WHEN ANALYSTS MEET CRYPTO: EVIDENCE FROM CORPORATE DISCLOSURE

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ABSTRACT

Improving the accounting and disclosure of crypto assets to provide decision useful information is the goal of FASB Accounting Standards Update (ASU) 2023-08. This study investigates whether firms' voluntary disclosure about their exposure to cryptocurrency is informative to financial analysts. Applying textual analysis to 8-K filings, I find that the intensity of firms' crypto-related disclosure is associated with more favorable target price revisions by analysts, but not near-term earnings forecast revisions. These findings imply that analysts perceive firms' crypto exposure to have a long-term benefit on firm value, but no immediate impact on operational performance. Cross-sectional analyses further show that analyst target price revisions contain more optimism when: 1) firms' crypto disclosure is related to corporate governance, and 2) firms' stock returns comove more closely with the cryptocurrency market returns. Finally, I find that analysts' target price revisions appear to enhance the stock market's positive reaction to firms' crypto-related disclosure in 8-K filings. My findings suggest the potential effectiveness of FASB's ASU for crypto assets.

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CHAPTER 1: INTRODUCTION

In this paper, I examine whether financial analysts respond to firms' voluntary disclosure about their exposure to cryptocurrency in 8-K filings (crypto-exposure hereafter).[1] Despite the dramatic surge of public interest in cryptocurrency and companies' exposure to it, research on the informativeness of crypto assets disclosure remains limited. Currently, cryptocurrency is recorded as an intangible asset with indefinite life, subject to impairment write-down but not write-up, even if the cryptocurrency's fair value later increases. Recognizing crypto assets as indefinite-lived intangible assets does not provide timely information for users. Recent FASB *Accounting Standards Update, Intangibles—Goodwill and Other—Crypto Assets (Subtopic 350-60)* requires firms to apply fair-value accounting for crypto assets and disclose details about their cryptocurrency holdings (FASB 2023). Effective in December 2024, FASB ASU 2023-08 aims to refine crypto asset accounting and disclosure in providing decision useful information for users. Some firms have already provided voluntary disclosure about their crypto exposure. Assessing whether firms' voluntary disclosure is informative to a sophisticated group of users—financial analysts—helps understand the potential effectiveness of mandatory disclosure with the upcoming FASB ASU 2023-08.

The paper is also motivated by the unsettled debate on cryptocurrency as merely hype or getting real. In Management Science's special issue on blockchains and crypto economics, Biais, Capponi, Cong, Gaur, and Giesecke (2023) calls for empirical studies that help understand whether the crypto sector is getting real or can get real. Some practitioners see the potential of blockchain-based cryptocurrency to change the way the economy operates, while others view it as hype. The proliferation of cryptocurrency coincides with a surge in public interest.

[1] Throughout the paper I use the term "crypto exposure" to refer to firms' 8-K disclosure of operating, investing, financing, and corporate governance activities that involve cryptocurrency.

"Dogecoin" and "Ethereum Price" are among the top 10 most searched news terms in 2021 (Google 2021). Google Trends reported "Bitcoin" as the second most searched global news term in 2017 (Google 2017). Perhaps not surprisingly, Deloitte's Global Blockchain Survey finds that leaders of the global financial services industry "view digital assets and their underlying blockchain technology as a strategic priority now and in the near future" (Deloitte 2021a, page 2). Brian Armstrong, the founder of the cryptocurrency platform Coinbase, believes that a true breakout in the cryptocurrency economy would arrive if Wall Street took it seriously (Roberts 2020). On January 10, 2024, the U.S. SEC approved eleven Bitcoin spot ETFS, enabling investors an easy way to add Bitcoin exposure to their investment portfolios. However, some sophisticated investors remain skeptical of the value of cryptocurrency. Warren Buffett called Bitcoin "probably rat poison squared" ahead of the Berkshire Hathaway annual shareholder meeting in 2018 and reaffirmed his aversion to cryptocurrencies because "cryptocurrencies basically have no value, and they don't produce anything" in an CNBC interview in 2020 (Bursztynsky 2020). Buffett's long-time business partner, Charlie Munger, further stated that Bitcoin is "disgusting and contrary to the interests of civilization" (Li 2021).

These controversial sentiments to cryptocurrency suggest the complexity and uncertainty underlying firms' exposure to cryptocurrency. Financial sophistication and knowledge of analysts prove to be valuable in the traditional stock market, especially when the uncertainty is high (Frankel, Kothari, and Weber 2006; Loh and Stulz 2011; Bradshaw, Ertimur, and O'Brien 2017). Several studies examine the role of ICO analysts in the setting of initial coin offerings (ICOs) and find the ICO analysts' ratings are associated with the functioning and the failure of ICOs (Bourveau, De George, Ellahie, and Macciocchi 2022; Florysiak and Schandlbauer 2022; Barth, Laturnus, Mansouri, and Wagner 2023). Studies on analysts' role in the traditional stock

market and the ICO market shed light on the importance of analysts' perspective on the potential impact of cryptocurrency on firm value, whereas empirical evidence remains limited on whether and how analysts incorporate firms' crypto exposure into their research output.

Ex-ante, it is unclear whether analysts view firms' crypto exposure as value-enhancing, value-destroying, or irrelevant. On the one hand, analysts may respond favorably to firms' crypto exposure. Cryptocurrency is one of the most recent FinTech innovations (Biais et al. 2023). A favorable view of innovation has been conveyed in early academic work, from Adam Smith's pin factory to Joseph Schumpeter's creative destruction, suggesting the importance of innovation for growth opportunities (Kempf and Spalt 2022). Recent studies have examined the value implications of FinTech innovations. Chen and Srinivasan (2023) find that adopting digital technologies increases firms' market value. Chen, Wu, and Yang (2019) find that most FinTech innovations generate substantial market value for innovators, with cryptocurrency and the underlying blockchain technology being considered as particular valuable innovations.[2]

On the other hand, analysts may react unfavorably to firms' crypto exposure. Cryptocurrency faces a highly uncertain regulatory environment. While some countries have adopted Bitcoin as official currency (e.g., El Salvador, Central African Republic), others have either banned (e.g., China) or plan to ban the trading and use of cryptocurrency (Corbet, Lucey, Urquhart, and Yarovaya 2019). In the U.S., the regulatory risk for cryptocurrency remains high. The SEC has significantly increased its resources and effort in the enforcement against initial coin offerings and heightened regulatory scrutiny on cryptocurrency (Sharma 2022). The potential pricing bubble is also a critical concern for the cryptocurrency market (Corbet et al.

[2] For example, a survey report of the World Economy in 2015 suggests that 10% of global GDP will be stored on blockchain technology (https://www.weforum.org/reports/deep-shift-technology-tipping-points-and-societal-impact).

2019). Cheah and Fry (2015) demonstrate that Bitcoin exhibits speculative bubbles and suggest that the fundamental price of Bitcoin should be zero. Moreover, cryptocurrency can be used to hide illegal transactions (Foley, Karlsen, and Putninš 2019). The regulatory risk and the speculative use of cryptocurrency indicate that exposure to cryptocurrency can harm firm value.

To empirically answer whether and how analysts respond to firms' crypto exposure, I apply textual analysis to all 8-K filings filed between January 2014 and September 2021. I identify 1,112 8-K filings from 223 U.S. public firms that contain crypto-related keywords and use the keyword count to capture the intensity of firms' crypto exposure. I examine analysts' responses to these 8-K flings through analyst target price revisions within five calendar days of the 8-K filing date because target price forecast reflects analysts' perceptions of firm value, making it a useful investment signal (Brav and Lehavy 2003; Bradshaw, Brown, and Huang 2013). If analysts interpret firms' crypto exposure positively, analysts will revise their target price forecasts upward, and vice versa. I also examine analysts' revision of one-year ahead annual earnings forecasts to assess whether analysts anticipate any immediate impact of crypto exposure on firms' near-term performance.[3]

I find that the keyword count is significantly and positively associated with analysts' target price forecast revisions, suggesting that analysts respond favorably to firms' crypto exposure in forecasting firms' stock prices. In the additional analysis, I extend the sample period to 2023 to include the recent crypto market downturn and continue to find a significantly positive association between analyst target price forecast revision and firms' crypto exposure. In contrast, I find *no* significant association between analysts' one-year ahead annual earnings forecast

[3] Target price forecasts incorporate analysts' expectations of future earnings in all periods, conveying information about firm value in the long run. In contrast, one-year annual earnings forecasts incorporate analysts' expectations of earnings in the next period, conveying information about firms' near-term performance.

revision and the crypto-related keyword count throughout the analysis, indicating that analysts do not perceive any immediate impact of crypto exposure on firms' earnings.

I then focus on cross-sectional analyses in the effect of firms' crypto exposure on analyst target price revisions. Prior studies find certain corporate governance arrangements to be value-enhancing in technology adoption (Bresnahan and Greenstein 1996; Bloom, Sadun, and Reenen 2012; Ashraf, Michas, and Russomanno 2020). I manually code the 8-K filings with crypto-related disclosure and classify them based on whether the disclosure is related to corporate governance such as board member selection. I find that the positive association between analyst target price forecast revisions and firms' crypto exposure is stronger when the firm has crypto-related corporate governance arrangement. This finding indicates that analysts view crypto-related expertise in top managers or board members as value-enhancing.

My second cross-sectional analysis examines the impact of the co-movement between a firm's stock returns and the returns in the cryptocurrency market on analyst target price revisions. This co-movement captures the degree to which a firm's fundamentals relate to the aggregate trend in the cryptocurrency market. I find that analysts revise their target price forecasts upward to a greater degree for firms with higher degrees of return co-movement. This evidence suggests that analysts view firms' crypto exposure as more valuable when firms' stock returns are more closely related to the cryptocurrency market.

Finally, I investigate whether analyst target price revisions have any incremental impact on investor reactions to the same 8-K filings with crypto-related disclosure. I find that analyst target price revisions strengthen the market's positive reaction to firms' crypto exposure. These findings imply that the market incorporates analysts' interpretation of firms' crypto exposure and reacts in the same direction. Various robustness tests alleviate the concerns that my results are

driven by confounding events such as earnings announcements, analysts' riding of cryptocurrency mania, and firms' disclosure styles.

My study makes several contributions. First, my findings provide evidence of the potential effectiveness of the updated accounting standards about crypto assets. The debate among lawmakers regarding how to oversee the booming digital asset market highlights the need to evaluate whether firms' voluntary disclosure of crypto assets is informative to the public (Schonberger 2022). I find a positive association between firms' crypto-related keyword counts in 8-K filings and analyst target price revision but not one-year ahead annual forecast revision, suggesting that firms' voluntary disclosure of crypto exposure is informative to analysts. However, the number of firms that voluntarily disclose crypto exposure is relatively small, and the content of disclosure varies across firms. The recent accounting standards of crypto assets can ensure a base level of transparency and comparability, offering more decision-useful information to capital market participants. The recent accounting standards of crypto assets mainly focus on firms' crypto holdings whereas firms' crypto exposure has various forms.[4] Future accounting policies may expand the scope and provide guidance on how to quantify the impact of other types of crypto exposure on financial reporting.

Second, my findings add to the emerging literature on cryptocurrency. The academic inquiry into crypto by finance and management scholars gets active since 2020 and research that answers the question whether crypto sector is hype or getting real is needed (Biais et al. 2023). Although studies in economics and finance offer some evidence on the factors relevant to the valuation of cryptocurrency (Cong, Li, and Wang 2021; Cong, He and Li 2021; Sockin and

[4] In its most recent accounting standard update of the project "Accounting for and Disclosure of Crypto Assets" (FASB, 2023), FASB requires firms to measure certain crypto assets at fair value each reporting period with changes in fair value recognized in net income and to disclose significant holdings, contractual sale restrictions, and changes during the reporting period.

Xiong 2023), accounting research on cryptocurrency is limited. Cheng, Franco, Jiang, and Lin (2019) provide early evidence on the market's reaction to firms' initial crypto-related disclosure in 8-K filings. Luo and Yu (2022) find that US firms recognize cryptocurrencies as intangible assets at cost and revalue them to reflect impairment loss without later upward adjustment, but Anderson, Fang, Moon, and Shipman (2022) find that US firms use both fair value accounting and accounting for indefinite-lived intangible assets for crypto assets. I find that firms' crypto-related disclosure in 8-K filings is informative to analysts. My findings also suggest that firms' crypto exposure is value-enhancing, adding evidence to the view that crypto is getting real.

Third, my study contributes to the literature on the role of analysts in corporate innovations (He and Tian 2013). Palmon and Yezegel (2012) document that analysts' stock recommendation revisions are more informative to investors for high R&D firms than for low R&D firms, suggesting that analyst research provides value to the valuation of innovative firms. Given the controversial views on cryptocurrency, it is not clear how analysts incorporate their perceptions of firms' crypto exposure into their research output. Using firms' voluntary disclosure of crypto exposure, I find that analysts respond favorably through their target price revisions, but not through their earnings forecasts. My findings suggest that analysts see long-term benefits from crypto exposure, which could encourage firms to engage in more innovations.

The rest of the paper proceeds as follows. Section 2 discusses the background of cryptocurrency and related literature. Section 3 describes the research design. Section 4 reports descriptive statistics, main results, and additional analyses. Finally, section 5 concludes.

CHAPTER 2: BACKGROUND AND RELATED LITERATURE

The earliest and the most popular cryptocurrency, Bitcoin, was originally introduced in a whitepaper by Nakamoto (2008) and came into existence in 2009 (Makarov and Schoar 2020). Since then, blockchain-based cryptocurrency has evolved rapidly, growing from nearly nothing to over $1 trillion in market capitalization in the past decade.[5] The proliferation of cryptocurrency coincides with surging public interests. Crypto terms such as "Bitcoin," "Dogecoin," and "Ethereum Price" became top searched news terms in recent years (Google 2017; Google 2021). As of March 2024, about 460 million unique Bitcoin wallets have been created (Duarte 2024).

