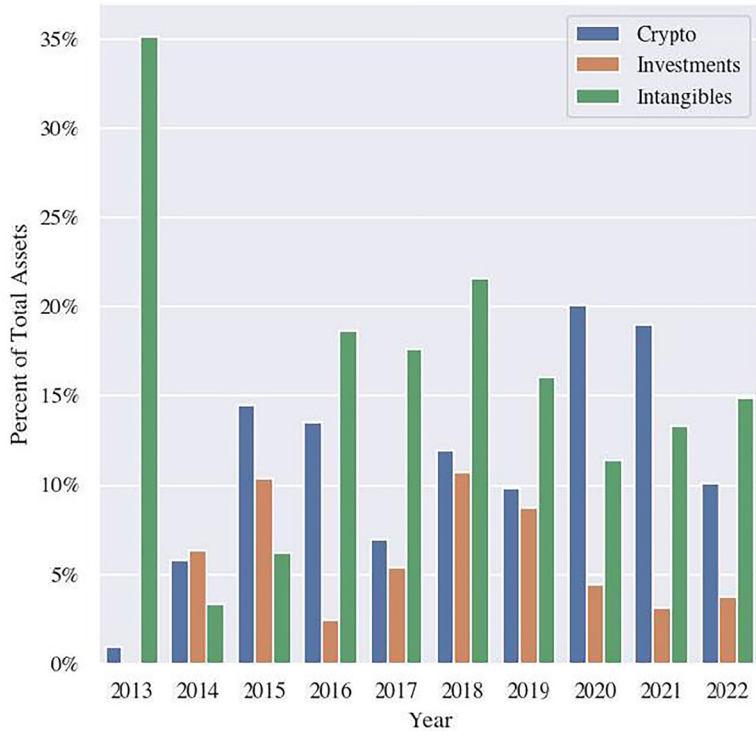

FIG. 3.—Materiality of corporate crypto holdings. This figure compares average crypto holdings as a percentage of firm assets (the blue bar), by calendar year, to two benchmarks: total investments as a percentage of firm assets (the orange bar) and total non-crypto intangible assets as a percentage of firm assets (the green bar). The figure includes 646 firm-quarter observations from 2013Q4 to 2022Q4, with firm-quarters aggregated by the calendar year in which the fiscal quarter ends.

intangibles (excluding goodwill), and goodwill held by the same firms (untabulated). From 2019Q4 to 2022Q4, crypto holdings grew at a CAGR of 546%, far exceeding the growth rates of investments (44%), non-crypto intangible assets (103%), and goodwill (28%).

Our estimates should be interpreted with three considerations. First, we capture only crypto holdings disclosed by public reporting entities, which understates the broad landscape, as some private entities are known to hold significant crypto reserves.[16] Second, as noted earlier, we are only able to

[16] For example, Grayscale manages 17 crypto trusts, but only nine registered with the SEC as public reporting entities during our sample period (i.e., Bitcoin Trust since 2019Q4, Ethereum Trust since 2020Q3, Digital Large Cap Fund since 2021Q2, Bitcoin Cash Trust, Ethereum Classic Trust, and Litecoin Trust since 2021Q3, and Horizen Trust, Stellar Lumens Trust, and Zcash Trust since 2022Q2). Some private entities also hold significant crypto reserves, such as Block.one and the Tezos Foundation.

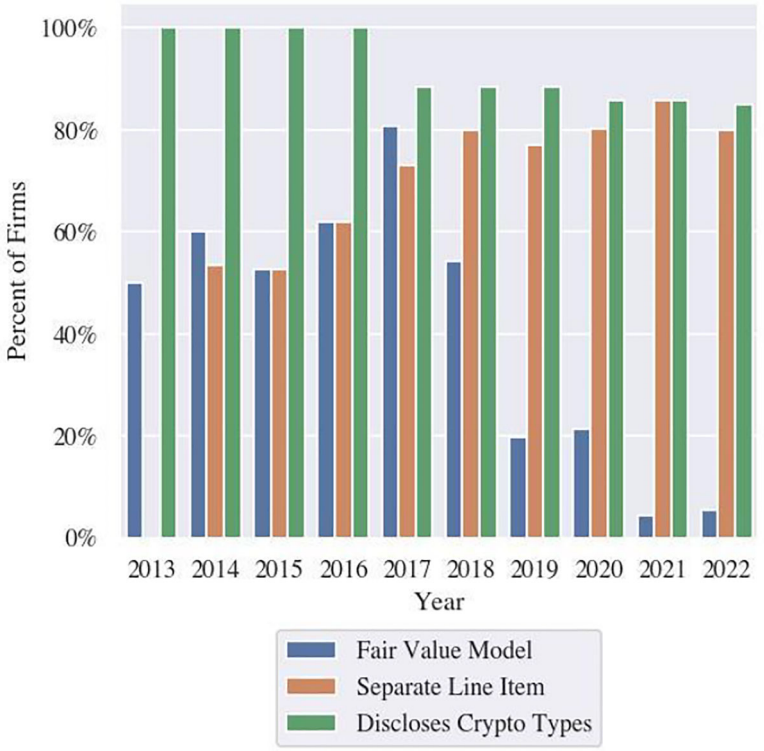

FIG. 4.—Crypto recognition, presentation, and disclosure choices. This figure summarizes the recognition, presentation, and disclosure choices by calendar year. It reports the percentage of firms applying the fair value model (the blue bar), the percentage of firms separately disclosing the crypto asset and/or income on the financial statements (the orange bar), and the percentage of firms disclosing the type(s) of crypto held (the green bar). The figure includes 646 firm-quarter observations from 2013Q4 to 2022Q4, with firm-quarters aggregated by the calendar year in which the fiscal quarter ends.

include firms that report the amount of their crypto holdings in their quarterly SEC filings and cannot capture holdings by non-disclosers and partial disclosers. Third, we are only able to include the quarter-end fair value of a firm's crypto holdings if the firm discloses it in the SEC filings, or we can reasonably infer the fair value based on disclosed information. Otherwise, we are constrained to use the quarter-end carrying value, which may be only a fraction of the fair value, given the generally rising crypto prices during our sample period.

