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FOMO and the ICO: The changing salience of quality signals

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ABSTRACT

The manuscript investigates whether the individual personality trait, Fear of Missing Out (FOMO)—typically considered negative—influences the willingness of individuals to contribute to Initial Coin Offerings (ICOs), a phenomenon that emerged after the blockchain revolution. We conducted both qualitative and quantitative work in this space and present the results of an international survey, including a conjoint experiment. Theoretically, we anchor our study in signaling theory and propose that signal valence (the positive or negative interpretation of a signal) can diverge from signal intent. Specifically, we find that candidate ICO funders with strong FOMO behave predictably irrationally. They are more likely to invest in financially irresponsible projects and are less likely to invest in projects that have received recognition from established media sources or multinationals. While both financial responsibility and stakeholder recognition are ostensibly positive signals of team and project quality, we find that for ICO funders with high FOMO, the valence of these signals changes.

1. Introduction

We investigate the phenomenon of Initial Coin Offerings (ICOs) from a signaling perspective to gain deeper insights into how decentralized, small-scale, and early-stage investors engage in this emerging market for risk capital provision (Fisch, Masiak, Vismara, & Block, 2021). Given the scant regulation, the anonymity of numerous transactions, and the proliferation of scams since its inception, the ICO market typifies an institutional void. ICOs surged in popularity in 2016, reaching a peak in 2018 with a global fundraising total of $7.5 billion (ICObench.com, 2024). By the second quarter of 2018, the ICO market accounted for 45% of the IPO market's size (Long, 2018). Throughout 2019, over 380 ICOs were completed, raising approximately $4.1 billion (PWC & Valley, 2020). By 2020, however, ICOs had declined to $55.6 million, with subsequent years showing fluctuations between $378 million in 2021 and $117 million in 2022 (ICObench.com, 2024).

In such an uncertain environment, founders must emit credible quality signals to attract investors (Barnes, 2018; Gao, Zuzul, Jones, & Khanna, 2017; Tiwari, Gepp, & Kumar, 2019). The lack of clear regulations and robust investor protections makes ICO funders particularly responsive to signals from the entrepreneurial team (Lahajnar & Rozanec, 2018). As a result, investors frequently depend on both voluntary and involuntary signals to reduce information asymmetry and improve decision-making (Ante, Sandner, & Fiedler, 2018; Spence, 1973; Spence, 2002; Stiglitz, 2000).

This research aims to explore the impact of signaling on investment decisions within the volatile yet lucrative context of Initial Coin Offerings (ICOs). It delves into how individual psychological traits, particularly the Fear of Missing Out (FOMO), interact with entrepreneurial signaling to influence investment behaviors. Specifically, the study focuses on how signals of financial stewardship, such as the establishment of hard and soft caps, and the acknowledgment by mainstream stakeholders, affect investor behavior. It pays special attention to how FOMO modulates the perceived value of these signals.

The central research question is: How does the presence of FOMO influence ICO-funders' responses to various entrepreneurial signaling regarding financial stewardship and stakeholder recognition, and what impact does this have on their willingness to invest in these ventures? To address these questions, we conduct a global survey and a conjoint experiment to assess how ICO-funders evaluate costly and credible project quality signals (Cohen & Dean, 2005). We hypothesize that the behaviors of ICO-funders are generally similar to those of business angels and other early-stage venture investors, but that FOMO can alter the valence of these signals in important ways.

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The context of the ICO market is ideally suited for studying entrepreneurial signaling because of its institutional void characteristics and its open access. Drawing on startup literature, we focus on two salient signals: financial stewardship and recognition by mainstream stakeholders. We posit that both signals significantly increase the willingness to invest. Specifically, within the ICO context, founders can convey strong signals of financial stewardship (Ahlers, Cumming, Günther, & Schweizer, 2015) by setting both a soft cap (the amount of money needed to develop a minimum viable product) and a hard cap (the maximum amount of new tokens the company intends to issue at a specified price, thus capping the maximum funds to be raised) (Connelly, Certo, Ireland, & Reutzel, 2011; Moro & Wang, 2019). Furthermore, ICO-funders may interpret recognition by various stakeholders, such as venture capitalists, mainstream media, social media followers, and multinational corporations, in different ways. While much of the existing research has concentrated on social media recognition (Albrecht, Lutz, & Neumann, 2019; Ante & Fiedler, 2019), our study suggests that partnerships and mainstream media recognition represent higher quality signals (Certo, 2003) and could have a more substantial impact on investment decisions due to their legitimising effect (Frydrych, Bock, Kinder, & Koeck, 2014; Suddaby, Bitektine, & Haack, 2016).