Cryptocurrency has inspired a debate. Some see cryptocurrency and the underlying blockchain technology as the "greatest technological breakthroughs since the Internet" (Chavez-Dreyfuss and Connor 2014). Deloitte's (2021a, p2) Global Blockchain Survey finds that financial industry leaders view cryptocurrency and the underlying blockchain technology as "a strategic priority now and in the near future." The leaders are concerned that "their organization will lose an opportunity for competitive advantage" if they fail to adopt cryptocurrency and blockchain technology. Goldman Sachs has already backed their lending facility with Bitcoin (Yang 2022).

An emerging literature in economics and finance has offered some rationale for understanding the value of cryptocurrency (Cong, Li, and Wang 2021; Cong, He, and Li 2021; Sockin and Xiong 2023). Theoretical papers demonstrate that cryptocurrency has fundamental values which are anchored by the underlying utility values (Cong, Li, and Wang 2021; Sockin

[5] See https://coinmarketcap.com/.

and Xiong 2023).[6] Liu, Sheng, and Wang (2024) find that the technological sophistication of cryptocurrency drives the successes and valuations in initial coin offerings (ICO), suggesting that the value of cryptocurrency comes from their underlying innovative technologies. Therefore, having a stake in cryptocurrency can be an investment in the future of its innovative technologies. Taken together, these studies suggest that cryptocurrency has the potential to positively change the way the economy operates.

In contrast, others call blockchain-based cryptocurrency a "black hole" where investors' money disappears (Freifeld and Chavez-Dreyfuss 2015). Warren Buffett calls Bitcoin "rat poison squared" and believes that "cryptocurrencies basically have no value, and they don't produce anything" (Bursztynsky 2020). His long-time business partner, Charlie Munger, further stated that Bitcoin is "disgusting and contrary to the interests of civilization" (Li 2021). Also, many remain skeptical of the genuine innovativeness of cryptocurrency, not to mention their association with illegal activities such as money laundering and drug dealing (Narayanan and Clark 2017). Based on the estimation by Foley, Karlsen, and Putninš (2019), 46% (amounts to $76 billion per year) of Bitcoin transactions are serving illegal activities and approximately 25% of Bitcoin users are involved in illegal activities. Similarly, Amiram, Jørgensen, and Rabetti (2022) find evidence that cryptocurrency is used to finance terrorist attacks such as Sri Lanka Easter bombing.

Given the conflicting views, it is not surprising that cryptocurrency faces a highly uncertain regulatory environment. Although El Salvador and Central African Republic have adopted Bitcoin as legal tender, China has banned the use of cryptocurrency and other countries plan to ban it (Corbet et al. 2019). In the U.S., the regulatory risk for cryptocurrency is also high

[6] Cryptocurrencies can be the means of payment on digital platforms that support certain economic transactions. For example, Filecoin is a digital platform that allows users to exchange data storage space for its tokens.

because the SEC has significantly increased its resource and effort in the enforcement against initial coin offerings and heightened the scrutiny on stablecoins and other tokens (Sharma 2022).

Moreover, price manipulation is frequent in the cryptocurrency market, which can substantially distort the valuation of cryptocurrency (Griffin and Shams 2020). Griffin and Shams (2020) document that the growth of Tether, the largest pegged cryptocurrency, is supplied to investors as part of a scheme to inflate Bitcoin prices. Li, Shin, and Wang (2023) find that pump-and-dump schemes (P&Ds) infuse the cryptocurrency market and are harmful to cryptocurrency liquidity and prices. Cheah and Fry (2015) demonstrate that Bitcoin exhibits speculative bubbles and argue that the fundamental price of Bitcoin should be zero.

Despite the debate, an increasing number of companies are using cryptocurrency for operations, transactions, and investment (Deloitte 2021b). One telling example is MicroStrategy, a business intelligence company, which has raised the company's Bitcoin holding units to 214,246 as of March 18, 2024 (Shen 2024). While more and more companies dabble into the crypto space in the surge of cryptocurrency, whether and how such crypto exposure affects financial analysts' perceptions of firms' valuation in both the short-and the long-term remains underexplored.

As market intermediaries, financial analysts gather, interpret, and produce information, and they are central to the flow of information between firms and investors (Kothari, So, and Verdi 2016; Bradshaw, Ertimur, and O'Brien 2016). In the traditional stock market, analysts provide valuable research to the investment community, especially when either macro-level or firm-level uncertainty is high (Frankel et al. 2006; Loh and Stulz 2011, 2018). Recent few studies examine the role of ICO analysts on ICO markets and find that ICOs with higher ICO

analyst ratings are more successful (Bourveau et al. 2022; Florysiak and Schandlbauer 2022).[7] Given that analysts' view matters in both the traditional stock market and the ICO market, whether analysts support, discount, or ignore firms' exposure to cryptocurrency is likely to affect investors' beliefs and wealth allocation.

Prior literature finds mixed evidence on whether analysts embrace or dismiss corporate innovations. Amir, Lev, and Sougiannis (2003) use R&D intensity to measure corporate innovation and find that analyst earnings forecasts are more optimistically biased for firms with high R&D intensity. Li (2016) finds that analysts revise their long-term earnings growth forecasts upward when firms obtain new patents or trademarks. These findings suggest that analysts can convey favorable information about corporate innovations to investors. In contrast, He and Tian (2013) find that firms covered by a larger number of analysts generate fewer patents or produce patents with lower impact because managers exhibit myopia behavior and sacrifice firm innovation when analysts focus on short-term earnings and do not fully account for information in the long-term in their stock recommendations. They interpret this as the "dark side" of analyst coverage on corporate innovations because analysts' unfavorable views of corporate innovations can hinder firm value in the long run.

When it comes to cryptocurrency, one of the most recent FinTech innovations, it is also unclear whether analysts hold favorable views of firms' exposure to crypto-related activities. A favorable view of innovation has been conveyed in early academic work, from Adam Smith's pin factory to Joseph Schumpeter's creative destruction, suggesting the importance of innovation for growth opportunities (Kempf and Spalt 2022). FinTech innovations increase firm value by

[7] ICO analysts are experts in the ICO market who voluntarily provide their ratings based on multiple dimensions (e.g., team, vision, and product) in evaluating the overall prospects of ICOs to rating platforms such as ICObench (Bourveau et al. 2022; Barth et al. 2023).

facilitating growth opportunities and improving productivity (Brynjolfsson, Rock, and Syverson 2017; Cockburn, Henderson, and Stern 2018; Goldstein, Jiang, and Karolyi 2019; Chen et al. 2019). Chen et al. (2019) construct a measure of firm value that combines stock market responses with predicted firm-level innovation intensity by identifying FinTech innovations and classifying them based on their underlying technologies, using patent filings during 2003-2017. They find that FinTech innovations yield substantial value to firms, with cryptocurrency and blockchain technology being particularly valuable. In the meantime, the regulatory risk and the speculative use of cryptocurrency suggest that dabbling into the crypto space is likely to heighten firms' risks and jeopardize firm value. The objective of this paper is to provide empirical evidence by examining whether and how analysts revise beliefs when firms disclose their crypto exposure in 8-K filings.

Economist Robert Solow said in 1987 that "the computer age was everywhere except for the productivity statistics," (known as the Solow Paradox), suggesting that the benefits of IT adoption were not evident in the data yet because they took so long to realize (Krishnan, Mischke, and Remes 2018). Frictions (e.g., the requirement of developing organizational capabilities) in adopting new technology can also delay the benefits (Bresnahan and Greenstein 1996). More recently, Chen and Srinivasan (2023) find that adopting digital technologies increase long-term productivity (as reflected in the asset turnover three-years after digital disclosure) even if it decreases sales growth. Similarly, even if cryptocurrency benefits the firm, such benefits may take a long time to realize.

Target price forecasts "provide market participants with analysts' most concise and explicit statement on the magnitude of the firm's expected value" (Brav and Lehavy 2003, page 1933). Compared to near-term earnings forecasts, target price forecasts incorporate analysts'

long-term assessment of firms' earnings and risks (Bilinski, Lyssimachou, and Walker 2013). The nature that target price forecasts reflect analysts' beliefs of firms' prospects in the long run makes target price forecasts suitable for examining whether and how analysts respond to firms' crypto exposure. I also examine whether analysts revise their one-year ahead earnings forecasts when firms disclose their crypto exposure. This comparison allows me to examine whether crypto exposure affects analysts' expectations of firms' short-term or long-term performance.

Given the lack of regulation or rules governing firms' disclosure of their involvement in cryptocurrency, information regarding firms' exposure to cryptocurrency is limited. Firms' 8-K filings offer analysts a channel to assess firms' exposure to cryptocurrency in a timely fashion. A study by Cheng et al. (2019) examines the stock market reaction to firms' *initial* disclosure of crypto exposure. They find that investors react positively in the seven-day event window to 8-K filings that speculatively mention blockchain, cryptocurrency, or Bitcoin, but such reaction is reversed in the following 30 days. Their study provides early evidence on the market's reaction to the very first disclosure related to cryptocurrency.

A few other studies examine how firms account for their holdings of cryptocurrency. Luo and Yu (2022) compare the financial reporting for Bitcoin holding of U.S firms and international firms. They find that US firms recognize Bitcoin as intangible assets at cost and estimate the impairment loss without later upward adjustment while most firms under IFRS recognize Bitcoin as intangibles and inventories at fair value. Anderson et al. (2022) focus on U.S. firms' crypto holdings. They find that US firms use both fair value accounting and accounting for indefinite-lived intangible assets for crypto assets and that firms tend to make fair value disclosures when cryptocurrencies are more liquid.

My study differs from prior research (Cheng et al. 2019; Luo and Yu 2022; Anderson et al. 2022) on crypto-related disclosure in several aspects. Cheng et al. (2019) focus on the firm's initial mentioning of "blockchain", "bitcoin", or "cryptocurrency(ies)" in 8-K. However, the field of cryptocurrency is evolving rapidly over time, and so is firms' exposure to it. I expand the set of keywords to include both initial and subsequent crypto-related disclosure in 8-K filings to provide a broad and dynamic picture of firms' crypto exposure over time.[8] Unlike Cheng et al. (2019), who manually classify a firm's crypto-related disclosure as speculative or not speculative, I count the crypto-related keywords in 8-K to proxy for the intensity of the firm's crypto exposure. More importantly, I focus on how *analysts* react to firms' crypto-related disclosure because analysts are sophisticated market participants whose reactions can affect a broader set of market participants. By examining both the long-term evaluation of firm performance (e.g., target price forecast) and short-term evaluation of firm performance (e.g., one-year ahead annual earnings forecast) from analysts, I further shed light on whether the impact of exposure to cryptocurrency on firm performance is immediate or takes a longer period to realize, while such inferences cannot be disentangled via the market reaction test alone.

Luo and Yu (2022) manually collect 40 financial statements of public companies that hold Bitcoin for the year 2020 from bitcointreasuries.net. Anderson et al. (2022) search financial statements and manually collect 438 firm-quarter observations of U.S. firms that hold crypto during 2013-2021. Luo and Yu (2022) and Anderson et al. (2022) focus only on firms' crypto holdings—one specific type of crypto exposure. To have a comprehensive view on firms' extent of crypto exposure, I examine a broader spectrum of firms' crypto exposure that ranges from crypto holding to any of companies' involvement or risks associated with crypto.

[8] See Appendix A for details.

Whether analysts find crypto-related disclosure in 8-Ks useful is unclear. Easton, Ben-Repahael, Da, and Israelsen (2021) find that institutional investors may learn about information by means other than 8-K while retail investors seek information there. In this regard, as sophisticated market participants, financial analysts may find 8-K filings uninformative. On the other hand, information about firms' exposure to cryptocurrency is scarce because firms do not have to provide such disclosure. Ex-ante, whether and how analysts respond to firms' crypto-related disclosure in 8-K filings is an empirical question.

CHAPTER 3: RESEARCH DESIGN

3.1 Sample Selection

I use Python to extract all 8-K filings issued from the beginning of 2014 to September 2021 from the SEC EDGAR database. The sample period starts from 2014 because trading data of Bitcoin, the earliest cryptocurrency, became available in the last week of 2013. Following Cheng et al. (2019), I filter out crypto-related 8-K filings based on mentions of crypto-related keywords in both the body of the 8-K and the exhibits (where firms attach files such as investor presentation slides and press releases). Tables A.1 and A.2 in Appendix A reports the list of crypto-related keywords in my sample selection process.[9] The initial sample of 8-K filings is 560,612. I then apply textual analysis techniques to identify crypto-related 8-K filings and require firms to have necessary data from Compustat, I/B/E/S, and CRSP. This process leaves me with 1,112 8-K filings with crypto-related disclosure from 223 unique U.S. public firms. Table E.1A presents the annual number of crypto-related 8-K filings and firms from the beginning of 2014 to the third quarter of 2021. In 2014, 41 8-K filings of 10 firms contained crypto-related keywords. As of the end of September 2021, 246 8-K filings of 82 firms mentioned crypto-related keywords. Both the number of firms and the number of crypto-related 8-K filings have grown over the sample period.