4.2 CRYPTO RECOGNITION, PRESENTATION, AND DISCLOSURE CHOICES

Next, we summarize the recognition, presentation, and disclosure choices of our sample firms. Figure 4 depicts these choices, including whether to use the fair value or impairment model to recognize crypto holdings, whether to separately present crypto assets and/or related in-

come on the financial statements, and whether to disclose the specific type of crypto assets held. As shown, for the first five years of our sample period, firms favored the fair value model, with the percentage of firms adopting the model starting at 50% in 2013 and peaking at 81% in 2017.[17] This percentage sharply declined in the second half of 2018, reaching 20% by 2019 and further declining to 5% in 2022—a trend aligned with the issuance of the non-authoritative guidance by the Big 4 and the AICPA, suggesting the use of the impairment model.

With respect to presentation, we find that firms tend to disclose their crypto separately on their financial statements. Figure 4 shows the trend in disclosing either crypto assets on the balance sheet or corresponding income on the income statement. In the first half of our sample period, about half of the firms made this presentation choice. We observe an increase to 73% in 2017, followed by further increases to 86% in 2021 before leveling off at 80% in 2022.[18] Firms in our sample period also faced the decision of whether to disclose the specific type of crypto assets held. This was a very common disclosure, as 100% of our observations disclosed this information in their footnotes from 2013 to 2016, before a slight decrease in the following years to between 85% and 89%. Thus, while not required, most firms in our sample appear to provide separate line-item disclosures for their total crypto holdings and related income on their financial statements. However, as noted earlier, our sample is inherently biased toward more transparent firms, as it cannot include non-disclosers and partial disclosers. Therefore, these findings may not reflect the transparency of all crypto-holding firms.

4.3 TESTS OF HYPOTHESES

As the previous section highlights, our sample firms applied discretion in their reporting, presentation, and disclosure choices. In this section, we develop and test three hypotheses that relate to firms' unguided accounting view of crypto assets, the impact of Big 4 auditors on clients' discretion, and the role of liquidity in crypto accounting. Even with the passage of ASU 2023-08, discretion remains for some of these choices. Thus, understanding

[17] We analyze the shift in recognition choice to determine if the increasing use of the impairment model is due to new entrants to our sample or a switch in accounting policy among existing firms. We observe 19 firm-quarter observations (2.5% of the sample) changing their accounting policy from the previous quarter, with ten occurring in 2018 to 2019 when the Big 4 and the AICPA issued non-authoritative guidance and nine occurring after 2019. Additionally, we observe that most firms enter our sample after the pre-guidance period and consistently apply the impairment model.

[18] When applying the fair value model, firms may recognize unrealized gains and losses differently: through net income for assets classified as "trading" or accumulated other comprehensive income (AOCI) for assets classified as "available-for-sale." ASU 2016-01, issued in January 2016, eliminates this option with all fair value changes from equity instruments recognized through net income. Among the 234 firm-quarter observations with this option in our sample, eight (226) recognize changes in unrealized gains or losses on crypto assets through AOCI (net income).

the factors contributing to firms' crypto accounting choices pre-rule can shed light on how they may influence practice and implementation under the new rule.

4.3.1. Firms' Unguided Accounting View of Crypto Assets. Our first hypothesis aims to gauge firms' unguided accounting view of crypto assets. To do so, we rely on the fact that ASC 105 requires that firms "first consider accounting principles for similar transactions or events within a source of authoritative GAAP for that entity" when there is no specified guidance under U.S. GAAP (ASC 105-10-05-2) and the assumption that familiarity with assets that firms already consider similar to crypto assets reinforces this understanding. More specifically, we consider two types of assets that firms may perceive as similar to crypto assets—investments (e.g., marketable securities) or non-crypto intangible assets (e.g., goodwill)—and study how firms' holdings of these assets associate with their crypto accounting choices. If firms view crypto assets as similar to investments, then we expect firms with greater levels of investments to be more inclined to use the fair value model for their crypto holdings, given their familiarity with that model. Alternatively, if firms view crypto assets as similar to non-crypto intangible assets, then firms with greater levels of intangible assets may be more likely to choose the impairment model. We summarize this reasoning in our first hypothesis, which we state in two parts as follows:

H1a. *Firms' experience with or knowledge of investments increases the likelihood that they recognize crypto assets using the fair value model.*

H1b. *Firms' experience with or knowledge of non-crypto intangible assets decreases the likelihood that they recognize crypto assets using the fair value model.*

We test these two predictions using the following linear probability model (LPM):

$$FV_{i,q} = \alpha + \beta_1 Investments_{i,q} + \beta_2 Intangibles_{i,q} + \beta_x Control_{i,q} + \varepsilon_{i,q}. \quad (1)$$

The dependent variable, *FV*, measures the recognition choice, which equals one if the firm applies the fair value model to account for its crypto holdings during a given quarter, and zero otherwise. The two key independent variables, *Investments* and *Intangibles*, measure firms' holdings of investments and non-crypto intangible assets (including goodwill) as a percentage of total assets, respectively. *Control* represents a vector of control variables that includes the buy-and-hold return of BTC during quarter q (*BitcoinReturn*), two measures of the firm's materiality of crypto holdings for quarter q (i.e., *CryptoHoldings*, the ratio of inferred crypto asset fair value-to-assets, and *CryptoIncome*, the ratio of crypto income-to-net income), and four basic controls for firm i measured at the end of quarter q, including *MVE* (the natural logarithm of the firm's market cap), *MTB* (market-to-book), *ROA* (return-on-assets), and *Leverage* (book leverage). The coefficients of interest are β_1 and β_2, which assess how a firm's level of