Moreover, we acknowledge that the valence of a signal—whether perceived as positive or negative—can differ between the signaler and the receiver. While Fischer and Reuber (2007) argued that consistent quality signals would lead to reputational consensus, we argue that audiences can possess diverging theories of value (Paolella & Durand, 2016). Therefore, a receiver may interpret a signal differently from the signaler's intent, thereby reducing the signal's salience, irrespective of its fit, consistency, and observability (Connelly et al., 2011). Supporting this notion, Jain, Jayaraman, and Kini (2008) demonstrated that the same signal could have both positive and negative impacts on diverse, desirable outcomes, such as the likelihood of attaining profitability and the time-to-profitability. Our theory posits that the impact of the same signal on willingness to invest is contingent on the funder's Fear of Missing Out (FOMO)—a pervasive psychological trait characterized by the worry that others are having rewarding experiences in one's absence (Elhai, Levine, Dvorak, & Hall, 2016). FOMO has been linked to problematic smartphone use and excessive social media usage (Elhai et al., 2018; Wolniewicz, Tiamiyu, Weeks, & Elhai, 2018) and may increase risk-taking behaviors. It has also been associated with hype cycles and has influenced both individuals and organizations in adopting blockchain technology (Koens, Van Aubel, & Poll, 2020). Integrating signaling and self-determination theory (Deci & Ryan, 2008; Ryan & Deci, 2000), we explore how FOMO can alter the valence of quality signals.

Our findings indicate that ICO-funders with pronounced FOMO are more inclined to invest in financially riskier projects. Counterintuitively, they are also less likely to invest in projects that have received recognition from mainstream stakeholders like newspapers and multinationals. This suggests that individuals with FOMO are more likely to strongly identify with specific tribes or communities, and this tribal mentality intensifies an us-vs-them mindset, leading them to interpret ostensibly positive signals (financial stewardship and established stakeholder recognition) in a less favorable light. This phenomenon illustrates how signal valence can be influenced by specific personality traits like FOMO. Our research contributes to the understanding of various investor types by suggesting that investment decisions are not strictly made based on rational reasoning (Granero et al., 2012; Snellman, 2017, 2018). Given the diversity and volume of participants in ICOs, these findings are both practically and academically significant.

In conclusion, our findings underscore the role of ICOs in democratizing risk capital provision, highlighting how this new form of financial empowerment can potentially place specific individuals at risk. While quality signals are generally interpreted predictably, individuals with FOMO deviate from commonly accepted behaviors, driven by the fear of missing out on something known to their tribe, thus leading to riskier investment decisions.

After conducting a thorough literature review, we develop our theoretical framework by merging signaling theory with self-determination theory (Deci and Ryan, 1985; Spence, 1973). We then delineate our research methodology, followed by the presentation of our data, methods, and analysis. The article concludes with a discussion of these findings and their broader implications.

2. Literature Review

2.1. Blockchain and the Initial Coin Offering

Providing risk capital has long been the prerogative of business angels, venture capitalists, hedge fund managers, and governments that support basic science research and the development of open access infrastructure (Espinel, O'Halloran, Brynjolfsson, & O'Sullivan, 2015). The blockchain revolution and its first major application—the Initial Coin Offering (ICO)—disrupted this hegemony and enabled globally dispersed individuals to fund the development of new forms of money (e.g., Bitcoin), basic infrastructure technology (e.g., Ethereum, EOS, Ripple), and decentralized applications such as exchanges, prediction markets, and digital art (Tapscott & Tapscott, 2017).

Bitcoin was the first incarnation of blockchain technology. Satoshi Nakamoto, Bitcoin's mythical founder, solved the Byzantine Generals' problem, created a network of nodes that did not need to trust each other, allowed them to compete for financial rewards, and ensured that every single node would agree on the most recent state of a constantly updating, public ledger of transactions (Champagne, 2014). Before Bitcoin, the economic system relied on trusted intermediaries like central banks, banks, credit card companies, and international financial communication networks like SWIFT (Iansiti & Lakhani, 2017). These intermediaries, along with governments, had only enabled so-called qualified investors to provide risk capital.

Since Bitcoin's launch in 2009, the next significant breakthrough in the blockchain space was made by Vitalik Buterin in 2013. At the age of 19, Vitalik created Ethereum, a more essential, virtual, and distributed computer network that could execute code, had internal logic, was Turing-complete, and became foundational to the rise of the Initial Coin Offering (ICO). The ICO is a new crowdsourcing or crowdfunding mechanism that blockchain-related projects use to source risk capital from all areas of the world, often fully anonymous and without any accountability to those willing to exchange hard-earned fiat currency for cryptographic tokens that have either speculative value or are used as utility tokens within an emergent ecosystem. The ICO became the first "killer application" of blockchain technology (Applied Blockchain, 2017). Around Christmas 2017, the valuation of all crypto assets reached an all-time high, only to crash shortly thereafter. Cryptocurrencies underwent a predictable hype cycle, and after a peak of inflated expectations, a trough of disillusionment inevitably followed (Linden & Fenn, 2003; Steinert & Leifer, 2010). Understanding how and why ICO funders decide to finance specific ICOs is therefore of great practical concern to crypto ventures, policymakers, and management scholars interested in crowdfunding, hypes, and technology adoption.