I use keyword counts in each crypto-related 8-K filing to measure the intensity of firms' exposure to cryptocurrency. Table E.1B reports the annual distribution of keyword counts by categories. In total, there are 10,675 keyword hits in the 1,112 8-K filings with crypto-related

[9] Prior studies such as Chen, Wu, and Yang (2019) and Cheng, Franco, Jiang, and Lin (2019) do not isolate cryptocurrency from blockchain, so I include blockchain as one of the keywords in this paper. I select 10 cryptocurrencies based on their ranking at several points of time in 2021. See https://www.fool.com/the-ascent/cryptocurrency/articles/10-biggest-cryptocurrencies-of-2021/, https://www.cointracker.io/blog/top-10-crypto, and https://www.nasdaq.com/articles/decoding-crypto%3A-the-10-most-popular-cryptocurrencies-2021-08-05. To make the count of keywords less noisy, I do not include "tether" and "ripple" because these two words have multiple meanings and usually do not refer to cryptocurrency in 8-K filings based on manual verification.

keywords. The keyword count of blockchain is 5,279, consisting of 49.5% of the total keyword counts. The keywords in the category of cryptocurrency were mentioned 2,646 times and take 24.8% of the total keyword counts. The keyword count of Bitcoin is 2,574 which consists of 24.1% of the total keyword counts. These descriptive statistics are visualized in the word cloud presented in Figure B.1 of Appendix B.[10] To shed light on the content of firms' crypto exposure disclosed in 8-K filings, I examine the most frequent words used within 5 words before and within 5 words after each crypto-related keyword. The word cloud in Figure B.2 of Appendix B shows that crypto-related keywords are most frequently accompanied by "mining,", "technology," "platform," "customer," and "revenue," suggesting that firms' crypto exposure disclosed in 8-K filings and their exhibits are more (less) likely to be associated with crypto mining, new technology and operating activities (speculation).[11]

To answer the question of whether and how analysts respond to firms' exposure to cryptocurrency disclosed in 8-K filings, I obtain analyst target price forecasts and annual earnings forecasts from the I/B/E/S database. I first examine the analyst target price forecast revision issued within five calendar days of the 8-K filing date. I only keep the first target price forecast revision and drop the later ones if an analyst issues multiple target price forecasts for the same firm within the five-day window. After requiring non-missing value for my main variables, among 1,112 crypto 8-K filings for 223 firms, 118 firms (394 8-K filings) have at least one target price forecast revision within the five-day window of the 8-K filing date. Firms without any target price revision during the window are dropped. For the target price analysis, the sample contains 1,880 analyst target price forecast revisions. To shed light on whether analysts see any

[10] Appendix B presents word clouds for the most frequent words used surrounding crypto-related keywords in 8-K filings and their exhibits. Texts within 5 words' distance of a crypto-related keyword in each 8-K filing form the basis for the word clouds.
[11] Figure A.1 of Appendix A provides an example of firms' crypto-related 8-Ks and their exhibits.

near-term impact of firms' crypto exposure on their earnings, I also examine analysts' one-year ahead annual earnings forecast revisions issued within the same five-day window. Similarly, I use the first annual earnings forecast revision if an analyst issues multiple annual forecasts for the same firm. After dropping observations with missing values for the required variables, the sample for annual earnings forecast revisions contains 2,692 observations consisting of 349 8-K filings from 114 firms.

I further use data from Compustat, CRSP, and I/B/E/S to construct variables for other firm- or analyst-level characteristics. To mitigate the influence of potential outliers, I winsorize all the continuous variables at 1% and 99%.

3.2 Model Specification

3.2.1 Analyst Belief Revision and Firms' Crypto Exposure

To empirically test whether analysts revise their beliefs about firms' performance following crypto-related disclosure in 8-K filings, I estimate the following model:

$$AnalystRevision_{ijt} = \alpha + \beta_1 LnKeywordCount_{jt} + Controls + Fixed\ Effects + \varepsilon_{jit} \quad (1)$$

I construct two measures to capture analyst belief revision (*AnalystRevisionijt*). The first measure is *ChgTP*, defined as the difference between the current and prior target price forecast issued by the same analyst for the same firm, divided by the firm's stock price two trading days prior to the current target price forecast issuance date. Following the prior literature that examines analysts' response to firms' public disclosure (Kross and Suk 2012), I require the current target price forecast to be issued within five calendar days after an 8-K filing that contains crypto-related disclosure. The second measure is *RevAF*, defined as the difference between the current and prior one-year ahead annual earnings forecast issued by the same analyst for the same firm, divided by the firm's stock price two trading days prior to the current earnings

forecast issuance date. I require the current annual earnings forecast to be issued within five calendar days following an 8-K filing that contains crypto-related disclosure.

The main variable of interest is *LnKeywordCount*, which is the natural logarithm of one plus the number of crypto-related keywords in an 8-K filing and its exhibits. The list of crypto-related keywords is available in Appendix A. Rather than simply capturing the presence of crypto-related keywords, I use *LnKeywordCount* to capture the intensity of firms' crypto exposure. The higher the *LnKeywordCount*, the more crypto exposure the firm has.

I control factors known to affect analyst responses to public disclosures following prior research. Specifically, I control stock turnover (*Turnover*) because stock turnover is directly related to trading commissions and analysts have incentives to issue optimistic research output to facilitate trading and help their brokerage houses generate more trading commissions (Irvine 2004). Analysts incorporate firms' general risk (*RetSD*) into target price forecasts (Bilinski, Lyssimachou, and Walker 2013; Dechow and You 2020). Past winners may continue to perform well, and past losers may continue to perform poorly (Hong, Lim, and Stein 2000). To isolate the effect of momentum on analyst target price forecast, I control a firm's buy-and-hold abnormal returns in the past 12 months (*PastRet*). I control firm size (*LnAT*) because it is often used as a proxy for the amount of information publicly available to a firm (Zhang 2006) and firms' information environment is likely to affect analysts' output. I include revenue growth (*RevGrowth*) and market-to-book value of equity to capture a firm's growth opportunity (Bamber and Cheon 1998). I also control the number of analysts following the firm (*LnAnalyst*) because Bradshaw et al. (2019) find a positive association between the number of analysts following the firm and analysts' target price forecast optimism.

The individual analyst characteristics I control for include analysts' firm-specific forecasting experience (*Exp_Firm*), general forecasting experience (*Exp_General*), the number of firms an analyst covers (*LnNumFirms*), and the size of the brokerage house the analyst works for (*BrokerSize*). Clement (1999) finds that analysts' experience and brokerage size are positively associated with, while analysts' firm coverage is negatively associated with their forecast accuracy. Finally, I include year, industry, and analyst fixed effects to account for the time trend, and the impact of time-invariant industry and analyst characteristics that may not be fully captured by the control variables.

3.2.2 Cross-Sectional Analyses of Analyst Belief Revision

It is natural to expect that firms' crypto-related disclosure in 8-K filings is not equally informative to analysts. To explore possible cross-sectional variations in the effect of crypto-related disclosure, I focus on two dimensions, including the type of firms' crypto-related exposure and the comovement of firms' stock returns with cryptocurrency market returns. While my focus is mainly on analyst target price revisions, I also use analysts' annual earnings forecast revisions for the cross-sectional analyses.

Bresnahan and Greenstein (1996) highlight the importance of developing complementary organizational capabilities in technology adoption. Bloom et al. (2012) find that better people-management practices (e.g., performance evaluation, reward-punishment practices) in U.S. firms quite explained the productivity gap in information technology (IT) adoption between U.S. and European firms. Ashraf et al. (2020) find that IT expertise on the audit committee of a firm enhances both the reliability and timeliness of financial reporting, suggesting the benefits of board expertise in IT adoption. I manually code the crypto 8-K filings and classify them based on whether the underlying crypto exposure is associated with corporate governance such as board

member selection (*CorpGov*).[12] The variable of interest in this cross-sectional test is the interaction between *LnKeywordCount* and *CorpGov*.

Next, I examine whether analyst response to crypto-related disclosure varies with the degree of comovement between firms' stock returns and cryptocurrency returns. Cheng et al. (2019) find that stock returns of companies that have crypto exposure comove with Bitcoin returns, suggesting that the return comovement reflects how closely a firm's fundamentals are related to the trend in the cryptocurrency market. I construct two measures for the return comovement between the firm's stock returns and the returns of the cryptocurrency market. To start with, I collect trading data of cryptocurrencies available on https://coinmarketcap.com/ for the period 12/31/2013-9/30/2021. Following Liu, Tsyvinski, and Wu (2022), I exclude the cryptocurrency whose market capitalization is less than $1 million. To calculate cryptocurrency returns, I require the cryptocurrency to have price information. I measure the initial cryptocurrency market returns as the value-weighted returns of all the underlying cryptocurrencies and construct the cryptocurrency market returns as the difference between the initial cryptocurrency market returns and the risk-free rate (i.e., the one-month Treasury bill rate). I measure return comovement during the period from 252 trading days before to 6 trading days before the crypto-related 8-K filing issuance date (i.e., [-252, -6]). The first measure of return comovement (*Comove_Coef*) is the *coefficient* on the cryptocurrency market returns when I regress the firm's risk-free rate adjusted returns on the Fama-French three factors and the cryptocurrency market returns. The second measure of return comovement (*Comove_Corr*) is the

[12] Examples include the appointment of managers or board members with expertise in cryptocurrency and blockchain technologies, the use of Bitcoin as part of top management's compensation, and the change of the corporate name to make it crypto-related.

Pearson correlation between the firm's risk-free rate adjusted returns and the cryptocurrency market returns.

3.2.3 The Impact of Analyst Belief Revision on Market Reaction to Firms' Exposure

To understand the impact of analyst target price revisions surrounding firms' crypto-related disclosure, I assess whether analyst target price forecast revisions affect investors' reactions to crypto-related 8-K filings. I estimate the following model:

$$BHAR\_FF3_{jt} = \alpha + \beta_1 LnKeywordCount_{jt} + \beta_2 LnKeywordCount_{jt} \times AvgChgTP_{jt} + Controls + Fixed\ Effects + \varepsilon_{it} \quad (2)$$

Following Cheng et al. (2019), I use buy-and-hold abnormal returns (*BHAR_FF3*) adjusted for the Fama-French three-factor model to capture the market reaction from three trading days before to three trading days after the crypto-related 8-K filing date (i.e., [-3, 3]). *AvgChgTP* is the average target price forecast revisions issued during the trading-day period [-3, 3] around the crypto-related 8-K filing date by any analysts who follow the same firm. I code *AvgChgTP* as zero if there is no analyst target price forecast revision during the period [-3,3]. The variable of interest is the interaction between *LnKeywordCount* and *AvgChgTP*.

CHAPTER 4: RESULTS

4.1 Summary Statistics and Main Results

Table E.2 presents the summary statistics for the target price revision sample, annual earnings forecast revision sample, and the sample for the market reaction test, respectively. Table E.2A shows that the mean (median) of analysts' target price revision (*ChgTP*) is 0.041 (0.051), suggesting that on average analysts revise their target price forecasts upward within five days of firms' crypto-related 8-K filing date. Table E.2B shows that the mean (median) of analysts' annual earnings forecast revision (*RevAF*) is 0.000 (0.001). The summary statistics for the rest of the variables in Table E.2A and Table E.2B are similar, indicating that firms in the target price revision sample and the annual earnings forecast revision sample are similar. In Table E.2C, the mean of *BHAR_FF3* is 0.004 and the median is -0.014. Table E.3 reports the Pearson correlations for the variables in the target price forecast revision sample, the main sample for the subsequent analyses. The Pearson correlation between *ChgTP* and *LnKeywordCount* is significantly positive, providing some evidence that analysts view firms' crypto disclosure favorably by revising their target price forecast upward.

Table E.4 presents regression results of model (1), where I focus on the analysts' belief revision in response to firms' crypto disclosure in 8-K filings. Column (1) of Table E.4 shows that the coefficient on *LnKeywordCount* is significantly positive. Holding constant other firm- and analyst-level characteristics, a 1 percentage point increase in the number of crypto-related keywords in 8-K flings will increase analysts' target price revision by 1.7 percentage points. This finding suggests that analysts respond favorably to firms' crypto-related disclosure by incorporating the positive view into their assessment of firms' long-term performance (i.e., target price forecast). As a contrast, column (2) estimates the effect of firms' crypto-related disclosure

on analysts' one-year ahead annual earnings forecast revision. Interestingly, there is no significant association between *LnKeywordCount* and *RevAF*, suggesting that analysts do not see any immediate impact of firms' crypto exposure on earnings.

4.2 Results of Cross-sectional Analyses

Tables E.5 and E.6 report the results of cross-sectional analyses that focus on variations in analysts' target price forecast revision conditional on the characteristics of 8-K filings and the firm. As a contrast, I also present cross-sectional results of analysts' annual earnings forecast revision. Table E.5 reports the results of the cross-sectional analysis conditional on whether the firm's crypto exposure disclosed in 8-K filings is related to corporate governance. In column (1), it shows that the coefficient on the interaction between *LnKeywordCount* and *CorpGov* is significantly positive, suggesting that analysts respond more favorably to firms' crypto exposure associated with corporate governance (e.g., the appointment of board members with expertise in cryptocurrency and blockchain) compared to other types of exposure. Not surprisingly, the coefficient on the term on the interaction between *LnKeywordCount* and *CorpGov* is insignificant in column (2). This finding indicates that analysts do not see any immediate impact of crypto exposure on firms' earnings regardless of the types of exposure.

Table E.6 reports the results of the cross-sectional analysis based on the comovement between the firm's stock return and the cryptocurrency market return. I focus on analyst target price forecast revision in columns (1) and (2). I find that the coefficient on the interaction between *LnKeywordCount* and *Comove_Coef* is significantly positive in column (1). In column (2), the coefficient on the interaction between *LnKeywordCount* and *Comove_Corr* is also significantly positive. These findings suggest that when firms are more fundamentally related to cryptocurrency, analysts perceive their crypto-related disclosure in 8-K filings as more valuable

and revise target price forecasts upward to a greater degree. In columns (3) and (4), I report the results of analysts' earnings forecast revision. The coefficient on the interaction between *LnKeywordCount* and the return comovement measure is insignificant in columns (3) and (4), suggesting that analysts do not consider firms' crypto exposure to have an immediate impact even if such exposure is fundamental.