TABLE 3

Firms' Familiarity with Other Assets and Recognition Choice for Crypto Assets

Dependent Variable	(1) Full Sample	(2) PreGuidance = 1	(3) Full Sample	(4) PreGuidance = 1
		FV		
Investments	***0.3132****	***0.7181*****	***0.1097***	***0.6706*****
	(2.48)	***(2.99)***	***(1.00)***	***(2.70)***
Intangibles	***0.0521***	***0.6065*****	***−0.0041***	***0.6139*****
	(0.79)	***(4.16)***	***(−0.07)***	***(4.07)***
BitcoinReturn	0.0981***	0.0259	0.0044	0.0112
	(3.79)	(0.55)	(0.15)	(0.13)
CryptoHoldings	−0.0381	0.6278***	0.0065	0.6688***
	(−0.87)	(3.25)	(0.17)	(3.41)
CryptoIncome	−0.0022	−0.1121*	0.0024	−0.1352**
	(−0.16)	(−1.70)	(0.21)	(−2.03)
MVE	−0.0000	−0.0000	−0.0000	−0.0000
	(−0.69)	(−0.17)	(−0.24)	(−0.88)
MTB	−0.0001	−0.0161*	−0.0044*	−0.0151
	(−0.03)	(−1.66)	(−1.78)	(−1.56)
ROA	−0.0060***	−0.0061**	−0.0027	−0.0053*
	(−2.71)	(−2.29)	(−1.41)	(−1.95)
Leverage	0.0017	−0.0099	−0.0042	−0.0074
	(0.30)	(−1.30)	(−0.84)	(−0.94)
Intercept	0.1732***	0.7805***	0.5774**	0.5488
	(3.13)	(3.88)	(2.29)	(1.38)
Year fixed effects	No	No	Yes	Yes
Observations	646	120	646	120
R-squared	0.0523	0.2872	0.3298	0.3264

This table reports the results of estimating equation (1) to assess the effect of familiarity with similar assets on the recognition choice of crypto holdings. Columns 1 and 2 report the results without fixed effects, and columns 3 and 4 report the results with year fixed effects included. Columns 1 and 3 report the results for the full sample period (i.e., 2013Q4 to 2022Q4), while columns 2 and 4 report the results for the pre-guidance period (i.e., 2013Q4 to 2018Q2). All variables are defined in appendix B. *t*-Statistics are reported in parentheses below the corresponding coefficients. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively (based on two-tailed tests).

investments and non-crypto intangible assets, respectively, may affect firms' recognition choice for crypto holdings.

Table 3 reports the regression results of estimating equation (1). Column 1 uses the full sample, while column 2 uses only observations from the pre-guidance period, when firms should have greater leeway in their recognition choices. Columns 3 and 4 repeat the analyses, including year fixed effects. In support of H1a, $\widehat{\beta_1}$ is positive and significant at the 5% level in column 1, which suggests that firms are more inclined to adopt the fair value model for crypto holdings as their level of investments increases, although the result weakens with year fixed effects included in column 3. This result is stronger when we limit the analysis to the pre-guidance period, presumably because firms' recognition choices then are more likely to reflect their instinctive, unguided accounting view of crypto assets. In contrast, the insignificant $\widehat{\beta_2}$ (in columns 1 and 3) and positive $\widehat{\beta_2}$ (in columns 2 and 4) are inconsistent with H1b. Together, these findings suggest that

firms view crypto assets as being more akin to investments than non-crypto intangibles. Therefore, ASU 2023-08's requirement of the fair value model for in-scope tokens largely reflects firms' instinctive, unguided accounting view of crypto assets, potentially easing compliance.

4.3.2. Big 4 Auditors. Our second hypothesis considers the impact that firms' auditors—specifically, whether they have a Big 4 auditor—may have on the recognition and presentation of their crypto holdings. Auditors play an important role in the verification of crypto holdings and therefore are in a key position to influence their clients' accounting and disclosure choices for these assets. *Ex ante*, there are strong reasons to suspect that clients of Big 4 auditors make more conservative choices. Theory suggests that larger auditors tend to be more risk averse as they have "more to lose" in the event of an audit failure (DeAngelo [1981], p. 185). Consistent with theory, the empirical literature suggests that Big 4 auditors tend to be more conservative when exposed to greater legal liability (Basu, Hwang, and Jan [2001]) or higher levels of scrutiny by the PCAOB (Stuber and Hogan [2021]). Big 4 auditors also face higher reputation costs, particularly when there is more regulatory attention (Wilson and Grimlund [1990], Francis and Krishnan [1999], Shaw and Whitworth [2022]). This reasoning leads to our second hypothesis, which we state as follows:

H2. *Firms with Big 4 auditors are more likely to make conservative crypto-related accounting choices than firms with other auditors.*

To test H2, we estimate the following LPM:

$$AccountingChoice_{i,q} = \alpha + \beta_1 Big4_{i,q} + \beta_x Control_{i,q} + \varepsilon_{i,q}. \quad (2)$$

Because we expect the external auditor to influence all accounting choices, the dependent variable, *AccountingChoice*, captures either the recognition choice (*FV*) or presentation choice (*LineItem*). *FV* is defined previously, and *LineItem* equals one if the firm separately discloses crypto holdings as a financial statement line item (as an asset on the balance sheet and/or income on the income statement), and zero otherwise. The key independent variable, *Big4*, equals one if the firm's auditor is one of the Big 4 and zero otherwise. Controls are previously defined. The coefficient of interest is β_1, and H2 predicts a negative coefficient for both accounting choices.