ICO funders provide very small investments in nascent entrepreneurial projects via decentralized platforms like Ethereum (Chen, 2018). For a start-up, the difference between receiving investments from business angels or venture capitalists and receiving funding from ICO funders is substantial. Business angels and venture capitalists typically provide large investments (US$50,000 and more) for a longer time period (typically 5–7 years) and organize in small syndicates. These financiers thus develop long, personal relationships with entrepreneurial teams and provide guidance to the entrepreneur (Smith, Harrison, & Mason, 2010, p. 3). The ICO turns this on its head by enabling micro-contributions (as little as a few dollars) that become liquid very quickly after the ICO. This decentralization in the provision of risk

capital is accompanied by little accountability. ICO funders tend to monitor very little, lack the network and personal expertise to help the venture along its entrepreneurial trajectory, and typically do not receive corporate shares and thus hold no legal claim to residual gains. They also tend to fund based on less stringent evaluation criteria and arguably fund faster, leading to less scrutiny.

If common early-stage investors are friends, family, and fools (Kotha & George, 2012), the ICO market really lets the fools rush in. Because the crypto market is characterized by very strong and rapid price swings, people get swept up in mania, as happened during previous bubbles (Faucette, Graseck, & Shah, 2018). Bourveau, De George, Ellahie, & Macciocchi (2019) concluded that the likelihood of a successful ICO project is positively associated with the information environment and hype that emerges around the project, as investor excitement influences how projects are evaluated. These findings are supported by crowdfunding research. Crowds also rely on project quality signals to make judgments about potential investments and are typically less sophisticated, leading them to attach value to signals that experienced investors may ignore or to under- or overvalue specific signals (Bernstein, Korteweg, & Laws, 2017; K. Kim & Viswanathan, 2019; Mollick, 2014). The ICO market, with its open access to virtually anyone, thus provides an ideal context to study the salience of quality signals and the contingent effect of the fear.

3. Theory and hypothesis development

3.1. Signaling and ICOs

Signaling theory posits that signalers, who possess more information than receivers, go to great lengths to emit signals that credibly demonstrate their company's reliability and value (Bergh, Connelly, Ketchen Jr, & Shannon, 2014; Spence, 2002). These signals serve to mitigate the ex-ante outcome uncertainty faced by receivers, who must make decisions from a set of choices with incomplete and asymmetrically distributed information (Bergh et al., 2014). In such environments, high-quality organizations endeavor to identify and employ signals that are costly and challenging to imitate, thus gaining a competitive advantage in the market (Spence, 1973). Specifically, high-quality firms are expected to benefit from signaling, while low-quality firms are likely to incur costs that deter them from engaging in such activities, preventing a scenario where all firms appear indistinguishable—a condition known as a pooling equilibrium (Connelly et al., 2011).

Signaling theory has been applied across various domains, including labor markets (Spence, 1973; Turban & Cable, 2003), new product launches (Akerlof, 1970), advertising (Kihlstrom & Rirdan, 1984), and insider trading of stocks (Sanders & Boivie, 2004). More recently, it has been utilized to analyze investment decisions in crowdfunding platforms (Lin, Prabhala, & Viswanathan, 2013; Moss, Neubaum, & Meyskens, 2015), with Lin et al. (2013) supporting the theory's core premise that agents use signals to mitigate adverse selection caused by asymmetric information. This extensive body of research suggests that signaling theory could be equally informative in new areas characterized by significant information asymmetry, such as ICO markets.

Being at an early stage, ICO investments are fraught with high uncertainty and significant information asymmetry (Kristoufek, 2015). Firstly, the largely unregulated nature of crypto markets allows for practices like pump-and-dump schemes, heightening the outcome uncertainty and mirroring the institutional voids seen in emerging markets, thus necessitating robust signals of quality from ventures to attract investors (Akhtar, 2018; Dale, 2018; Gao et al., 2017). This is evident from studies indicating that ICOs tend to be underpriced, highlighting the substantial need for discounting to attract investment, thereby underscoring the importance of effective signaling (Benedetti & Kostovetsky, 2018; Felix & von Eije, 2019; Stastny, 2018).