4.3 Results of Market Reaction Test

So far, my analyses show that analysts revise target price forecasts upward following firms' crypto disclosure in 8-K filings, suggesting analysts perceive firms' crypto exposure to have a positive impact on firm performance in the long run. In this section, I investigate whether analysts' favorable view about firms' crypto exposure affects investors' reaction to firms' exposure. As a baseline, columns (1) and (2) in Table E.7 report the market reaction to firms' crypto-related disclosure in 8-K filings. The coefficient on *LnKeywordCount* is significantly positive in both columns, suggesting that the greater the firms' crypto exposure, the more positive the market reaction is. More importantly, as shown in columns (3) and (4), the coefficients on *LnKeywordCount* and the interaction between *LnKeywordCount* and *AvgChgTP* are both significantly positive. This means that when analysts revise target price forecast to a larger degree, market reaction to firms' crypto disclosure is greater, suggesting investors incorporate analysts' favorable view about firms' crypto disclosure in decision making and react in the same direction as analysts. As robustness tests, I replace the dependent variable *BHAR_FF3* with three alternative measures: *BHAR_Madj* (i.e., buy-and-hold abnormal return adjusted for the value-weighted market return), *BHAR_M* (i.e., buy-and-hold abnormal return adjusted for the market model), and *BHAR_FF3M* (i.e., buy-and-hold abnormal return adjusted

for the model with Fama-French three-factors and the momentum). I rerun the regressions of the market reaction test. As shown in Table E.8, the results are quantitatively the same.[13]

4.4 Robustness Tests

In this section, I conduct multiple robustness tests to further check the validity of my inferences. Specifically, I run multiple tests to mitigate the concerns that my results are driven by (1) confounding events such as earnings announcements, (2) analysts' riding of crypto mania, (3) the firm's disclosure style in 8-K filings and their exhibits, and (4) the firm's blockchain exposure.

To alleviate the concern that analysts' favorable target price forecast revision in response to firms' crypto exposure disclosed in 8-K is driven by confounding events such as earnings announcements, I further control the earnings news around the 8-K filing date (*EarningNews*), whether the 8-K filing contains the item 2.02 Results of Operations and Financial Condition (*Item202*), and the information content of the 8-K filing (*ItemCount*). Table E.9 shows that both my main results and cross-sectional results hold when controlling for confounding events.

An alternative explanation to analysts' favorable target price forecast revision in response to firms' crypto exposure is that analysts are riding the price mania of cryptocurrency. To rule out this alternative explanation, I control the momentum of crypto market return prior to the analysts' target price revisions (*CAR_Crypto* and *BHAR_Crypto*). As shown in Table E.10, my inferences remain. This analysis suggests that my results are less likely to be driven by analysts riding the cryptocurrency's price mania but more likely reflect the possibility that analysts view firms' crypto exposure as value-enhancing.

[13] The inferences remain the same when I replace the buy-and-hold-abnormal return with the cumulative abnormal return (CAR). The results are untabulated.

Instead of proxying for the intensity of firms' crypto exposure, the number of crypto-related keywords in 8-K flings may capture firms' disclosure styles of simply providing information in detail. If the latter is the case, a greater amount of crypto-related keyword counts reveals more information about firm's crypto exposure but not necessarily the extent of the firm's crypto exposure. Detailed crypto-exposure information is likely to help analysts better predict firms' prospects both in the short-term and in the long run, and therefore, is likely to improve the accuracy of analysts' target price forecasts and annual earnings forecasts. However, in Table E.11, there is no significant association between analyst forecast accuracy and the count of crypto-related keywords in both columns, suggesting that the number of crypto-related keywords is more likely to capture firms' crypto exposure rather than firms' disclosure styles.

Finally, to further isolate analysts' reaction to firms' crypto-exposure, I conduct the main analysis within a subsample where the 8-K filings contain all the other crypto-related keywords except for blockchain. In Table E.12, I continue to find that analysts revise their target price forecasts upward in response to firms' crypto exposure but do not do so with their annual earnings forecasts, suggesting that my results are explained by firms' crypto exposure rather than simply driven by analysts' reaction to blockchain technology.

4.6 Exploratory Analysis Using the Extended Sample

The cryptocurrency landscape has undergone rapid transformations since 2022, characterized by a prolonged bear market in the cryptocurrency industry and dramatic events such as the collapse of FTX. To have a more complete picture of analysts' views, I investigate analysts' perspective for firms' crypto exposure over a longer sample period that includes crypto market downturns. Examining this difference is helpful for understanding analysts' rationale in responding to firms' crypto exposure. If analysts' views hold throughout crypto market

fluctuations, analysts are more likely to view crypto exposure as having profound strategic implications on firm value. Otherwise, analysts are more likely to view firms' crypto exposure as speculative and ride the crypto mania in their forecasts.

To answer this question, I extract additional SEC 8-K filings for the period 10/1/2021 – 12/31/2023. Using the same set of keywords as in the original sample selection process, I filtered out 1,130 crypto-related 8-K filings that can be matched with firm identifiers (e.g., GVKEY, PERMNO, TICKER) in Compustat, I/B/E/S, and CRSP. This leaves me with 2,242 crypto-related 8-K filings from 1/1/2014 to 12/31/2023 in total.[14] I obtain analyst target price forecasts and one-year ahead annual earnings forecasts issued during 1/1/2014 – 12/31/2023 from I/B/E/S. After requiring the sample to have non-missing value for control variables, the full sample consists of 3,646 target price revisions issued within five calendar days following 809 crypto-related 8-K filings from 217 firms. As a comparison, there are 4,932 one-year ahead annual earnings forecasts revisions issued within five calendar days following 731 crypto-related 8-K filings from 208 firms.

Table E.13 presents regression results using the full sample. Column (1) shows that the coefficient on *LnKeyword* is significantly positive and the magnitude of the coefficient on *LnKeyword* is comparable to that in Table E.4. Overall, analysts respond favorably to firms' crypto exposure in their target price forecast revision during 2014-2023. Column (2) shows that

[14] As shown in Appendix D, there are 445,870 SEC 8-K filings during 1/1/2014 – 12/31/2023 that can be matched with firm identifiers in Compustat, I/B/E/S, and CRSP and have non-missing firm level control variables. 2,032 are crypto-related and 443,838 are non-crypto-related 8-K filings. There are significant differences in firm characteristics between crypto-related and non-crypto related 8-K filings evidenced by t-test for difference in mean. Crypto-related 8-K filings are more likely to be growth firms that have a smaller size, a lower number of analyst following, and a higher growth rate. Considering the significant difference between two groups of firms, parallel consumption does not hold for a DID like research design that includes non-crypto related 8-K filings as a control group in the analyses. Instead, I focus on crypto-related 8-K filings throughout the analyses and focus on the variation in firms' crypto exposure captured by the number of crypto-related keyword counts.

there is no significant association between firms' crypto exposure and analysts' one-year ahead annual earnings forecast revision.

CHAPTER 5: CONCLUSION

This study examines whether and how financial analysts respond to firms' crypto exposure. With the surge in public interest, cryptocurrency has stimulated a debate. On the one hand, cryptocurrency has the potential to change the way the economy operates. On the other hand, it can be hype where bubbles and fraud pervade. Despite the conflicting views, more and more firms are dabbling into the crypto space. While research in economics and finance has examined both the potential value of cryptocurrency and the associated downside risks, the impact of crypto exposure on firm value is not obvious. Given the uncertain and complex nature of cryptocurrency, it is important to understand analysts' interpretation of firms' crypto exposure because analysts' research output is more valuable in circumstances of high uncertainty (Loh and Stulz 2011, 2018).

Applying the textual analysis to 8-K filings filed between January 2014 and September 2021, I identify 1,112 8-K filings that contain crypto -related keywords from 223 unique U.S. public firms. I find a positive association between analyst target price forecast revisions and the count of crypto-related keywords in the 8-K filings, suggesting that analysts view a higher level of crypto exposure as having a positive effect on firm value in the long run. In the additional analysis, I extend the sample period to 2023 to include the recent crypto market downturn and continue to find a significantly positive association between analyst target price forecast revision and firms' crypto exposure. In contrast, crypto exposure does not affect analysts' near-term earnings forecasts because analyst earnings forecast revisions are not associated with the intensity of firms' crypto exposure.

Further cross-sectional analyses show that the positive association between analysts' target price revision and firms' crypto exposure is stronger when firms' crypto exposure is

related to corporate governance such as appointing the board of directors with crypto-related expertise. The positive association between target price revision and crypto exposure is also stronger when firms' stock returns comove more closely with cryptocurrency market returns. Interestingly, when I conduct similar cross-sectional analyses using analysts' one-year ahead annual earnings forecast revisions, I do not find any cross-sectional variations. My final analysis examines the incremental impact of analyst target price forecast revisions on the market's reaction to firms' crypto exposure. I find that analyst target price revisions appear to enhance the market's positive reaction to firms' crypto exposure disclosed in the 8-K filings.

This study enhances our understanding of how firms' exposure to cryptocurrency affects analysts' perceptions of firm value and the role analysts play in affecting investor reactions to firms' crypto exposure. Collectively, my paper provides evidence that firms' crypto exposure disclosed in 8-K filings is informative to financial analysts, suggesting that carefully designed disclosure rules from regulators can offer more decision-useful information to capital market participants. My findings also have implications for investors' wealth allocation. To have a stake in growth opportunities associated with crypto-related FinTech innovations, investors may consider holding shares of public companies that have crypto exposure.

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APPENDIX A. CRYPTO-RELATED KEYWORDS AND 8-K FILINGS

Table A.1 List of Crypto-related Keywords

The search of keywords in 8-K filings is case-insensitive and considers plurals when applying the regular expression in Python.

Category	List of crypto-related keywords
Blockchain	"blockchain"
Cryptocurrency	"cryptocurrency", "crypto asset", "digital currency"
Bitcoin	"bitcoin"
Ethereum	"ethereum"
Litecoin	"litecoin"
Other coins	"cardano", "polkadot", "bitcoin cash", "chainlink", "binance coin", "dogecoin", "usd coin"

Table A.2. Selection of Crypto-related 8-K Filings

Total number of 8-K filings issued during 1/1/2014-9/30/2021	560,612
Excluding:	
8-Ks without crypto-related keywords	(557,955)
8-Ks with an irrelevant mention of crypto-related keywords (e.g., mention Bitcoin in the section of SEC header)	(55)
Firms with unavailable Compustat Identifier (i.e., GVKEY)	(861)
Firms with unavailable I/B/E/S Identifier (i.e., TICKER)	(490)
Firms with unavailable CRSP Identifier (i.e., PERMNO)	(123)
Combining 8-K filings released on the same day of the same firm into one record	(16)
Number of crypto-related 8-K filings	1,112

Figure A.1 Crypto Excerpts from Mechanical Technology, Incorporated (“MTI”) 8-K and Exhibit

Excerpts from Mechanical Technology, Incorporated (“MTI”) crypto-related 8-K and its exhibit filed on 4/12/2021.

Item 1.01 Entry into a Material Definitive Agreement.

The Company's indirect subsidiary, EcoChain Block, LLC (“EcoChain Block”), executed and entered into a purchase agreement, dated April 11, 2021 (the “Purchase Agreement”), providing for the purchase of equipment which is expected to deliver throughput of 11.2 Pethash in SHA-256 Bitcoin miners and 235 Gigahash in Scrypt Litecoin miners. The total purchase price payable for these miners is $702,700, $507,850 which is being paid, in cash, and the remaining portion which will be paid by the issuance of restricted shares of the Company's common stock having an aggregate value of $194,850. The seller of the equipment has agreed to host the equipment temporarily until such time as the equipment is placed into our own facility. Power used by us in connection with our operation of the equipment will be charged to us by the seller, at cost, and is expected to average 2.3 cents kwh for 83% up time with a nominal overhead charge to reimburse for certain operating costs. The consummation of the transactions described in the Purchase Agreement is expected to occur on April 12, 2021.

The foregoing description of the Purchase Agreement is qualified in its entirety by reference to the full text of such Purchase Agreement, the form of which is attached as Exhibit 10.1 to this Current Report on Form 8-K (this “Form 8-K”), and which is incorporated herein in its entirety by reference. Certain identified information has been redacted from Exhibit 10.1 because it is both not material and is the type that the Company treats as private or confidential.

Item 8.01 Other Events.

On April 12, 2021, the Company issued a press release announcing EcoChain Block's execution and entering into the Purchase Agreement. A copy of the press release is filed as Exhibit 99.1 to this Form 8-K and is incorporated in this Item 8.01 by reference.

This Form 8-K and Exhibit 99.1 contain forward-looking statements. Forward-looking statements include, but are not limited to, statements that express the Company's intentions, beliefs, expectations, strategies, predictions or any other statements related to the Company's future activities, or future events or conditions. These statements are based on current expectations, estimates and projections about the Company's business based, in part, on assumptions made by its management. These statements are not guaranties of future performance and involve risks, uncertainties and assumptions that are difficult to predict. Therefore, actual outcomes and results may differ materially from what is expressed or forecasted in the forward-looking statements due to numerous factors, including those risks that may be included in documents that the Company files from time to time with the SEC. Any forward-looking statements speak only as of the date on which they are made, and the Company undertakes no obligation to update any forward-looking statement to reflect events or circumstances after the date of this Form 8-K, except as required by law.

Item 9.01. Financial Statements and Exhibits.
(d) Exhibits

Exhibit No.	Description
10.1	Form of Purchase Agreement, dated April 11, 2021.#
99.1	Press Release of Mechanical Technology, Incorporated dated April 12, 2021.

EX-99.1 3 g082131_ex99-1.htm EXHIBIT 99.1

Exhibit 99.1

EcoChain, Inc. Adds Immediate Capacity,
Reiterates 50MW 2021 Target

ALBANY, N.Y., April 12, 2021 /PRNewswire/ – EcoChain, Inc. (“EcoChain”), a wholly-owned subsidiary of Mechanical Technology, Incorporated (“MTI” or the “Company”), (NASDAQ: MKTY), a cryptocurrency mining business powered by renewable energy, today announced the acquisition of approximately 11.2 Petahash in SHA-256 Bitcoin miners and 235 Gigahash in Scrypt Litecoin miners for use by the Company and EcoChain in connection with the planned growth of MTI's cryptocurrency mining business.

- As of the close of business today, this capacity will be on-line and operational.
- Consideration paid was $545 thousand in cash and approximately $210 thousand in common shares, for a total purchase price of $755 thousand.
- The negotiated power cost is $.023 per kWh for 83% uptime.

“We believe that this transaction is highly advantageous and will help to drive our return on invested capital. This purchase provides EcoChain with the equipment required to support MTI's planned expansion of its cryptocurrency mining business. Based on our development pipeline, we remain confident that by the end of 2021 we will have approximately 50MW of high ROI, green, ultra-low cost capacity,” said Michael Toporek, CEO of MTI.