Table 4 reports the regression results of estimating equation (2). Columns 1–4 report results on the recognition choice, which suggest that Big 4 clients are less likely to adopt the fair value model to account for their crypto holdings, as $\widehat{\beta_1}$ is significantly negative at the 1% level both across the full sample period and in the pre-guidance period, as well as with and without year fixed effects. Columns 5 and 6 report results on the presentation choice, which suggest that Big 4 clients are also less likely to present their crypto holdings as separate financial statement line items, as $\widehat{\beta_1}$ is

TABLE 4

Big 4 Auditors and Firms' Accounting Choices for Crypto Assets

	(1) Full Sample	(2) PreGuidance = 1	(3) Full Sample	(4) PreGuidance = 1	(5) Full Sample	(6) Full Sample
Dependent Variable	*FV*				*LineItem*	
Big4	***−0.2186****	***−0.8870****	***−0.3033****	***−0.8855****	***−0.3869****	***−0.3688****
	(−4.96)	***(−15.91)***	***(−8.26)***	***(−15.04)***	***(−9.07)***	***(−8.52)***
BitcoinReturn	0.1067***	0.0388	0.0019	0.0460	−0.0163	−0.0094
	(4.18)	(1.36)	(0.07)	(0.90)	(−0.66)	(−0.29)
CryptoHoldings	−0.0496	−0.0443	0.0077	−0.0424	0.0639	0.0468
	(−1.16)	(−0.38)	(0.22)	(−0.35)	(1.54)	(1.12)
CryptoIncome	0.0018	−0.0173	0.0107	−0.0159	0.0356***	0.0335***
	(0.14)	(−0.43)	(1.00)	(−0.38)	(2.83)	(2.66)
MVE	−0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(−0.82)	(0.62)	(0.14)	(0.38)	(0.98)	(0.84)
MTB	0.0058*	0.0018	0.0029	0.0019	−0.0000	0.0002
	(1.88)	(0.31)	(1.16)	(0.32)	(−0.01)	(0.07)
ROA	−0.0054**	−0.0006	−0.0019	−0.0006	0.0005	0.0006
	(−2.45)	(−0.38)	(−1.06)	(−0.38)	(0.24)	(0.28)
Leverage	0.0003	−0.0120***	−0.0063	−0.0132***	0.0049	0.0062
	(0.05)	(−2.63)	(−1.33)	(−2.73)	(0.90)	(1.11)
Intercept	0.1368**	0.9308***	0.5933**	0.8092***	0.8289***	0.1967
	(2.51)	(8.12)	(2.48)	(3.34)	(15.73)	(0.70)
Year Fixed Effects	No	No	Yes	Yes	No	Yes
Observations	646	120	646	120	646	646
R-squared	0.0785	0.7386	0.3944	0.7433	0.1496	0.1726

This table reports the results of estimating equation (2) to assess the effect of auditor type on the recognition and presentation choices of crypto holdings. The first four columns report on the recognition choice (i.e., whether the fair value model is applied): Columns 1 and 2 report the results without fixed effects, and columns 3 and 4 report the results with year fixed effects included. Columns 1 and 3 report the results for the full sample period (i.e., 2013Q4 to 2022Q4), while columns 2 and 4 report the results for the pre-guidance period (i.e., 2013Q4 to 2018Q2). The last two columns report on the presentation choice (i.e., whether crypto assets and/or income are presented as separate line items on financial statements), without and with year fixed effects included, respectively. All variables are defined in appendix B. *t*-Statistics are reported in parentheses below the corresponding coefficients. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively (based on two-tailed tests).

significantly negative at the 1% level in both columns, with and without year fixed effects.[19]

It is important to acknowledge that, prior to ASU 2023-08, the prevailing view of the Big 4 was that crypto assets were best described as intangible assets (a position that is confirmed by ASU 2023-08). Under this view, it is likely that Big 4 auditors encouraged clients to apply the impairment model, which they did publicly in the 2018–2019 non-authoritative guidance. However, the influence this view had on firms' recognition choices does not necessarily extend to their presentation choices and so our results are still consistent with Big 4 auditors favoring more conservative crypto accounting and presentation choices by their clients. While ASU 2023-08 standardizes certain crypto accounting choices across firms, our results suggest that clients of Big 4 auditors are likely to remain conservative in any discretionary choices they make in their accounting and disclosure of crypto assets.

4.3.3. Liquidity. Our final hypothesis focuses on the role of liquidity in firms' crypto accounting choices. Liquidity is a crucial aspect of cryptocurrencies as the trading activity of digital tokens hinges on their adoption and circulation (Cong, Li, and Wang [2022], Sockin and Xiong [2023]). Moreover, models in Allen and Carletti [2008] and Plantin, Sapra, and Shin [2008] predict enhanced informativeness of the fair value model when the underlying asset is more liquid. Consistent with this line of reasoning, the AICPA's FinREC group suggested that the adoption of fair value model should be contingent on the existence of a liquid crypto market in its comment letter to the FASB (AICPA [2021]), a perspective that also aligns with Japanese GAAP, which mandates the fair value model for crypto assets traded on active markets and the impairment model for less actively traded assets (ASBJ [2018]). Given these arguments, we expect to see more fair-value–related accounting choices as liquidity increases. We state our third hypothesis as follows:

H3. *The likelihood that firms apply the fair value model and make more transparent presentation choices increases with crypto market liquidity.*

To test H3, we estimate the following LPM, analogous to equation (2):

$$AccountingChoice_{i,q} = \alpha + \beta_1 Liquidity_{i,q} + \beta_x Control_{i,q} + \varepsilon_{i,q}. \quad (3)$$

The dependent variable refers to the same two accounting choices as in the previous section (*FV* and *LineItem*), and controls are as previously defined. To measure the key independent variable, *Liquidity*, we rely on the

[19] We do not separately tabulate the presentation choice in the pre-guidance period, as the non-authoritative guidance only applies to the recognition choice. Nevertheless, in untabulated analyses, we find consistent results for the presentation choice if we separately examine observations from the pre-guidance period.

quarterly average of daily trading volume of the BTC market (*BitcoinVolume*) as a proxy for the liquidity of the firm's crypto holdings.[20] In line with insights from the market microstructure literature (e.g., Kyle [1985], Fang, Noe, and Tice [2009], Goyenko, Holden, and Trzcinka [2009]), we expect this measure to be positively related to liquidity, as higher trading volume implies less market tightness and a lower trading cost. The coefficient of interest is β_1, which H3 predicts to be positive for both recognition and presentation choices.