Secondly, in online markets, signaling plays a crucial role in reducing the information asymmetry exacerbated by the spatial and temporal distances between buyers and sellers (Wells, Valacich, & Hess, 2011). The preference for anonymity in the ICO market complicates information sharing between investors and ventures, making signaling an essential strategy for attracting funding. Additionally, the complexity and novelty of the technology and the presence of numerous small-scale investors amplify the knowledge gaps between the team and funders (Chester, 2017).

To address both outcome uncertainty and information asymmetry, early-stage ventures deploy specific signals. Founder involvement and experience (Busenitz, Fiet, & Moesel, 2005), founder CEO status (Wang & Song, 2016), and board characteristics (Certo, 2003) are all indicators of quality that alleviate outcome uncertainty. Similarly, the quality and detail of the white paper can reduce information asymmetry (Rrustemi & Tuchschmid, 2020). In contexts related to IPOs, firms utilize specific indicators to signal their internal capabilities and the potential future value of investments to potential investors (Deeds, Decarolis, & Coombs, 1997). We argue that signals like financial stewardship and recognition by external stakeholders are crucial in influencing investors' willingness to commit capital (Elitzur & Gavious, 2003).

3.2. Financial Stewardship as a Signal that reduces Outcome Uncertainty

Early-stage startups use quality signals to mitigate outcome uncertainty. Ahlers et al. (2015) examined an Australian equity platform and found that projects with higher outcome uncertainty, such as those lacking financial projections, have a lower probability of funding success. It is generally expected that pre-seed startups will have a detailed financial plan, specifying the amount of funding needed and its intended uses. Pre-seed startups seeking to raise more funds than necessary for their initial goals often face difficulties in securing any funding (Fan, Gao, & Steinhart, 2020; Paschen, 2017). Similarly, larger private ventures may consider a public listing when they have specific financial needs, such as funding growth, that can be satisfied through an IPO (Hursti & Maula, 2007; Ritter & Welch, 2002). The issuance of preferential shares in this context aims to balance the anticipated external demand for the stock against the internal need for financial resources (W. Kim & Weisbach, 2005). We argue that similar signals of financial stewardship are utilized by ventures looking to raise funds through an ICO.

In the ICO market, financial stewardship is demonstrated through the setting of soft and hard caps. Ventures planning an ICO may establish a soft and/or a hard cap, or opt for no cap at all. A soft cap represents the minimum viable funding amount needed to initiate a project, similar to the funds required to develop a minimum viable product. A hard cap sets a maximum funding target by limiting the number of tokens a company will sell at a specified price (typically expressed in BTC, ETH, and/or USD). Setting caps too high can deter investors, who may perceive the venture's leadership as overly optimistic about their fundraising capabilities or as having not adequately budgeted for necessary development costs (Priority Token, 2017).

Alternatively, a venture might set neither a soft nor a hard cap, giving no clear indication of how much funding is necessary for further development, and attempting to maximize capital inflow. Without a hard cap, ventures can potentially raise more funds than needed, particularly if they capitalize on the timing of the hype cycle—before it peaks or after the trough of disillusionment when demand rebounds (Linden & Fenn, 2003; Steinert & Leifer, 2010). This excess funding may lead to challenges in effective utilization, with potential devaluation of the cryptocurrency if excess funds are poorly managed or spent on non-business-related expenses, to the detriment of ICO-funders (FinTech Fans, 2017).

Therefore, by committing to both soft and hard caps, crypto ventures can signal financial stewardship. This type of signaling, according to Connelly et al. (2011), not only distinguishes the signaler from competitors but also activates the quality of the signaler. Ventures that demonstrate financial stewardship by setting both soft and hard caps not

only differentiate themselves from potential scammers and low-quality projects but also demonstrate effective management. Effective management is evidenced when the raised funds are allocated and used as planned. Moro and Wang (2019) noted that a clear explanation of fund usage post-ICO significantly boosts fundraising success. Thus, signaling financial stewardship can effectively reduce outcome uncertainty by reassuring investors about the venture's financial planning and resource allocation capabilities. This observation leads to our first hypothesis.

Hypothesis 1. *Signals from a crypto venture that indicate financial stewardship (imposing soft and hard caps) will increase funder willingness to invest.*

3.3. Stakeholder Recognition as a Signal that reduces Information Asymmetry

While financial stewardship can mitigate perceived outcome uncertainty, recognition from stakeholders can decrease perceived information asymmetry. Much of the existing research in the cryptocurrency space has concentrated on a team's ability to cultivate a growing community or tribe of supporters. Effective social media management, as evidenced by an increase in Twitter followers and general Twitter activity, has been associated with positive market returns for ICOs (Ante & Fiedler, 2019; Fisch, Masiak, Vismara, & Block, 2021). Albrecht et al. (2019) specifically found that positive language and a high and consistent level of community engagement correlate with greater fundraising success. For potential ICO funders, the size and engagement level of a follower tribe serve as compelling signals of the firm's reliability, adhering to the notion that 'there is safety in numbers', thereby reducing the prominence of information asymmetry.