APPENDIX B. FREQUENT WORDS AROUND CRYPTO-RELATED KEYWORDS

Texts within 5 words' distance of a crypto-related keyword in 8-K filings and their exhibits for period 1/1/2014 – 9/30/2021 are the basis of word clouds. Word size represents a word's number of occurrences in the texts. In plotting the word cloud, Figure B.1 includes crypto-related keywords and Figure B.2 excludes crypto-related keywords.

Figure B.1 Word Cloud with Crypto-related Keywords

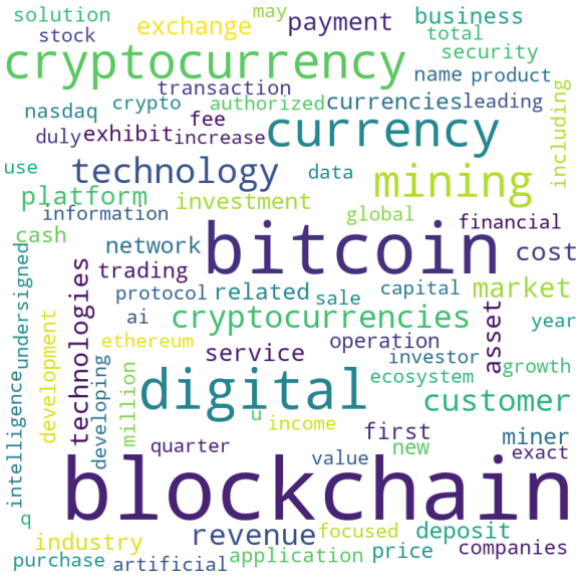
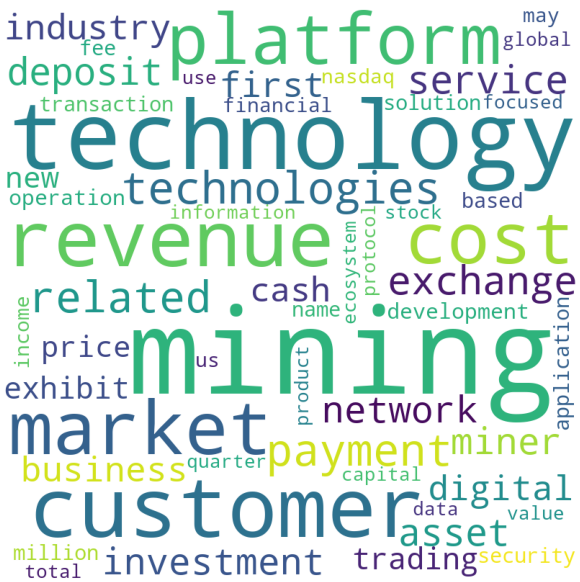


Figure B.2 Word Cloud without Crypto-related Keywords



APPENDIX C. VARIABLE DEFINITION

Table C.1 Variable Definition

Variable	Definition
BHAR_FF3	Buy-and-hold abnormal return adjusted for the Fama-French three-factor model for the [-3, 3] trading days relative to the 8-K filing date.
BHAR_FF3M	Buy-and-hold abnormal return adjusted for the model with Fama-French three factors and the momentum for the [-3, 3] trading days relative to the 8-K filing date.
BHAR_M	Buy-and-hold abnormal return adjusted for the market model for the [-3, 3] trading days relative to the 8-K filing date.
BHAR_Madj	Buy-and-hold abnormal return adjusted for the value-weighted market return for the [-3, 3] trading days relative to the 8-K filing date.
ChgTP	The difference between the current and prior target price forecast issued by the same analyst for the same firm, scaled by stock price two trading days prior to the current target price forecast announcement date.
RevAF	The difference between the current and prior one-year ahead annual earnings forecast issued by the same analyst for the same firm, scaled by stock price two trading days prior to the current earnings forecast announcement date.
TPAccuracy	Negative one times the absolute value of the difference between current target price and the forecast horizon end stock price, scaled by stock price two trading days prior to the current target price announcement date.
AFAccuracy	Negative one times the absolute value of the difference between current one-year ahead annual earnings forecast and the actual earnings per share, scaled by stock price two trading days prior to the current earnings forecast announcement date.
AvgChgTP	The average of analyst target price forecast revisions (i.e., *ChgTP*) for the same firm issued during [-3, 3] trading days relative to the 8-K filing date. *AvgChgTP* is coded as zero if there is no analyst target price forecast revision for the firm during [-3, 3] trading days relative to the 8-K filing date.
BrokerSize	The natural logarithm of one plus the number of analysts in a year working for the brokerage that the analyst is associated with as recorded in I/B/E/S.
BHAR_Crypto	The market adjusted buy-and-hold abnormal cryptocurrency market return for the [-21, -6] trading days relative to the 8-K filing date, where the cryptocurrency market return is the value-weighted return of all the underlying cryptocurrencies adjusted by risk-free rate.
CAR_Crypto	The market adjusted cumulated abnormal cryptocurrency market return for the [-21, -6] trading days relative to the 8-K filing date, where the cryptocurrency market return is the value-weighted return of all the underlying cryptocurrencies adjusted by risk-free rate.
Comove_Coef	The coefficient on the cryptocurrency market return when regressing the firm's risk-free rate adjusted return on Fama-French three factors and the cryptocurrency market return for the [-252, -6] trading days relative to the 8-K filing date, where the cryptocurrency market return is the value-weighted return of all the underlying cryptocurrencies adjusted by risk-free rate.
Comove_Corr	The Pearson correlation coefficient between the firm's risk-free rate adjusted return and the cryptocurrency market return for the [-252, -6] trading days relative to the 8-K filing date, where the cryptocurrency market return is the value-weighted return of all the underlying cryptocurrencies adjusted by risk-free rate.
CorpGov	An indicator that equals one if the firm's crypto exposure disclosed in the 8-K filing is related to corporate governance and zero otherwise.
EarningsNews	The difference between the actual earnings per share announced within 5 days prior to the 8-K filing date and the median of analyst forecasts issued within 30 days before the earnings announcement date, scaled by the stock price at the beginning of the quarter of the 8-K filing date. *EarningsNews* is set to zero if there is no earnings announcement within 5 days prior to the 8-K filing date of the firm.
Exp_Firm	Time interval in years since an analyst provides the first earnings forecast for the underlying firm as recorded in I/B/E/S.

Table C.1 (cont'd)

Exp_General	Time interval in years since an analyst provides the first earnings forecast as recorded in I/B/E/S.
Item202	An indicator that equals one if the 8-K filing contains the item 2.02 Results of Operations and Financial Condition and zero otherwise.
ItemCount	Number of different items in the 8-K filing.
LnAnalyst	The natural logarithm of one plus the number of analysts following the firm.
LnAT	The natural logarithm of total assets.
LnKeywordCount	The natural logarithm of one plus the number of crypto-related keywords in an 8-K filing and its exhibits.
LnNumFirms	The natural logarithm of one plus the number of firms an analyst covers.
MB	The ratio of the market value of equity to the book value of equity.
PastRet	Buy-and-hold abnormal return adjusted for the value-weighted market return for the [-252, -6] trading days relative to the 8-K filing date.
RetSD	The standard deviation of daily stock returns of a firm for the [-252, -6] trading days relative to the 8-K filing date.
RevGrowth	The annual growth of total revenues in the past year.
Turnover	The average of the daily stock turnovers of a firm for the [-252, -6] trading days relative to the 8-K filing date.

APPENDIX D. FIRM CHARACTERISTICS FOR 8-K FILINGS

Table D.1 Firm Characteristics For 8-K Filings

The table below presents summary statistics of firm characteristics of 8-K filings issued during 1/1/2014 – 12/31/2023 that can be matched with firm identifiers in Compustat, I/B/E/S, and CRSP and have non-missing firm level control variables. Two sample t tests are used to examine the main difference between firm characteristics of crypto-related and non-related 8-K filings. Variables are defined in Appendix C.

	Non-crypto-related 8-K filings		**Crypto-related 8-K filings**			
	N	**Mean**	**N**	**Mean**	**Mean difference**	**t value**
Turnover	443,838	0.01	2,032	0.04	-0.03	-74.90
RetSD	443,838	0.03	2,032	0.05	-0.02	-46.20
PastRet	443,838	-0.03	2,032	0.07	-0.10	-9.00
LnAnalyst	443,838	2.00	2,032	1.61	0.39	19.50
LnAT	443,838	21.12	2,032	20.52	0.60	12.25
MB	443,838	3.28	2,032	3.82	-0.54	-3.30
RevGrowth	443,838	0.22	2,032	0.60	-0.37	-19.50

APPENDIX E: TABLES OF EMPIRICAL RESULTS

Table E.1 Distribution of Crypto-related 8-K Filings and Keyword Counts

This table presents the distribution of crypto-related 8-K filings and keyword counts for the period from January 2014 to September 2021. Table E.1A shows the distribution of 1,112 8-K filings containing crypto-related keywords by firms over time. Table E.1B exhibits the number of crypto-related keywords by category over time. The category of crypto-related keywords is defined in Appendix A.

Table E.1A Distribution of 8-K Filings Containing Crypto-related Keywords by Firms Over Time

Year	Number of 8-K Filings Containing Crypto-related Keywords	Number of Firms
2014	41	10
2015	25	13
2016	54	19
2017	93	31
2018	293	100
2019	191	68
2020	169	44
2021	246	82

Table E.1B Distribution of Crypto-related Keyword Counts Disclosed in 8-K Filings

Year	Blockchain	Cryptocurrency	Bitcoin	Ethereum	Litecoin	Other coins	Total
2014	21	66	309	0	2	6	404
2015	21	115	146	0	0	0	282
2016	312	37	42	0	0	0	391
2017	652	269	139	39	9	1	1,109
2018	1,275	524	296	27	27	9	2,158
2019	521	226	163	5	4	3	922
2020	944	576	336	3	1	1	1,861
2021	1,533	833	1,143	36	3	0	3,548
Total	5,279	2,646	2,574	110	46	20	10,675

Table E.2 Summary Statistics

This table reports summary statistics of variables used in the analyses. Table E.2A reports the summary statistics of variables for the target price revision sample. Table E.2B reports the summary statistics of variables for the annual earnings forecast revision sample. Table E.2C reports the summary statistics of variables for the sample of the market reaction test. Continuous variables are winsorized at 1% and 99%. All variables are defined in Appendix C.

Table E.2A Summary Statistics of the Target Price Revision Sample

	N	Mean	SD	Min	p25	Median	p75	Max
ChgTP	1,880	0.041	0.187	-0.613	-0.029	0.051	0.120	0.731
LnKeywordCount	1,880	1.351	0.932	0.693	0.693	1.099	1.609	4.394
Turnover	1,880	0.019	0.020	0.002	0.007	0.011	0.025	0.107
RetSD	1,880	0.027	0.015	0.009	0.015	0.025	0.033	0.088
PastRet	1,880	0.398	0.921	-0.619	-0.091	0.128	0.527	5.984
Exp_Firm	1,880	5.580	4.722	0.000	1.892	4.240	8.241	22.151
Exp_General	1,880	16.255	10.787	0.170	7.659	13.952	23.248	37.827
LnAnalyst	1,880	3.066	0.898	0.000	2.773	3.401	3.689	3.989
LnNumFirms	1,880	2.956	0.507	1.099	2.773	3.045	3.277	3.892
BrokerSize	1,880	3.900	1.017	1.099	3.219	4.078	4.718	5.485
LnAT	1,880	23.132	1.876	17.276	22.190	22.970	24.091	28.561
MB	1,880	6.296	35.393	-283.393	3.183	8.041	16.934	48.348
RevGrowth	1,880	0.196	0.263	-0.199	-0.010	0.150	0.309	1.438
CorpGov	1,880	0.012	0.110	0.000	0.000	0.000	0.000	1.000
Comove_Coef	1,877	0.013	0.030	-0.039	-0.006	0.007	0.030	0.152
Comove_Corr	1,877	0.081	0.104	-0.101	0.003	0.070	0.137	0.359

Table E.2B Summary Statistics of the Annual Earnings Forecast Revision Sample

	N	Mean	SD	Min	p25	Median	p75	Max
RevAF	2,692	0.000	0.009	-0.046	-0.001	0.001	0.002	0.033
LnKeywordCount	2,692	1.322	0.901	0.693	0.693	1.099	1.609	4.394
Turnover	2,692	0.018	0.020	0.002	0.007	0.011	0.022	0.107
RetSD	2,692	0.027	0.015	0.009	0.015	0.026	0.032	0.098
PastRet	2,692	0.360	0.984	-0.655	-0.092	0.086	0.421	6.272
Exp_Firm	2,692	5.961	5.224	0.005	1.956	4.588	8.645	27.403
Exp_General	2,692	17.060	10.819	0.318	8.175	15.248	25.393	37.868
LnAnalyst	2,692	3.048	0.934	0.000	2.862	3.401	3.638	3.989
LnNumFirms	2,692	2.960	0.501	1.099	2.773	3.045	3.258	3.892
BrokerSize	2,692	3.885	0.938	1.099	3.219	3.932	4.691	5.485
LnAT	2,692	23.215	1.965	17.276	22.227	22.970	24.662	28.561
MB	2,692	3.812	42.326	-283.393	2.185	7.685	16.845	48.348
RevGrowth	2,692	0.188	0.252	-0.199	-0.010	0.137	0.296	1.438
CorpGov	2,692	0.013	0.113	0.000	0.000	0.000	0.000	1.000
Comove_Coef	2,692	0.013	0.028	-0.040	-0.005	0.008	0.030	0.146
Comove_Corr	2,692	0.084	0.099	-0.101	0.012	0.073	0.147	0.324