Table 5 reports the regression results of estimating equation (3). As in table 4, the first four columns report results on the recognition choice. In columns 1 and 2, we observe a negative relation (significant at the 1% level) between our liquidity measure and the use of the fair value model when considering the full sample and excluding year fixed effects; however, when focusing on the pre-guidance period, we observe a positive relation (significant at the 5% level). This result provides support for H3. This result fails to hold with the inclusion of year fixed effects in columns 3 and 4, likely due to the lack of within-firm variation in our market-based liquidity measure. Column 5 reports results on the presentation choice without year fixed effects included, which suggests that firms are more likely to present their crypto assets and/or the related income as separate financial statement line items as crypto market liquidity increases, supporting H3. This result again fails to hold in column 6 with year fixed effects included.

Combined, these results provide some support for H3 and suggest a role liquidity plays in fair value reporting of crypto holdings. These findings remain relevant even after the issuance of ASU 2023-08, as liquidity continues to influence the fair value determination of crypto assets. Under the new rule, firms holding in-scope tokens must determine fair value based on guidelines outlined in ASC 820. This involves prioritizing quoted prices for identical assets in active markets when feasible, and the presence of liquid markets makes it easier to obtain such prices.

5. *Market-based Analyses*

In this section, we conduct two market-based analyses aimed at addressing the central debate between the fair value model and historical accounting models: Does fair value accounting risk amplifying stock return

[20] We derive our liquidity measure from trading properties of the BTC market because limited disclosures on the proportions of firms' crypto holdings hinder the creation of firm-quarter specific measures. However, among the observations with disclosed holdings, the majority hold BTC, with some also holding ETH and fewer holding smaller altcoins. Liquidity measures derived from ETH strongly correlate with those based on BTC (ρ between 0.86 and 0.97). Our inferences are also consistent using two alternative measures of liquidity, including the quarterly average of daily BTC trading volume scaled by its market capitalization, as well as the quarterly average of daily absolute return-to-trading volume, akin to the Amihud [2002] illiquidity measure.

TABLE 5

Crypto Market Liquidity and Firms' Accounting Choices for Crypto Assets

	(1) Full Sample	(2) PreGuidance = 1	(3) Full Sample	(4) PreGuidance = 1	(5) Full Sample	(6) Full Sample
Dependent Variable	*FV*				*LineItem*	
BitcoinVolume	***−0.0113***	***0.0245***	***−0.0001***	***0.0247***	***0.0032***	***0.0022***
	(−12.80)	***(2.21)***	***(−0.05)***	***(0.88)***	***(3.26)***	***(0.95)***
BitcoinReturn	0.1038***	0.0472	0.0055	0.0074	−0.0182	−0.0143
	(4.40)	(0.89)	(0.18)	(0.07)	(−0.69)	(−0.41)
CryptoHoldings	0.0023	0.4069**	0.0033	0.4564**	0.0402	0.0414
	(0.06)	(2.03)	(0.09)	(2.23)	(0.92)	(0.94)
CryptoIncome	0.0007	−0.1288*	0.0020	−0.1437**	0.0235*	0.0235*
	(0.06)	(−1.84)	(0.18)	(−2.00)	(1.78)	(1.77)
MVE	−0.0000	−0.0000	−0.0000	−0.0000	0.0000	0.0000
	(−0.47)	(−0.79)	(−0.38)	(−1.28)	(0.45)	(0.28)
MTB	−0.0026	−0.0197*	−0.0042*	−0.0199*	−0.0089***	−0.0086***
	(−0.99)	(−1.93)	(−1.71)	(−1.92)	(−3.05)	(−2.93)
ROA	−0.0046**	−0.0041	−0.0027	−0.0036	−0.0006	−0.0003
	(−2.32)	(−1.46)	(−1.41)	(−1.26)	(−0.25)	(−0.13)
Leverage	−0.0038	−0.0107	−0.0044	−0.0100	0.0078	0.0085
	(−0.75)	(−1.33)	(−0.90)	(−1.18)	(1.37)	(1.45)
Intercept	0.5318***	0.9456***	0.6887***	1.0518***	0.8347***	0.6837***
	(9.67)	(4.53)	(6.74)	(4.40)	(13.54)	(5.64)
Year fixed effects	No	No	Yes	Yes	No	Yes
Observations	644	118	644	118	644	644
R-squared	0.2381	0.1797	0.3290	0.1995	0.0536	0.0676

This table reports the results of estimating equation (3) to assess the effect of crypto market liquidity on the recognition and presentation choices of crypto holdings. Two observations from 2013 were excluded due to missing Bitcoin volume data. The first four columns report on the recognition choice (i.e., whether the fair value model is applied): Columns 1 and 2 report the results without fixed effects, and columns 3 and 4 report the results with year fixed effects included. Columns 1 and 3 report the results for the full sample period (i.e., 2013Q4 to 2022Q4), while columns 2 and 4 report the results for the pre-guidance period (i.e., 2013Q4 to 2018Q2). The last two columns report on the presentation choice (i.e., whether crypto assets and/or income are presented as separate line items on financial statements), without and with year fixed effects included, respectively. All variables are defined in appendix B. *t*-Statistics are reported in parentheses below the corresponding coefficients. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively (based on two-tailed tests).

volatility, despite potentially enhancing earnings informativeness (e.g., Barth [1994], Barth and Landsman [1995], Barth, Beaver, and Landsman [2001], Landsman [2007], Laux and Leuz [2009])?