Perceived information asymmetry may also be alleviated by recognition from third parties. When early-stage ventures receive acknowledgment from the media, multinational corporations, or venture capitalists, potential investors may feel less concerned about their own lack of direct information, assuming that these recognized third parties have performed due diligence (Courtney, Dutta, & Li, 2017). Investors often depend on a venture's network of exchange partners to infer its quality (Häussler, 2006). Business angels, for instance, consider the opinions and actions of other ventures and investors (Smith et al., 2010) and are influenced by announcements of VC partnerships and endorsements by industry incumbents (Davila, Foster, & Gupta, 2003; Gulati & Higgins, 2003). Furthermore, managing public relations and media connections effectively can boost a venture's legitimacy and project an attractive risk/return profile (Baron & Markman, 2003; Petkova, Rindova, & Gupta, 2013; Sindhu & Kumar, 2014).

Despite the significant focus on social media within crypto markets, we propose that recognition from external stakeholders such as media coverage, VC partnerships, or multinational corporate associations will be viewed as more credible and informative signals by potential ICO funders (Davila et al., 2003; Gulati & Higgins, 2003; Petkova et al., 2013). This assertion forms the basis for our second hypothesis.

Hypothesis 2. *Signals from a crypto venture that indicate recognition by mainstream stakeholders will increase funder willingness to invest.*

3.4. The Moderating Effects of FOMO

Besides formal investment criteria such as business plans (Zacharakis & Meyer, 1998), soft criteria like investor emotion and trust (Fink, Moro, Landstrom, & Avdeichikova, 2013), and personality traits can significantly influence decision-making processes (Parks-Leduc, Feldman, & Bardi, 2015). Research on individual decision-making under uncertainty confirms that choices vary based on the personal characteristics of the evaluator (Mintzberg, Raisinghani, & Theoret, 1976). Our research specifically explores the moderating effects of the fear of missing out (FOMO), which manifests as the anxious need to stay connected with what others are doing and the worry that others may be experiencing rewarding events in one's absence (Beyens, Frison, & Eggermont, 2016; Przybylski, Murayama, DeHaan, & Gladwell, 2013).

Self-determination theory, which explains the satisfaction of humans' basic psychological needs, provides a useful framework for understanding FOMO (Vallerand, 2000). FOMO is closely linked with unmet needs for social relatedness and is associated with poor self-regulation and psychological health outcomes, such as negative affectivity (Beyens et al., 2016; Przybylski et al., 2013). Conceptually, FOMO represents an emotional trait characterized by a fear of not being "in the know" within a specific social group, or "tribe" (Highhouse, Thornbury, & Little, 2007). It is not simply about missing out on general activities but specifically on those relevant to one's identified social circle.

In the cryptosphere, FOMO is a pivotal construct. Ryu and Ko (2019) discovered that speculative investment in this realm is often driven by strong impulses and weak self-control, traits associated with FOMO. Despite numerous market bubbles and crashes, the crypto space remains hyped, with FOMO significantly influencing behavior during hype cycles, particularly in ICOs (Fox, 2018; Koens et al., 2020). Interestingly, there is even a popular blockchain game named "FOMO" that has occasionally consumed over 35% of Ethereum network transactions (Oliva, Hassan, & Jiang, 2020), highlighting the pervasive influence of FOMO in the crypto markets. Early adopters have earned millions, and token values can skyrocket over 1000% in a day, creating a fertile ground for speculative bubbles driven by tribal herding instincts. The relative lack of regulation in the crypto markets further exacerbates this risk, allowing room for potential manipulation (Barnes, 2018). Broadly speaking, Snellman (2018) demonstrated that FOMO can also affect risk perceptions among experienced business angels. Our study investigates how FOMO influences the perceived strength of signals related to financial stewardship and stakeholder recognition in ICO markets.

3.5. FOMO and Financial Stewardship

The value and efficacy of potential signals in new ventures have been demonstrated to be context-dependent (Moss et al., 2015). This suggests that the prominence of a specific signal can be diminished by the characteristics of the receiver. We propose that FOMO can reduce the salience of financial stewardship signals, leading to riskier investments. During the ICO boom in late 2017, the demand for most ICOs was irrationally high, driven largely by FOMO (Gaudiano, 2018). Following a few highly publicized success stories, many investors, fearing they had missed earlier opportunities, began participating indiscriminately in any highly touted ICO. The risk of an ICO becoming overhyped is exacerbated when there are no soft or hard caps, allowing for unlimited funding, which in turn increases the number of investors and the likelihood of the ICO gaining widespread attention. The allure of a rapidly increasing investment, or a coin 'going to the moon,' can be particularly hard to resist for someone with FOMO, as they are acutely sensitive to not participating in what their entire tribe is involved in. This susceptibility persists even though many soaring ICOs are driven by orchestrated pump-and-dump schemes (Barnes, 2018).