Table E.2C Summary Statistics of the Sample for Market Reaction Test

	N	Mean	SD	Min	p25	Median	p75	Max
BHAR_FF3	1,087	0.004	0.205	-0.450	-0.089	-0.014	0.048	1.009
LnKeywordCount	1,087	1.577	1.027	0.693	0.693	1.099	2.079	4.754
Turnover	1,087	0.049	0.072	0.001	0.006	0.012	0.066	0.294
RetSD	1,087	0.054	0.039	0.009	0.022	0.043	0.077	0.195
LnAnalyst	1,087	1.478	1.192	0.000	0.693	1.099	2.303	3.850
LnAT	1,087	20.165	2.830	15.563	17.479	19.949	22.359	26.824
MB	1,087	4.550	9.008	-35.891	1.286	3.253	6.925	49.466
RevGrowth	1,087	1.031	4.951	-0.882	-0.053	0.054	0.287	30.765
AvgChgTP	1,087	0.007	0.184	-1.179	0.000	0.000	0.010	0.636

Table E.3 Pearson Correlations of the Target Price Revision Sample

This table reports Pearson correlations of the variables for the target price revision sample. ***, **, and * denote significance at 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) *ChgTP*	1.000								
(2) *LnKeywordCount*	0.192***	1.000							
(3) *Turnover*	-0.010	0.296***	1.000						
(4) *RetSD*	0.092***	0.324***	0.675***	1.000					
(5) *PastRet*	0.230***	0.318***	0.562***	0.553***	1.000				
(6) *Exp_Firm*	-0.010	-0.270***	-0.195***	-0.226***	-0.210***	1.000			
(7) *Exp_General*	0.047*	-0.053*	0.010	0.038	-0.045*	0.392***	1.000		
(8) *LnAnalyst*	0.057*	0.063**	-0.007	-0.247***	-0.112***	0.179***	0.067**	1.000	
(9) *LnNumFirms*	-0.036	-0.016	-0.007	-0.015	-0.045	0.120***	0.337***	0.066**	1.000
(10) *BrokerSize*	-0.008	-0.024	-0.103***	-0.173***	-0.036	0.114***	-0.010	0.078***	0.064**
(11) *LnAT*	-0.003	-0.122***	-0.432***	-0.500***	-0.211***	0.290***	0.032	0.374***	0.019
(12) *MB*	0.061**	0.143***	0.084***	0.090***	0.088***	-0.120***	-0.060**	0.080***	-0.012
(13) *RevGrowth*	0.083***	0.444***	0.345***	0.309***	0.341***	-0.174***	-0.031	0.187***	-0.018
(14) *CorpGov*	-0.006	-0.058*	-0.014	0.060**	-0.029	-0.052*	-0.012	-0.128***	0.017
(15) *Comove_Coef*	0.118***	0.319***	0.283***	0.469***	0.248***	-0.110***	0.032	-0.006	0.007
(16) *Comove_Corr*	0.195***	0.245***	0.187***	0.485***	0.234***	-0.061**	0.058*	0.069**	0.017

Table E.3 (cont'd)

	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(10) *BrokerSize*	1.000						
(11) *LnAT*	0.121***	1.000					
(12) *MB*	-0.021	-0.018	1.000				
(13) *RevGrowth*	-0.050*	-0.213***	0.262***	1.000			
(14) *CorpGov*	-0.049*	-0.192***	0.017	-0.029	1.000		
(15) *Comove_Coef*	-0.058*	-0.231***	0.048*	0.267***	-0.047*	1.000	
(16) *Comove_Corr*	-0.067**	-0.127***	0.018	0.363***	-0.032	0.779***	1.000

Table E.4 Analyst Revision and Crypto Exposure

This table reports regression results of analysts' revision within five calendar days following firms' crypto exposure disclosed in 8-K filings. I estimate the following model: $AnalystRevision_{ijt} = \alpha + \beta_1 LnKeywordCount_{jt} + Controls + Fixed\ Effects + \varepsilon_{jit}$. The dependent variable used in column (1) is *ChgTP*, which is the difference between the current and prior target price forecast issued by the same analyst for the same firm, deflated by stock price two trading days prior to the current target price forecast announcement date. The dependent variable used in column (2) is *RevAF*, which is the difference between the current and prior one-year ahead annual earnings forecast issued by the same analyst for the same firm, deflated by stock price two trading days prior to the current earnings forecast announcement date. *LnKeywordCount* is the natural logarithm of one plus the number of crypto-related keywords in an 8-K filing and its exhibits. All variables are defined in Appendix C. Standard errors are clustered at the analyst level, and t-statistics (two-tailed test) are shown in the parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% levels.

	(1)	(2)
Variables	*ChgTP*	*RevAF*
LnKeywordCount	**0.017****	**0.000**
	(2.45)	(0.66)
Turnover	-2.090***	-0.017
	(-2.84)	(-0.85)
RetSD	0.174	-0.061
	(0.20)	(-1.10)
PastRet	0.078***	0.001***
	(5.70)	(3.74)
Exp_Firm	0.002	-0.000
	(1.13)	(-1.23)
Exp_General	-0.025	0.000
	(-1.56)	(0.49)
LnAnalyst	0.010	0.000
	(0.97)	(0.22)
LnNumFirms	-0.009	-0.001
	(-0.39)	(-1.09)
BrokerSize	-0.026*	0.000
	(-1.70)	(0.50)
LnAT	-0.002	-0.000
	(-0.50)	(-0.11)
MB	0.000***	0.000*
	(5.10)	(1.74)
RevGrowth	-0.081***	0.002
	(-2.96)	(0.99)
Constant	0.580*	-0.005
	(1.94)	(-0.32)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Analyst Fixed Effects	Yes	Yes
Observations	1,880	2,692
Adjusted R-squared	0.260	0.181

Table E.5 Cross-sectional Analysis: Crypto-related Disclosure on Corporate Governance

This table reports the results of the cross-sectional analysis based on whether firms' crypto exposure disclosed in 8-K filings related to corporate governance. I estimate the following model: $BHAR\_FF3_{jt} = \alpha + \beta_1 LnKeywordCount_{jt} + \beta_2 LnKeywordCount_{jt} \times AvgChgTP_{jt} + Controls + Fixed\ Effects + \varepsilon_{it}$. The dependent variable used in column (1) is *ChgTP*, which is the difference between the current and prior target price forecast issued by the same analyst for the same firm, deflated by stock price two trading days prior to the current target price forecast announcement date. The dependent variable used in column (2) is *RevAF*, which is the difference between the current and prior one-year ahead annual earnings forecast issued by the same analyst for the same firm, deflated by stock price two trading days prior to the current earnings forecast announcement date. *LnKeywordCount* is the natural logarithm of one plus the number of crypto-related keywords in an 8-K filing and its exhibits. *CorpGov* is an indicator that equals 1 if the firm's crypto exposure disclosed in the 8-K filing is related to corporate governance and zero otherwise. All variables are defined in Appendix C. Standard errors are clustered at the analyst level, and t-statistics (two-tailed test) are shown in the parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% levels.

Variables	(1) *ChgTP*	(2) *RevAF*
LnKeywordCount	**0.016****	**0.000**
	(2.40)	(0.61)
LnKeywordCount × CorpGov	**0.249*****	**-0.005**
	(3.41)	(-0.76)
CorpGov	-0.210**	0.009
	(-2.52)	(1.28)
Turnover	-1.938***	-0.012
	(-2.73)	(-0.61)
RetSD	0.215	-0.062
	(0.24)	(-1.10)
PastRet	0.077***	0.001***
	(5.63)	(3.73)
Exp_Firm	0.002	-0.000
	(1.16)	(-1.27)
Exp_General	-0.028*	0.001
	(-1.66)	(0.67)
LnAnalyst	0.012	0.000
	(1.09)	(0.08)
LnNumFirms	-0.006	-0.001
	(-0.26)	(-1.14)
BrokerSize	-0.024	0.000
	(-1.58)	(0.58)
LnAT	-0.002	0.000
	(-0.45)	(0.28)
MB	0.000***	0.000*
	(5.13)	(1.67)
RevGrowth	-0.082***	0.002
	(-2.95)	(1.05)
Constant	0.593*	-0.009
	(1.95)	(-0.62)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Analyst Fixed Effects	Yes	Yes
Observations	1,880	2,692
Adjusted R-squared	0.263	0.183

Table E.6 Cross-sectional Analysis: Degree of Comovement between Stock Returns and Cryptocurrency Market Returns

This table reports the results of the cross-sectional analysis based on the degree of comovement between firms' stock returns and the cryptocurrency market returns. I estimate the following model: $AnalystRevision_{ijt} = \alpha + \beta_1 LnKeywordCount_{jt} + \beta_2 LnKeywordCount_{jt} \times Comove_{jt} + \beta_3 Comove_{jt} + Controls + Fixed\ Effects + \varepsilon_{jit.}$ The dependent variable used in columns (1) and (2) is *ChgTP*, which is the difference between the current and prior target price forecast issued by the same analyst for the same firm, deflated by stock price two trading days prior to the current target price forecast announcement date. The dependent variable used in columns (3) and (4) is *RevAF*, which is the difference between the current and prior one-year ahead annual earnings forecast issued by the same analyst for the same firm, deflated by stock price two trading days prior to the current earnings forecast announcement date. *LnKeywordCount* is the natural logarithm of one plus the number of crypto-related keywords in an 8-K filing and its exhibits. *Comove* is proxied by *Comove_Coef* and *Comove_Corr*. *Comove_Coef* is the coefficient on the cryptocurrency market return when regressing the firm's risk-free rate adjusted return on Fama-French three factors and the cryptocurrency market return for the [-252, -6] trading days relative to the 8-K filing date. *Comove_Corr* is the Pearson correlation coefficient between the firm's risk-free rate adjusted return and the cryptocurrency market return for the [-252, -6] trading days relative to the 8-K filing date. The cryptocurrency market return is the value-weighted return of all the underlying cryptocurrencies adjusted by the risk-free rate. All variables are defined in Appendix C. Standard errors are clustered at the analyst level, and t-statistics (two-tailed test) are shown in the parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% levels.

	ChgTP		*RevAF*	
Variables	(1)	(2)	(3)	(4)
LnKeywordCount	0.006	0.004	0.001	0.001
	(0.80)	(0.52)	(1.21)	(1.55)
LnKeywordCount × Comove_Coef	**0.362****		**0.003**	
	(2.47)		(0.16)	
Comove_Coef	-0.364		-0.038	
	(-1.06)		(-1.35)	
LnKeywordCount × Comove_Corr		**0.104*****		**-0.002**
		(2.60)		(-0.67)
Comove_Corr		0.186**		-0.015***
		(2.00)		(-2.65)
Turnover	-2.039***	-1.590**	-0.016	-0.024
	(-2.72)	(-2.20)	(-0.82)	(-1.25)
RetSD	-0.214	-1.546	-0.051	-0.052
	(-0.24)	(-1.54)	(-0.90)	(-0.93)
PastRet	0.076***	0.075***	0.001***	0.001***
	(5.45)	(5.37)	(3.84)	(4.06)
Exp_Firm	0.002	0.001	-0.000	-0.000
	(1.06)	(0.87)	(-1.24)	(-1.23)
Exp_General	-0.025	-0.045***	0.001	0.001
	(-1.59)	(-2.82)	(0.58)	(0.64)
LnAnalyst	0.008	0.005	0.000	0.000
	(0.74)	(0.42)	(0.66)	(0.85)
LnNumFirms	-0.006	-0.012	-0.001	-0.001
	(-0.27)	(-0.50)	(-0.90)	(-0.77)
BrokerSize	-0.028*	-0.027*	0.000	0.000
	(-1.87)	(-1.73)	(0.65)	(0.59)
LnAT	-0.001	-0.004	-0.000	0.000
	(-0.30)	(-1.06)	(-0.03)	(0.26)
MB	0.000***	0.001***	0.000*	0.000**

Table E.6 (cont'd)

	(4.91)	(5.13)	(1.91)	(2.22)
RevGrowth	-0.084***	-0.114***	0.001	0.002
	(-3.04)	(-4.18)	(0.63)	(1.27)
Constant	0.584**	1.029***	-0.008	-0.010
	(2.01)	(3.40)	(-0.55)	(-0.67)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Analyst Fixed Effects	Yes	Yes	Yes	Yes
Observations	1,877	1,877	2,692	2,692
Adjusted R-squared	0.263	0.274	0.186	0.189

Table E.7 Market Reaction Test

This table reports the results of market reaction to firms' crypto-related 8-K filings. I estimate the following two models for columns (1)-(2) and columns (3)-(4), respectively: $BHAR\_FF3_{jt} = \alpha + \beta_1 LnKeywordCount_{jt} + Controls + Fixed\ Effects + \varepsilon_{jt}$, and $BHAR\_FF3_{jt} = \alpha + \beta_1 LnKeywordCount_{jt} + \beta_2 LnKeywordCount_{jt} \times AvgChgTP_{jt} + Controls + Fixed\ Effects + \varepsilon_{it}$. The dependent variable *BHAR_FF3* is the buy-and-hold abnormal return adjusted for the Fama-French three-factor model for the [-3, 3] trading days relative to the 8-K filing date. *LnKeywordCount* is the natural logarithm of one plus the number of crypto-related keywords in an 8-K filing and its exhibits. *AvgChgTP* is the average of analyst target price forecast revision (i.e., *ChgTP*) for the same firm issued during [-3, 3] trading days relative to the 8-K filing date. *AvgChgTP* is coded as zero if there is no analyst target price forecast revision for the firm during [-3, 3] trading days relative to the 8-K filing date. All variables are defined in Appendix C. Standard errors are clustered at the firm level in columns (1) and (3) and are clustered at the industry level in columns (2) and (4). t-statistics (two-tailed test) are shown in the parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% levels.