Speaking to the key concern of the fair value approach, our first analysis examines whether firms using the fair value model for their crypto holdings experience higher stock return volatility. Specifically, we estimate the following model at the firm-quarter level:

$$FirmVolatility_{i,q} = \alpha + \beta_1 FV_{i,q} + \beta_2 Control_{i,q} + \varepsilon_{i,q}. \quad (4)$$

FirmVolatility is the firm's stock return volatility for quarter *q*, calculated as the standard deviation of its daily raw returns during the quarter. *Controls* includes six controls from Fang, Huang, and Wang [2017], which are the natural logarithm of market capitalization (*MVE*), market-to-book ratio (*MTB*), a loss indicator (*Loss*), the size of the industry to which the firm belongs (*NFirms*), an indicator denoting the fourth quarter (*Q4*), and stock beta estimated over (−365, −60) days relative to earnings announcement dates (*Beta*). In addition, we control for firm-specific crypto exposure as well as crypto and broad market conditions by including the firm's crypto holdings-to-assets (*CryptoHoldings*), Bitcoin's cumulative quarterly return (*BitcoinReturn*), and stock market volatility (*MarketVolatility*), measured as the standard deviation of daily returns on the CRSP value-weighted index during the quarter. The coefficient of interest is β_1; a positive estimate would suggest that the use of the fair value model is associated with higher stock return volatility.

Column 1 of table 6 reports the results of estimating equation (4), excluding year fixed effects. As shown, $\widehat{\beta_1}$ is positive and significant at the 1% level, suggesting that firms experience higher stock return volatility during quarters in which they apply the fair value model to account for their crypto holdings. In column 2 of table 6, we augment the model with an additional control, *BitcoinVolatility*, calculated as the standard deviation of Bitcoin's raw daily returns during the quarter. The coefficient of interest remains significantly positive at the 1% level, indicating that the increased volatility extends beyond the volatility of Bitcoin prices. Columns 3 and 4 repeat the analyses from the first two columns, including year fixed effects, and report similar results.

The second analysis examines whether firms applying the fair value model to their crypto holdings exhibit a higher ERC at quarterly earnings announcements, as a higher ERC indicates greater value relevance of reported earnings (e.g., Fang, Huang, and Wang [2017]).

Specifically, we estimate the following model at the firm-quarter level:

$$CAR_{i,q} = \alpha + \beta_1 UE_{i,q} + \beta_2 FV_{i,q} + \beta_3 UE \times FV_{i,q} + \beta_4 Control_{i,q} + \beta_5 UE \times Control_{i,q} + \varepsilon_{i,q}. \quad (5)$$

CAR is the cumulative three-day market-adjusted return, centered on firm *i*'s quarterly earnings announcement date. *UE* is the unexpected earn-

TABLE 6
Firm Return Volatility and the Fair Value Model

	(1)	(2)	(3)	(4)
Dependent Variable	*FirmVolatility*			
FV	***0.0248****	***0.0257****	***0.0247****	***0.0256****
	(2.94)	***(3.01)***	***(2.52)***	***(2.59)***
MVE	−0.0034***	−0.0034***	−0.0034***	−0.0033***
	(−3.66)	(−3.58)	(−3.53)	(−3.46)
MTB	0.0000	0.0000	0.0000	0.0000
	(0.71)	(0.77)	(0.83)	(0.90)
Loss	0.0103	0.0106	0.0103	0.0107
	(1.26)	(1.29)	(1.21)	(1.26)
NFirms	0.0000	0.0000	0.0000	0.0000
	(1.23)	(1.26)	(1.22)	(1.28)
Q4	0.0003	−0.0007	0.0006	−0.0012
	(0.04)	(−0.10)	(0.08)	(−0.16)
Beta	−0.0050*	−0.0050*	−0.0046	−0.0046
	(−1.83)	(−1.83)	(−1.59)	(−1.61)
BitcoinReturn	0.0184***	0.0191***	0.0143*	0.0148**
	(3.18)	(3.25)	(1.93)	(1.99)
CryptoHoldings	0.0195*	0.0193*	0.0178*	0.0175
	(1.86)	(1.84)	(1.66)	(1.63)
MarketVolatility	0.1389	0.1653	0.0252	0.1443
	(0.23)	(0.27)	(0.04)	(0.21)
BitcoinVolatility		−0.2466		−0.3687
		(−0.67)		(−0.84)
Intercept	0.1393***	0.1465***	0.0649	0.0859
	(6.59)	(6.17)	(0.76)	(0.97)
Year fixed effects	No	No	Yes	Yes
Observations	600	600	600	600
R-squared	0.0970	0.0977	0.1023	0.1034

This table reports the results of estimating equation (4) to assess the effect of the fair value model for crypto holdings on firm return volatility. Columns 1 and 2 report the results without fixed effects, and columns 3 and 4 report the results with year fixed effects included. Columns 1 and 3 report the results for equation (4), while columns 2 and 4 report the results including Bitcoin return volatility as an additional control variable. All variables are defined in appendix B. *t*-Statistics are presented in parentheses below the corresponding coefficients. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively (based on two-tailed tests).

ings (or earnings surprise), calculated as the difference between the firm's earnings per share (EPS) of quarter q and the analyst consensus forecast of quarter q immediately prior to the earnings announcement, scaled by the stock price two days before the earnings announcement date of quarter q. Due to limited analyst coverage for crypto-holding firms, this variable is only available for a subset of the sample, reducing the number of observations in this analysis to 173. *FV* is defined as before. *Control* includes all controls used in equation (4), with the exception of *MarketVolatility*. The coefficient of interest is β_3; a positive estimate would suggest that the use of the fair value model enhances crypto-holding firms' earnings informativeness.