Furthermore, ICO projects with high or no caps often create a sense of urgency by notifying potential investors of the limited time remaining to invest, enhancing the pressure to act quickly (Albrecht et al., 2019). Such time pressure triggers loss aversion and the fear of missing out on a potentially lucrative opportunity. Regular reminders about impending deadlines amplify FOMO and increase the probability of contractual commitments, such as investments (Chen, Hambrick, & Pollock, 2008; Zamir, Lewinsohn-Zamir, & Ritov, 2017). Moreover, project teams that demonstrate strong financial stewardship typically raise less capital and often secure funding from sources outside the ICO, such as pre-sales to friends and business angels. As a result, less money is raised through public ICOs, the projects gain less exposure, and are less likely to be hyped, making them less attractive to individuals with FOMO. Based on these observations, we propose the following hypothesis:

Hypothesis 3. *The positive relationship between signals from the venture that indicate financial stewardship (imposing soft and hard caps) and funder willingness to invest is attenuated by funder FOMO.*

3.6. FOMO and Mainstream Stakeholder Signals

It could be persuasively argued that when crypto ventures are recognized by mainstream stakeholders such as established newspapers and multinational corporations (MNCs), these endorsements act as potent universally recognizable quality signals. Especially for investors experiencing the fear of missing out (FOMO), such recognition might suggest that the venture is gaining acceptance in a broader community, potentially enhancing its chances of success and increasing their willingness to invest. However, we previously discussed how the valence of a signal can differ between the signaler and the receiver. Given that audiences hold diverging theories of value, a receiver may interpret a signal differently from the signaler's intent (Paolella & Durand, 2016). This difference in interpretation may be particularly pronounced among investors with high levels of FOMO when ICO projects receive mainstream recognition.

The blockchain community often behaves like a 'tribe' that is resistant to outsiders (Lielacher, 2018). This tribal culture is reinforced by unique jargon (e.g., HODL, ICO), an 'us versus them' mentality, and the frequent use of linguistic markers that create a sense of separation (e.g., the blockchain space, the cryptosphere). Individuals with FOMO possess a strong desire to belong to an in-group and typically maintain obsessive connections with their chosen community (Przybylski et al., 2013). A common way for such groups to foster cohesion is by defining a common adversary (Tajfel, 1970). Outsiders are generally unwelcome, and engagement with them may be viewed as traitorous. This sentiment exists not only within various factions within the crypto community, who may champion specific cryptocurrencies or blockchain principles, but also between the crypto community at large and the external world.

Since the cryptosphere has its dedicated media outlets (e.g., Twitter, Telegram, specialized websites), most ICO-funders do not rely on mainstream media to stay informed. Even when community members summarize crypto topics from mainstream news, these overviews are often seen as outdated, summarizing information that is, on average, six months old (O'Neal, 2020). Consequently, projects that receive mainstream media recognition might become less appealing to potential ICO-funders that strongly identify with the crypto 'tribe', as they may view such recognition as a sign that the venture has distanced itself from the tribe with which they identify, thus diminishing their interest in the project.

We contend that crypto's tribal nature is associated with FOMO because FOMO is linked to a strong social identification and can influence how signals are perceived (Highhouse et al., 2007). From a self-determination perspective, FOMO is associated with unmet needs for social relatedness, and individuals with FOMO often seek to fulfill these needs within a specific community with which they identify (Przybylski et al., 2013). Duman and Ozkara (2019) found that social identification of online gamers with their gaming community, and its effect on gaming addiction, is fully mediated by FOMO. This relationship is moderated by the individual's need to belong. Consequently, ICO-funders with high FOMO are more likely to view partnerships with incumbent MNCs as instances of 'selling out'. The blockchain community, rooted in the cypherpunk movement (Champagne, 2014), generally supports an open-source, permissionless blockchain approach that champions decentralization, contrasting with the permissioned blockchains favored by large incumbents (Hawlitschek, Notheisen, & Teubner, 2018; Iansiti & Lakhani, 2017; Mik, 2019). Thus, partnering with an MNC might be seen as a deviation from the crypto community's norms.