	BHAR_FF3			
Variables	(1)	(2)	(3)	(4)
LnKeywordCount	**0.034*** **	**0.030*** **	**0.030*** **	**0.025*** **
	(2.98)	(4.26)	(2.65)	(2.95)
LnKeywordCount × AvgChgTP			**0.066** **	**0.058** **
			(2.10)	(2.38)
AvgChgTP			0.042	0.063
			(0.56)	(1.21)
Turnover	-0.945*	-0.457**	-0.881*	-0.408**
	(-1.75)	(-2.22)	(-1.68)	(-2.10)
RetSD	-0.408	-0.157	-0.511	-0.245
	(-0.45)	(-0.47)	(-0.55)	(-0.77)
LnAnalyst	0.001	0.009**	0.010	0.010**
	(0.02)	(2.52)	(0.27)	(2.34)
LnAT	0.037	-0.005**	0.033	-0.006***
	(1.34)	(-2.13)	(1.19)	(-3.02)
MB	-0.000	-0.001*	-0.000	-0.001**
	(-0.08)	(-1.70)	(-0.19)	(-2.27)
RevGrowth	0.003	0.001	0.002	0.001
	(1.01)	(0.77)	(0.83)	(0.67)
Constant	-0.730	0.074	-0.656	0.114*
	(-1.30)	(1.22)	(-1.17)	(1.98)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	No	Yes	No	Yes
Firm Fixed Effects	Yes	No	Yes	No
Observations	1,087	1,087	1,087	1,087
Adjusted R-squared	-0.020	0.036	0.005	0.059

Table E.8 Robustness of Market Reaction Test

This table reports the results of market reaction to firms' crypto-related 8-K filings with alternative market reaction measures. Panel A and Panel B estimate the following models, respectively: $BHAR\_FF3_{jt} = \alpha + \beta_1 LnKeywordCount_{jt} + Controls + Fixed\ Effects + \varepsilon_{jt}$, and $BHAR\_FF3_{jt} = \alpha + \beta_1 LnKeywordCount_{jt} + \beta_2 LnKeywordCount_{jt} \times AvgChgTP_{jt} + Controls + Fixed\ Effects + \varepsilon_{it}$. In both Table E.8A and Table E.8B, the dependent variable in columns (1) and (2) is buy-and-hold abnormal return adjusted for the value-weighted market return (*BHAR_Madj*). In columns (3) and (4), the dependent variable is buy-and-hold abnormal return adjusted for the market model (*BHAR_M*). In columns (5) and (6), the dependent variable is buy-and-hold abnormal return adjusted for the model with Fama-French three factors and the momentum (*BHAR_FF3M*). All three dependent variables are measured during the [-3, 3] trading days relative to the 8-K filing date. *LnKeywordCount* is the natural logarithm of one plus the number of crypto-related keywords in an 8-K filing and its exhibits. *AvgChgTP* is the average of analyst target price forecast revision (i.e., *ChgTP*) for the same firm issued during [-3, 3] trading days relative to the 8-K filing date. *AvgChgTP* is coded as zero if there is no analyst target price forecast revision for the firm during [-3, 3] trading days relative to the 8-K filing date. All variables are defined in Appendix C. Standard errors are clustered at the firm level in columns (1), (3) and (5), and are clustered at the industry level in columns (2), (4) and (6). t-statistics (two-tailed test) are shown in the parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% levels.

Table E.8A Market Reaction to Firms' Crypto Exposure

	BHAR_Madj		*BHAR_M*		*BHAR_FF3M*	
Variables	(1)	(2)	(3)	(4)	(5)	(6)
LnKeywordCount	**0.038*** **	**0.035*** **	**0.035*** **	**0.031*** **	**0.034*** **	**0.029*** **
	(3.22)	(5.30)	(3.42)	(4.84)	(2.94)	(4.05)
Turnover	-0.859	-0.459*	-0.998*	-0.531**	-0.939*	-0.467**
	(-1.56)	(-1.99)	(-1.82)	(-2.71)	(-1.75)	(-2.31)
RetSD	0.257	0.352	-0.218	-0.027	-0.561	-0.260
	(0.28)	(1.22)	(-0.24)	(-0.07)	(-0.66)	(-0.88)
LnAnalyst	-0.021	0.004	-0.006	0.008**	-0.001	0.009***
	(-0.55)	(0.88)	(-0.17)	(2.28)	(-0.04)	(3.17)
LnAT	0.053**	0.000	0.042	-0.004	0.033	-0.006***
	(2.08)	(0.16)	(1.57)	(-1.52)	(1.14)	(-2.83)
MB	-0.000	-0.001	0.000	-0.001	0.000	-0.001*
	(-0.30)	(-1.10)	(0.00)	(-1.45)	(0.06)	(-1.77)
RevGrowth	0.003	0.001	0.003	0.001	0.003	0.002
	(1.03)	(0.61)	(1.06)	(0.77)	(0.97)	(0.78)
Constant	-1.044**	-0.047	-0.827	0.051	-0.635	0.103**
	(-2.07)	(-0.71)	(-1.54)	(0.71)	(-1.09)	(2.07)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	No	Yes	No	Yes	No	Yes
Firm Fixed Effects	Yes	No	Yes	No	Yes	No
Observations	1,087	1,087	1,087	1,087	1,087	1,087
Adjusted R-squared	-0.030	0.031	-0.016	0.040	-0.019	0.039

Table E.8B The Effect of Analyst Target Price Revision on Market Reaction to Firms' Crypto Exposure

	BHAR_Madj		*BHAR_M*		*BHAR_FF3M*	
Variables	(1)	(2)	(3)	(4)	(5)	(6)
LnKeywordCount	**0.034*** **	**0.030*** **	**0.032*** **	**0.026*** **	**0.030*** **	**0.025*** **
	(2.89)	(3.77)	(3.01)	(3.29)	(2.62)	(2.79)
LnKeywordCount × AvgChgTP	**0.062** **	**0.053** **	**0.062***	**0.052** **	**0.065** **	**0.057** **
	(2.08)	(2.35)	(1.96)	(2.21)	(2.06)	(2.33)
AvgChgTP	0.075	0.107*	0.059	0.085	0.044	0.064
	(0.93)	(1.91)	(0.72)	(1.49)	(0.59)	(1.24)
Turnover	-0.790	-0.405*	-0.934*	-0.481**	-0.875*	-0.417**
	(-1.47)	(-1.82)	(-1.75)	(-2.59)	(-1.68)	(-2.20)
RetSD	0.148	0.250	-0.321	-0.119	-0.664	-0.347
	(0.16)	(0.90)	(-0.34)	(-0.33)	(-0.76)	(-1.25)
LnAnalyst	-0.011	0.005	0.003	0.009**	0.008	0.010***
	(-0.28)	(0.96)	(0.09)	(2.12)	(0.22)	(2.85)
LnAT	0.048*	-0.002	0.038	-0.006**	0.029	-0.008***
	(1.90)	(-0.90)	(1.41)	(-2.35)	(1.01)	(-3.85)
MB	-0.000	-0.001*	-0.000	-0.001*	-0.000	-0.001**
	(-0.46)	(-1.71)	(-0.11)	(-1.89)	(-0.05)	(-2.27)
RevGrowth	0.003	0.001	0.002	0.001	0.002	0.001
	(0.85)	(0.50)	(0.87)	(0.64)	(0.78)	(0.68)
Constant	-0.964*	0.003	-0.752	0.094	-0.561	0.142***
	(-1.90)	(0.04)	(-1.40)	(1.37)	(-0.97)	(3.14)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	No	Yes	No	Yes	No	Yes
Firm Fixed Effects	Yes	No	Yes	No	Yes	No
Observations	1,087	1,087	1,087	1,087	1,087	1,087
Adjusted R-squared	0.002	0.063	0.010	0.065	0.006	0.062

Table E.9 Analyst Revision and Crypto Exposure after Controlling Confounding Events

This table reports regression results of analysts' revision within five calendar days following firms' crypto exposure disclosed in 8-K filings after controlling confounding events. Columns (1) – (3) add *EarningsNews*, *Item202*, *ItemCount*, respectively, to control for confounding events. Table E.9A reports the baseline regression results. Table E.9B reports the cross-sectional results related to corporate governance. Table E.9C and Table E.9D report the cross-sectional results related to the degree of comovement between stock return and the cryptocurrency market return. All variables are defined in Appendix C. Standard errors are clustered at the analyst level, and t-statistics (two-tailed test) are shown in the parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% levels.

Table E.9A Analyst Revision in Response to Crypto Exposure

		ChgTP	
Variables	(1)	(2)	(3)
LnKeywordCount	**0.018*** **	**0.017** **	**0.016** **
	(2.69)	(2.44)	(2.32)
Turnover	-2.127***	-2.102***	-2.170***
	(-3.01)	(-2.84)	(-2.91)
RetSD	-0.300	0.189	0.242
	(-0.36)	(0.22)	(0.28)
PastRet	0.080***	0.078***	0.079***
	(6.12)	(5.70)	(5.74)
Exp_Firm	0.002	0.002	0.002
	(1.00)	(1.10)	(1.08)
Exp_General	-0.030*	-0.026	-0.024
	(-1.85)	(-1.60)	(-1.49)
LnAnalyst	0.008	0.010	0.011
	(0.76)	(0.97)	(1.02)
LnNumFirms	-0.013	-0.010	-0.008
	(-0.54)	(-0.41)	(-0.32)
BrokerSize	-0.027*	-0.026*	-0.026*
	(-1.87)	(-1.70)	(-1.74)
LnAT	-0.004	-0.002	-0.001
	(-0.96)	(-0.46)	(-0.31)
MB	0.000***	0.000***	0.000***
	(5.32)	(5.23)	(5.08)
RevGrowth	-0.087***	-0.082***	-0.081***
	(-3.17)	(-2.93)	(-2.97)
EarningsNews	9.984***		
	(4.48)		
Item202		0.005	
		(0.38)	
ItemCount			0.007
			(0.84)
Constant	0.726**	0.579*	0.526*
	(2.44)	(1.93)	(1.74)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Analyst Fixed Effects	Yes	Yes	Yes
Observations	1,880	1,880	1,880
Adjusted R-squared	0.271	0.260	0.260

Table E.9B Analyst Revision in Response to Crypto Exposure Conditional on Corporate Governance

		ChgTP	
Variables	(1)	(2)	(3)
LnKeywordCount	0.018***	0.016**	0.016**
	(2.64)	(2.39)	(2.30)
LnKeywordCount* × *CorpGov	**0.221*** **	**0.247*** **	**0.240*** **
	(2.93)	(3.41)	(3.06)
CorpGov	-0.184**	-0.206**	-0.204**
	(-2.08)	(-2.46)	(-2.37)
Turnover	-1.988***	-1.944***	-1.989***
	(-2.90)	(-2.73)	(-2.73)
RetSD	-0.250	0.222	0.252
	(-0.29)	(0.25)	(0.29)
PastRet	0.079***	0.077***	0.078***
	(6.04)	(5.62)	(5.63)
Exp_Firm	0.002	0.002	0.002
	(1.03)	(1.15)	(1.13)
Exp_General	-0.032*	-0.028*	-0.027
	(-1.91)	(-1.68)	(-1.61)
LnAnalyst	0.009	0.012	0.012
	(0.88)	(1.09)	(1.11)
LnNumFirms	-0.010	-0.007	-0.005
	(-0.41)	(-0.27)	(-0.23)
BrokerSize	-0.025*	-0.024	-0.025
	(-1.75)	(-1.58)	(-1.60)
LnAT	-0.004	-0.002	-0.002
	(-0.89)	(-0.41)	(-0.35)
MB	0.000***	0.000***	0.000***
	(5.33)	(5.28)	(5.11)
RevGrowth	-0.088***	-0.083***	-0.083***
	(-3.15)	(-2.93)	(-2.96)
EarningsNews	9.653***		
	(4.41)		
Item202		0.003	
		(0.24)	
ItemCount			0.004
			(0.47)
Constant	0.731**	0.590*	0.564*
	(2.43)	(1.93)	(1.81)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Analyst Fixed Effects	Yes	Yes	Yes
Observations	1,880	1,880	1,880
Adjusted R-squared	0.273	0.262	0.262

Table E.9C Analyst Revision in Response to Crypto Exposure Conditional on Return Comovement Coefficient

		ChgTP	
Variables	(1)	(2)	(3)
LnKeywordCount	0.009	0.006	0.006
	(1.16)	(0.77)	(0.75)
LnKeywordCount* × *Comove_Coef	**0.310****	**0.359****	**0.344****
	(2.11)	(2.33)	(2.25)
Comove_Coef	-0.287	-0.361	-0.321
	(-0.84)	(-1.03)	(-0.90)
Turnover	-2.088***	-2.042***	-2.106***
	(-2.90)	(-2.70)	(-2.74)
RetSD	-0.622	-0.208	-0.168
	(-0.70)	(-0.23)	(-0.18)
PastRet	0.079***	0.076***	0.077***
	(5.89)	(5.42)	(5.46)
Exp_Firm	0.002	0.002	0.002
	(0.95)	(1.06)	(1.02)
Exp_General	-0.030*	-0.025	-0.024
	(-1.89)	(-1.61)	(-1.54)
LnAnalyst	0.006	0.008	0.008
	(0.57)	(0.74)	(0.77)
LnNumFirms	-0.010	-0.007	-0.005
	(-0.45)	(-0.28)	(-0.22)
BrokerSize	-0.029**	-0.028*	-0.028*
	(-2.03)	(-1.87)	(-1.89)
LnAT	-0.003	-0.001	-0.001
	(-0.77)	(-0.29)	(-0.16)
MB	0.000***	0.000***	0.000***
	(5.13)	(5.06)	(4.88)
RevGrowth	-0.090***	-0.084***	-0.084***
	(-3.26)	(-2.98)	(-3.05)
EarningsNews	9.821***		
	(4.28)		
Item202		0.001	
		(0.10)	
ItemCount			0.006
			(0.66)
Constant	0.730**	0.583**	0.542*
	(2.52)	(2.00)	(1.83)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Analyst Fixed Effects	Yes	Yes	Yes
Observations	1,877	1,877	1,877
Adjusted R-squared	0.273	0.262	0.262

Table E.9D Analyst Revision in Response to Crypto Exposure Conditional on Return Comovement Correlation