Table 7 reports the results of estimating equation (5). Column 1 reports the baseline specification, including only *UE* as a regressor. While the ERC

TABLE 7
Earnings Informativeness and the Fair Value Model

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	*CAR*					
UE	−0.0013	−0.0012	0.0416	−0.0008	−0.0008	0.0332
	(−0.14)	(−0.12)	(0.09)	(−0.08)	(−0.08)	(0.07)
FV		0.7737	0.7555		0.7956	0.6877
		(0.98)	(0.95)		(0.99)	(0.85)
UE × FV		***−4.8055***	***−4.5503***		***−4.8058***	***−4.1095***
		(−1.03)	***(−0.97)***		***(−1.01)***	***(−0.86)***
MVE			0.0161			0.0148
			(0.92)			(0.83)
UE × *MVE*			−0.0368			−0.0334
			(−0.42)			(−0.37)
MTB			−1.2829			−1.2683
			(−0.69)			(−0.67)
UE × *MTB*			6.8905			6.7740
			(0.70)			(0.68)
Loss			0.0544			0.0490
			(0.82)			(0.72)
UE × *Loss*			−0.4611			−0.4569
			(−1.47)			(−1.43)
NFirms			0.0207			0.0318
			(1.11)			(1.49)
UE × *NFirms*			−0.0072			0.0034
			(−0.12)			(0.06)
Q4			0.0285			0.0301
			(1.36)			(1.40)
UE × *Q4*			−0.0215			−0.0190
			(−0.65)			(−0.57)
Beta			−0.0021			0.0033
			(−0.10)			(0.15)
UE × *Beta*			0.0296			0.0327
			(0.44)			(0.47)
BitcoinReturn			0.0019			−0.0117
			(0.13)			(−0.69)
UE × *BitcoinReturn*			−0.0278			−0.0306
			(−0.46)			(−0.50)
CryptoHoldings			0.0241			0.0238
			(0.90)			(0.88)
UE × *CryptoHoldings*			−0.1479			−0.1439
			(−1.02)			(−0.98)
Intercept	−0.0035	−0.0028	−0.0129	0.0163	0.0163	0.0614
	(−0.38)	(−0.30)	(−0.13)	(0.13)	(0.13)	(0.35)
Year fixed effects	No	No	No	Yes	Yes	Yes
Observations	173	173	173	173	173	173
R-squared	0.0001	0.0080	0.0944	0.0293	0.0358	0.1333

This table reports the results of estimating equation (5) to assess the effect of the fair value model for crypto holdings on earnings informativeness, for the subsample of firms with analyst coverage. Columns 1–3 report the results without fixed effects, and columns 4–6 report the results with year fixed effects included. Columns 1 and 4 report on the baseline ERC model, columns 2 and 5 report on the model adding an indicator for the fair value model and its interaction with *UE*, and columns 3 and 6 report on the fully interacted model. All continuous variables are standardized, and all variables are defined in appendix B. *t*-Statistics are presented in parentheses below the corresponding coefficients. *, **, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively (based on two-tailed tests).

literature typically finds a positive association between unexpected earnings and announcement returns—consistent with a positive earnings surprise leading to a more favorable market reaction—we do not observe this effect in our sample as *UE* carries an insignificant coefficient estimate. Column 2 adds *FV* and its interaction with *UE*. The coefficient on *UE* remains insignificant, and $\widehat{\beta}_3$, the coefficient estimate of interest on the interaction term, is also insignificant. Column 3 adds control variables and their interactions with *UE* and continues to show a statistically insignificant $\widehat{\beta}_3$. Columns 4–6 repeat the analyses in columns 1-3 including year fixed effects and report similar results. These results carry ambiguous implications. One possibility is that the market does not respond strongly to earnings reports for crypto-holding firms, making the choice of accounting model less relevant. Another possibility is that the use of the fair value model does not enhance earnings informativeness, at least within our sample.[21]

Combined, the results from our market-based tests suggest a potential cost without clear evidence of offsetting benefits. Although the fair value model under ASU 2023-08 is intended to make crypto-holding firms' financial reporting more closely reflect their underlying economics, we do not find evidence of improved earnings informativeness within our sample. At the same time, firms applying the fair value model appear to experience greater stock return volatility. The first finding should be interpreted with caution, as we also do not observe a significant ERC in the baseline specification for our sample firms.

6. *Conclusion*

Against the backdrop of ASU 2023-08, this paper conducts a comprehensive analysis of corporate crypto holdings. We document the rapid growth of these holdings, examine the diverse crypto accounting and disclosure choices preceding the ASU, explore the rationale behind these choices, and probe the market implications of the recognition model. Our finding of the exponential rise in crypto holdings, coupled with inconsistent accounting treatments, underscores the need for standardization. The issuance of ASU 2023-08 represents an important first step in addressing this need and achieving the benefits of comparable external financial reporting (De Franco, Kothari, and Verdi [2011], Fang, Iselin, and Zhang [2022]).

Our tests reveal three factors shaping firms' pre-ASU choices. First, firms viewed crypto assets as more akin to investments than intangible assets,

[21] While table 7 focuses on firms with analyst coverage—enabling a more accurate calculation of *UE* relative to market expectations—we also examine whether the choice of accounting model affects earnings informativeness for the full sample in untabulated analyses. For this robustness check, we proxy for *UE* using the change in EPS relative to the prior quarter and rely on the filing date instead of the earnings announcement date. We continue to observe no ERC to earnings surprises, and, in fact, find a negative effect of the fair value model on the ERC. However, the use of a more crude proxy for UE limits the strength of any inferences drawn from this analysis.

aligning with the fair value model mandated by ASU 2023-08. Second, clients of Big 4 auditors made more conservative recognition and presentation choices, a trend likely to persist post-ASU given large auditors' incentives to limit liability. Third, firms were more inclined to apply the fair value model and provide detailed disclosures when crypto market liquidity was higher. For in-scope tokens, liquidity remains relevant post-ASU 2023-08 as firms retain flexibility in fair value determination, similar to trigger determination under the impairment model. For excluded assets such as self-issued tokens, NFTs, and wrapped tokens, liquidity may matter even more given that these tokens are often obscure and thinly traded.

Furthermore, our market-based tests provide preliminary insights into the implications of applying fair value accounting to crypto holdings. Within our sample, we do not find evidence of improved earnings informativeness from the use of the fair value model—a result that warrants caution, given the lack of a significant ERC in the baseline specification. At the same time, firms applying the fair value model appear to experience greater stock return volatility. These results suggest a potential cost without a clearly observable benefit. However, the absence of a benefit prior to ASU 2023-08 does not preclude one from emerging later—particularly if the ASU, by promoting standardization, helps normalize corporate adoption of crypto assets and leads market participants to rely more on earnings reports when pricing crypto-holding firms. Nevertheless, our findings underscore the need for continued evaluation of the fair value model's implications as crypto adoption grows and the market matures (Fang [2024]).