Furthermore, ventures that receive venture capital (VC) backing are often perceived as adopting a traditional fundraising approach, thereby relinquishing some control and ownership to VCs who may not be considered part of the crypto tribe. Such arrangements often provide VCs with a better deal (e.g., shares and control) compared to community members who invest through ICOs, potentially decreasing their willingness to invest. Given that FOMO is a trait focused on a specific community, people with strong FOMO might view these partnerships as a betrayal of their tribe. Therefore, we hypothesize:

Hypothesis 4. *The positive relationship between an ICO project's recognition by mainstream media and MNCs and willingness to invest is weakened by funder FOMO.*

4. Data and methods

To deepen our understanding of the cryptosphere and the investment decisions of ICO investors, we initially conducted 21 interviews with seasoned ICO investors and operators from the UK, Singapore, China, Russia, and Kazakhstan. These participants were accessed through the personal networks of the first two authors. This preliminary, exploratory research was instrumental in shaping the quantitative questions we aimed to investigate and also provided us with essential contacts for further study dissemination and survey testing.

We developed an online survey that included demographic and background questions derived from Viita (2016), along with a conjoint design, and an established scale to measure FOMO. To ensure clarity and usability, we pilot tested the survey with some of our initial interviewees. Subsequently, the survey was translated into multiple languages to facilitate global participation. The translation process involved one translator converting the original English version into various languages, followed by a second translator performing a back translation into English. Any discrepancies between the original text and the back translation were reconciled collaboratively by the translators.

The survey was administered using Microsoft Forms from July to August 2018. We leveraged our personal networks, the networks of our interviewees, and various online communities dedicated to blockchain and cryptocurrency. Additionally, we engaged 'gatekeepers' who had access to online ICO investor communities, such as administrators of crypto-focused Telegram, Slack, and WhatsApp groups. We also utilized direct messages to our personal contacts to further our reach. To broaden our international engagement, the second author capitalized on his role as a prominent member of his home country's professional blockchain association. The chairman of this association endorsed our research and distributed an official invitation to 30 international blockchain and cryptocurrency associations. We also authored and published a brief article on LinkedIn to share some of our qualitative findings and encouraged readers to distribute the article and participate in the survey.

Despite these extensive efforts, we managed to collect only 200 survey responses from 40 different countries over a 5-week period. While the response rate was lower than anticipated, the data collected through the conjoint design still provided us with sufficient statistical power to rigorously test our hypotheses.

4.1. Conjoint Analysis

Conjoint analysis is a research technique that asks respondents to rate scenarios featuring various attributes, which helps reveal individuals' relative preferences when making decisions. This method has been extensively used in marketing research and has also been applied to areas such as expert judgment, venture capitalists' decision-making policies, and collaboration preferences (Green, Krieger, & Wind, 2001; Schillebeeckx, Chaturvedi, King, & George, 2016). For example, Ludvigsen (2009) utilized conjoint analysis to explore factors influencing business angels' investment decisions.

One limitation of our study is its reliance on a single survey, making our data susceptible to common method bias, which could affect the ability to definitively establish causal relationships. Fortunately, the inherent variance within respondents created by the conjoint design

helps to mitigate this issue (Podsakoff, Podsakoff, MacKenzie, & Lee, 2003). Additionally, the use of self-reported scales may introduce a positive response bias, particularly concerning sensitive topics like the fear of missing out (FOMO); respondents may be reluctant to admit to behaviors or feelings that could be perceived negatively. Therefore, our findings should be interpreted with an awareness of these potential biases.

4.2. Response

Our primary variable of interest is the respondents' 'Willingness-To-Invest' (WTI), which they indicated using a seven-point Likert scale ranging from 1 ('Very unlikely to invest') to 7 ('Very likely to invest') after being presented with a specific investment scenario. We designed these scenarios with five different dimensions, each dimension having between two and four levels. This resulted in a total of 288 alternative scenarios (as detailed in Table 1).

To minimize respondent fatigue, we only asked respondents to rate five scenarios. Each scenario was constructed by randomly selecting one level from each of the five dimensions, ensuring that each respondent was presented with a varied set of investment scenarios. This approach allowed us to effectively analyze which dimensions, and which levels within those dimensions, are most influential in shaping a respondent's willingness to invest, as detailed in Table 1.

4.3. Scenarios

The scenarios presented to survey respondents were developed through the triangulation of insights gleaned from 21 expert interviews conducted in English and Russian between April and May 2018, and existing research on entrepreneurship, crowdfunding, and ICOs. During these interviews, experts shared the types of ICOs they invested in and described the key attributes of these ICOs and their teams. We analyzed the prevalence of different motivations expressed by the experts for investing in specific projects and compared these motivations with findings from existing literature to validate our qualitative results.

Before evaluating their willingness to invest, survey respondents were informed through a preparatory text that the scenario involved a utility token (not a security token), was organized by a highly experienced team, and occurred in a regulatory environment favorable to the emerging blockchain space. This was done to encourage respondents to abstract from their local regulatory regimes (Adhami, Giudici, & Martinazzi, 2018; Bernstein et al., 2017; Burns & Moro, 2018; Giudici & Adhami, 2019). These three characteristics were emphasized as crucial by our experts and, being well-documented in prior literature, were not included as variables within our conjoint analysis.