		ChgTP	
Variables	(1)	(2)	(3)
LnKeywordCount	0.005	0.004	0.004
	(0.66)	(0.43)	(0.51)
LnKeywordCount * Comove_Corr	**0.106*** **	**0.105** **	**0.094** **
	(2.65)	(2.37)	(2.17)
Comove_Corr	0.161*	0.185*	0.209**
	(1.74)	(1.94)	(2.10)
Turnover	-1.654**	-1.584**	-1.690**
	(-2.37)	(-2.15)	(-2.28)
RetSD	-1.863*	-1.555	-1.488
	(-1.83)	(-1.53)	(-1.47)
PastRet	0.077***	0.075***	0.076***
	(5.74)	(5.28)	(5.38)
Exp_Firm	0.001	0.001	0.001
	(0.76)	(0.89)	(0.81)
Exp_General	-0.048***	-0.045***	-0.045***
	(-3.01)	(-2.84)	(-2.76)
LnAnalyst	0.003	0.005	0.005
	(0.27)	(0.42)	(0.47)
LnNumFirms	-0.015	-0.012	-0.011
	(-0.62)	(-0.49)	(-0.44)
BrokerSize	-0.029*	-0.027*	-0.027*
	(-1.92)	(-1.73)	(-1.74)
LnAT	-0.006	-0.004	-0.004
	(-1.42)	(-1.09)	(-0.89)
MB	0.001***	0.001***	0.001***
	(5.30)	(5.29)	(5.09)
RevGrowth	-0.118***	-0.114***	-0.114***
	(-4.33)	(-4.11)	(-4.17)
EarningsNews	9.474***		
	(4.11)		
Item202		-0.002	
		(-0.11)	
ItemCount			0.008
			(0.93)
Constant	1.135***	1.030***	0.976***
	(3.75)	(3.38)	(3.16)
Year Fixed Effects	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes
Analyst Fixed Effects	Yes	Yes	Yes
Observations	1,877	1,877	1,877
Adjusted R-squared	0.284	0.274	0.274

Table E.10. Analyst Revision and Crypto Exposure after Controlling Crypto Momentum

This table reports regression results of analysts' revision within five calendar days following firms' crypto exposure disclosed in 8-K filings after controlling the momentum of cryptocurrency market returns. Columns (1) and (2) add *CAR_Crypto* and *BHAR_Crypto*, respectively, to control the momentum of cryptocurrency market returns. Table E.10A reports the baseline regression results. Table E.10B reports the cross-sectional results related to corporate governance and the degree of comovement between stock return and the cryptocurrency market return. All variables are defined in Appendix C. Standard errors are clustered at the analyst level, and t-statistics (two-tailed test) are shown in the parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% levels.

Table E.10A Analyst Revision and Crypto Exposure

	ChgTP	
Variables	(1)	(2)
LnKeywordCount	**0.017****	**0.017****
	(2.38)	(2.38)
Turnover	-2.085***	-2.082***
	(-2.84)	(-2.83)
RetSD	0.055	0.058
	(0.06)	(0.07)
PastRet	0.079***	0.079***
	(5.92)	(5.90)
Exp_Firm	0.002	0.002
	(1.13)	(1.12)
Exp_General	-0.023	-0.023
	(-1.42)	(-1.42)
LnAnalyst	0.011	0.011
	(1.04)	(1.05)
LnNumFirms	-0.006	-0.006
	(-0.26)	(-0.25)
BrokerSize	-0.026*	-0.026*
	(-1.75)	(-1.76)
LnAT	-0.002	-0.002
	(-0.57)	(-0.57)
MB	0.000***	0.000***
	(5.06)	(5.05)
RevGrowth	-0.084***	-0.084***
	(-3.08)	(-3.08)
CAR_Crypto	-0.000	
	(-1.61)	
BHAR_Crypto		-0.000
		(-1.61)
Constant	0.548*	0.549*
	(1.83)	(1.83)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Analyst Fixed Effects	Yes	Yes
Observations	1,880	1,880
Adjusted R-squared	0.261	0.261

Table E.10B Cross-sectional Variation Results of Analyst Revision and Crypto Exposure

			ChgTP			
Variables	(1)	(2)	(3)	(4)	(5)	(6)
LnKeywordCount	0.016**	0.016**	0.006	0.006	0.004	0.004
	(2.33)	(2.33)	(0.77)	(0.77)	(0.52)	(0.51)
LnKeywordCount * CorpGov	**0.244*** **	**0.244*** **				
	(3.30)	(3.30)				
CorpGov	-0.204**	-0.204**				
	(-2.45)	(-2.45)				
LnKeywordCount * Comove_Coef			**0.356****	**0.357****		
			(2.43)	(2.43)		
Comove_Coef			-0.352	-0.351		
			(-1.03)	(-1.02)		
LnKeywordCount * Comove_Corr					**0.101****	**0.102****
					(2.54)	(2.56)
Comove_Corr					0.191**	0.190**
					(2.04)	(2.03)
Turnover	-1.934***	-1.932***	-2.035***	-2.033***	-1.589**	-1.585**
	(-2.72)	(-2.72)	(-2.72)	(-2.71)	(-2.20)	(-2.19)
RetSD	0.099	0.102	-0.329	-0.327	-1.658*	-1.661*
	(0.11)	(0.12)	(-0.37)	(-0.36)	(-1.65)	(-1.65)
PastRet	0.078***	0.078***	0.078***	0.078***	0.076***	0.076***
	(5.86)	(5.83)	(5.65)	(5.63)	(5.55)	(5.53)
Exp_Firm	0.002	0.002	0.002	0.002	0.001	0.001
	(1.16)	(1.16)	(1.06)	(1.06)	(0.87)	(0.87)
Exp_General	-0.026	-0.026	-0.023	-0.023	-0.043***	-0.043***
	(-1.53)	(-1.53)	(-1.45)	(-1.45)	(-2.68)	(-2.68)
LnAnalyst	0.012	0.013	0.009	0.009	0.005	0.005
	(1.15)	(1.16)	(0.81)	(0.82)	(0.49)	(0.50)
LnNumFirms	-0.003	-0.003	-0.004	-0.003	-0.009	-0.009
	(-0.14)	(-0.13)	(-0.15)	(-0.14)	(-0.38)	(-0.37)
BrokerSize	-0.025	-0.025	-0.028*	-0.028*	-0.028*	-0.028*
	(-1.63)	(-1.63)	(-1.92)	(-1.93)	(-1.77)	(-1.78)
LnAT	-0.002	-0.002	-0.002	-0.002	-0.005	-0.005
	(-0.51)	(-0.51)	(-0.37)	(-0.37)	(-1.13)	(-1.13)

Table E.10B (cont'd)

MB	0.000***	0.000***	0.000***	0.000***	0.001***	0.001***
	(5.08)	(5.07)	(4.87)	(4.85)	(5.09)	(5.07)
RevGrowth	-0.086***	-0.086***	-0.087***	-0.087***	-0.117***	-0.117***
	(-3.07)	(-3.07)	(-3.15)	(-3.15)	(-4.25)	(-4.25)
CAR_Crypto	-0.000		-0.000		-0.000	
	(-1.54)		(-1.57)		(-1.61)	
BHAR_Crypto		-0.000		-0.000		-0.000*
		(-1.54)		(-1.58)		(-1.65)
Constant	0.561*	0.562*	0.553*	0.554*	0.999***	0.999***
	(1.85)	(1.85)	(1.90)	(1.90)	(3.30)	(3.29)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Analyst Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,880	1,880	1,877	1,877	1,877	1,877
Adjusted R-squared	0.264	0.264	0.264	0.264	0.275	0.275

Table E.11 Analyst Forecast Accuracy and Crypto Exposure

This table reports regression results of the accuracy of analysts' forecasts within five calendar days following firms' crypto exposure disclosed in 8-K filings. I estimate the following model: $AnalystAccuracy_{ijt} = \alpha + \beta_1 LnKeywordCount_{jt} + Controls + Fixed\ Effects + \varepsilon_{jit}$. The dependent variable used in column (1) is *TPAccuracy*, which is negative one times the absolute value of the difference between current target price and the forecast horizon end stock price, scaled by stock price outstanding two trading days prior to the current target price announcement date. The dependent variable used in column (2) is *AFAccuracy*, which is negative one times the absolute value of the difference between current one-year ahead annual earnings forecast and the actual earnings per share, scaled by stock price outstanding two trading days prior to the current earnings forecast announcement date. *LnKeywordCount* is the natural logarithm of one plus the number of crypto-related keywords in an 8-K filing and its exhibits. All variables are defined in Appendix C. Standard errors are clustered at the analyst level, and t-statistics (two-tailed test) are shown in the parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% levels.

Variables	(1) *TPAccuracy*	(2) *AFAccuracy*
LnKeywordCount	**-0.023**	**0.000**
	(-0.62)	(0.65)
Turnover	-0.786	0.074***
	(-0.42)	(4.05)
RetSD	-2.911	-0.297***
	(-1.03)	(-7.33)
PastRet	0.334***	0.003***
	(5.94)	(3.35)
Exp_Firm	0.007	-0.000
	(1.10)	(-1.23)
Exp_General	0.098**	0.007***
	(2.22)	(6.45)
LnAnalyst	0.067*	0.001
	(1.94)	(1.42)
LnNumFirms	0.094	0.000
	(1.09)	(0.24)
BrokerSize	-0.009	0.001
	(-0.15)	(1.13)
LnAT	0.046***	0.001***
	(2.78)	(3.73)
MB	-0.001***	-0.000
	(-2.94)	(-0.86)
RevGrowth	0.174	0.001
	(1.14)	(0.38)
Constant	-3.545***	-0.140***
	(-4.39)	(-7.80)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Analyst Fixed Effects	Yes	Yes
Observations	1,485	2,158
Adjusted R-squared	0.471	0.537

Table E.12 Test of the Subsample without Blockchain Mentioning

This table reports regression results of analysts' revision within five calendar days following firms' crypto exposure disclosed in 8-K filings that do not contain the mentioning of blockchain. I estimate the following model: $AnalystRevision_{ijt} = \alpha + \beta_1 LnKeywordCount_{jt} + Controls + Fixed\ Effects + \varepsilon_{jit}$. The dependent variable used in column (1) is *ChgTP*, which is the difference between the current and prior target price forecast issued by the same analyst for the same firm, deflated by stock price two trading days prior to the current target price forecast announcement date. The dependent variable used in column (2) is *RevAF*, which is the difference between the current and prior one-year ahead annual earnings forecast issued by the same analyst for the same firm, deflated by stock price two trading days prior to the current earnings forecast announcement date. *LnKeywordCount* is the natural logarithm of one plus the number of crypto-related keywords in an 8-K filing and its exhibits. All variables are defined in Appendix C. Standard errors are clustered at the analyst level, and t-statistics (two-tailed test) are shown in the parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% levels.

	(1)	(2)
Variables	*ChgTP*	*RevAF*
LnKeywordCount	**0.041*** **	**-0.000**
	(3.81)	(-0.08)
Turnover	-7.034***	-0.276***
	(-5.71)	(-5.01)
RetSD	-0.273	0.259***
	(-0.30)	(3.28)
PastRet	0.087***	0.001*
	(5.26)	(1.72)
Exp_Firm	-0.003	-0.000
	(-1.49)	(-0.55)
Exp_General	-0.031	0.003*
	(-1.23)	(1.86)
LnAnalyst	0.020	-0.001
	(1.49)	(-1.46)
LnNumFirms	0.004	-0.000
	(0.12)	(-0.36)
BrokerSize	-0.025	0.000
	(-1.28)	(0.18)
LnAT	-0.034***	0.000
	(-3.05)	(0.12)
MB	0.000***	-0.000**
	(2.74)	(-2.13)
RevGrowth	-0.159***	0.007***
	(-4.40)	(3.72)
Constant	1.464***	-0.045
	(2.93)	(-1.57)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Analyst Fixed Effects	Yes	Yes
Observations	998	1,447
Adjusted R-squared	0.311	0.138

Table E.13 Analyst Revision and Crypto Exposure Using the Extended Sample

This table reports regression results of analysts' revision within five calendar days following firms' crypto exposure disclosed in 8-K filings issued during 1/1/2014-12/31/2023. I estimate the following model: $AnalystRevision_{ijt} = \alpha + \beta_1 LnKeywordCount_{jt} + Controls + Fixed\ Effects + \varepsilon_{jit}$. The dependent variable used in column (1) is *ChgTP*, which is the difference between the current and prior target price forecast issued by the same analyst for the same firm, deflated by stock price two trading days prior to the current target price forecast announcement date. The dependent variable used in column (2) is *RevAF*, which is the difference between the current and prior one-year ahead annual earnings forecast issued by the same analyst for the same firm, deflated by stock price two trading days prior to the current earnings forecast announcement date. *LnKeywordCount* is the natural logarithm of one plus the number of crypto-related keywords in an 8-K filing and its exhibits. All variables are defined in Appendix C. Standard errors are clustered at the analyst level, and t-statistics (two-tailed test) are shown in the parenthesis. ***, **, and * denote significance at 1%, 5%, and 10% levels.

Variables	(1) *ChgTP*	(2) *RevAF*
LnKeywordCount	**0.0226*** **	**-0.0001**
	(2.82)	(-0.17)
Turnover	-1.1437	0.1099
	(-1.17)	(1.28)
RetSD	-0.8104	-0.1066
	(-0.81)	(-1.43)
PastRet	0.1380***	0.0029***
	(8.89)	(4.08)
Exp_Firm	0.0049**	-0.0002*
	(2.09)	(-1.85)
Exp_General	0.0395**	-0.0041
	(2.09)	(-1.49)
LnAnalyst	0.0092	0.0024***
	(1.02)	(3.84)
LnNumFirms	-0.0024	0.0003
	(-0.08)	(0.17)
BrokerSize	-0.0170	0.0008
	(-0.72)	(0.57)
LnAT	0.0080	-0.0000
	(1.37)	(-0.04)
MB	0.0002	0.0000*
	(1.04)	(1.75)
RevGrowth	-0.0819***	-0.0107***
	(-6.93)	(-6.25)
Constant	-0.8468**	0.0614
	(-2.39)	(1.27)
Year Fixed Effects	Yes	Yes
Industry Fixed Effects	Yes	Yes
Analyst Fixed Effects	Yes	Yes
Observations	3,646	4,932
Adjusted R-squared	0.372	0.139