APPENDIX A: CATEGORIZED FOOTNOTES

Footnote Name	Crypto Relevance	Footnote Name	Crypto Relevance
Accounting changes and error corrections	High	Liquidity management	High
Accounts payable and accrued liabilities	Low	Long-term debt	Low
Accounts receivable	Low	Mergers and acquisitions	Low
Advertising expenses	Low	Mining activities	High
Allowance for credit losses	Low	Non-cash activities	High
Basis of accounting and presentation	Low	Non-GAAP reconciliation	Low
Blockchain and technology	High	Non-monetary transactions	High
Capitalized software	Low	Organization and business description	Low
Cash and cash equivalents	High	Other assets and liabilities	High
Commissions	Low	Other income and expenses	Low
Commitments and contingencies	Low	Other revenues and expenses	Low
Compensation-related costs	Low	Post-retirement benefits	Low

Footnote Name	Crypto Relevance	Footnote Name	Crypto Relevance
Comprehensive income	Low	Prepaid expenses	Low
Consolidation policy	Low	Property, plant and equipment	High
Contracts and agreements	Low	Public utilities	Low
Cost of revenues	Low	Real estate assets	Low
COVID-19 policy	Low	Recent accounting pronouncements	Low
Cryptocurrencies	High	Regulatory requirements	Low
Custodied assets and collateral	High	Related party transactions	High
Deferred acquisition costs	Low	Repurchase agreements	Low
Deferred revenue	Low	Research and development expenses	Low
Discontinued operations	Low	Restructuring charges	Low
Earnings per share	High	Revenue recognition	Low
Fair value measurement	High	Risk management policy	High
Financial instruments	High	Segment reporting	Low
Foreign operations	Low	Share-based payments	Low
Going concern policy	Low	Shareholders' equity and capital	High
Goodwill and intangible assets policy	High	Statement of cash flows	Low
Insurance-specific disclosures	Low	Subsequent events	Low
Interest income	Low	Supplementary information	Low
Internal use software policy	Low	Taxes	Low
Inventory	Low	Use of estimates	High
Leases	Low		

APPENDIX B: VARIABLE DEFINITIONS

Variable	Definition
Dependent Variables and Subsample-Defining Variables	
FV	An indicator variable set to one if firm *i* applies the fair value model to its crypto holdings in quarter *q*, and zero otherwise.
LineItem	An indicator variable set to one if firm *i* separately presents its crypto holdings and/or crypto-related income on the balance sheet and/or income statement, respectively, in quarter *q*, and zero otherwise.
FirmVolatility	The standard deviation of firm *i*'s daily raw returns in quarter *q*.
CAR	The cumulative abnormal return for firm *i* at its quarterly earnings announcement, calculated as the sum of the firm's daily raw return (minus the corresponding CRSP value-weighted return) over the three-day window centered on the earnings announcement date of quarter *q*.
PreGuidance	An indicator variable set to one if the financial statement date for quarter *q* occurs before the third calendar quarter of 2018, and zero otherwise.
Key Independent Variables	
Investments	The ratio of investments-to-total assets as of the financial statement date for firm *i*-quarter *q*, where investments include all financial instruments classified as trading, available-for-sale, and held-to-maturity.

Key Independent Variables	
Intangibles	The ratio of the sum of intangible assets (excluding any crypto assets classified as intangible assets) and goodwill to total assets as of the financial statement date for firm *i*-quarter *q*.
Big4	An indicator variable set to one if firm *i* engages a Big 4 auditor (PwC, EY, KPMG, or Deloitte) to audit its financial statements for the fiscal year to which quarter *q* belongs, and zero otherwise.
BitcoinVolume	The average daily dollar trading volume of Bitcoin during quarter *q* (in billions).
UE	Unexpected earnings for firm *i*-quarter *q*, calculated as the difference between diluted earnings per share (EPS) for quarter *q* less the mean analyst consensus forecast of EPS, scaled by the stock price of the firm two days before the earnings announcement date of quarter *q*.
Control Variables	
BitcoinReturn	The cumulative buy-and-hold Bitcoin return of quarter *q*.
CryptoHoldings	The ratio of the fair value of crypto holdings-to-total assets as of the financial statement date for firm *i*-quarter *q*. The numerator takes, in order of preference based on availability, the disclosed fair value, the inferred fair value derived from disclosed inputs, or the book value of crypto holdings.
CryptoIncome	The ratio of the sum of the absolute value of income and loss from crypto-related transactions-to-the absolute value of net income or loss for firm *i*-quarter *q*.
MVE	The natural logarithm of the market value of equity as of the financial statement date for firm *i*-quarter *q*.
MTB	The ratio of market value of equity-to-book value of equity as of the financial statement date for firm *i*-quarter *q*.
ROA	Net income scaled by average total assets for firm *i*-quarter *q*.
Leverage	The sum of long-term debt and debt in current liabilities scaled by total assets as of the financial statement date for firm *i*-quarter *q*.
Loss	An indicator variable set to one if firm *i* has a net loss in quarter *q*, and zero otherwise.
NFirms	The number of firms in Compustat with the same two-digit SIC as firm *i* in quarter *q*.
Q4	An indicator variable set to one if quarter *q* is the fourth quarter of firm *i*'s fiscal year, and zero otherwise.
Beta	The market beta estimated using daily returns over (−365, −60) days relative to the earnings announcement date of firm *i*-quarter *q*.
BitcoinVolatility	The standard deviation of Bitcoin daily returns in quarter *q*.
MarketVolatility	The standard deviation of the CRSP value-weighted daily returns in quarter *q*.

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