The scenarios incorporated five dimensions, two of which—financial stewardship and recognition by established stakeholders—were our focal points of interest. The remaining three dimensions were: 1) the openness of the code, 2) the presence of a relationship with the venture's founders, and 3) the state of technological development of the project. The third dimension was included as it signals lower outcome uncertainty, while the first and second capture potentially confounding factors related to information asymmetry. These attributes were identified as critical decision-making factors by our experts and are consistent with prior research in both the cryptosphere and broader fields of entrepreneurship (Baron & Markman, 2003; Blank, 2013; Kotha & George, 2012).

Table 1
Conjoint analysis scenarios.

Dimension	Conjoint analysis alternatives
Personal connection	1. I have a personal connection with the team 2. I have a personal connection with someone who knows the team 3. I do not have any personal connection with the team
Stakeholder recognition	1. The project team has attracted lots of followers at social media 2. The project team is featured in established newspapers such as Financial Times and TechCrunch 3. The project team has partnered with a large multinational 4. The project team is backed by a known venture capital firm
Project development stage	1. The technology is explained in white paper but not yet developed 2. Minimal Viable Product is ready and testnet is about to be launched 3. Testnet has been operational for months without significant bugs 4. Mainnet has been operational for months without significant bugs
Open source culture	1. Project code is open source and available on GitHub 2. Project code is proprietary and not available on GitHub
Financial stewardship	1. The project has no soft cap and no hard cap 2. The project has a low soft cap and no hard cap 3. The project has a low soft cap and a low hard cap

4.4. Focal variables

Our two main hypothesized effects revolve around financial stewardship and stakeholder recognition. Our interviewees considered these variables essential in their funding decisions, and they both provide powerful signals to respectively reduce outcome uncertainty and information asymmetry. Financial stewardship was operationalized in the conjoint scenario by presenting three alternative options regarding how much money the team wanted to raise: no caps, a low soft cap but no hard cap, and both low soft and hard caps (Ahlers et al., 2015; Paschen, 2017; Priority Token, 2017). Stakeholder recognition was operationalized with four alternative factors. Our baseline factor, social media presence, has been studied extensively in the cryptosphere and has been found to be an important predictor of success (Xuan, Zhu, & Zhao, 2020). The other three factors—mainstream media recognition, partnership with an MNC, or backing by a VC firm—are salient signals of success for non-crypto entrepreneurs and were hypothesized to be equally important for ICO funders.

4.5. Fear of Missing Out (FOMO)

Przybylski et al. (2013) drafted a pool of statements to capture FOMO and used a data-driven approach to select items with the best psychometric properties. We use the same statements to explore the prevalence of FOMO among our participants. Respondents are asked to indicate their level of agreement with each scale item on a five-point Likert scale. The entire scale is reported in Table 2.

4.6. Controls

The first part of the survey collected various demographic and expertise variables that we used as controls in our analysis. All our measures are self-declared and include: 1) the average time a respondent takes to learn about an ICO project, 2) the respondent's level of

Table 2
FOMO Scale: rate between 1 'not at all true of me' to 5 'extremely true of me'.

1. I fear others have more rewarding experiences than me.
2. I fear my friends have more rewarding experiences than me.
3. I get worried when I find out what my friends are up to.
4. I get anxious when I don't know what my friends are up to.
5. It is important that I understand my friends "in jokes".
6. Sometimes, I wonder if I spend too much time keeping up with what is going on.
7. It bothers me when I miss an opportunity to meet up with friends.
8. When I have a good time it is important for me to share the details online (e.g. updating status).
9. When I miss out on a planned get-together it bothers me.
10. When I go on vacation, I continue to keep tabs on what my friends are doing.

education, 3) the respondent's blockchain experience, 4) risk attitude (respondents were asked to self-assess on a scale from very risk-averse to very risk-taking), 5) respondent's nationality, 6) respondent's age, 7) respondent's gender, 8) respondent's occupation, 9) respondent's work experience, 10) the average investment horizon of respondents when acquiring new cryptocurrencies, and 11) the stage at which respondents typically invest in a crypto project. Additionally, we tested a variety of other controls, including survey design controls; however, these did not alter the results nor did they provide substantial insights, so we chose to exclude them to improve the parsimony of our analysis.

5. Results

5.1. Descriptives

58% of respondents were aged between 26 and 45, and they were generally well-educated, with over 80% having at least an undergraduate degree. The survey revealed a gender disparity with 75% of respondents being male and 25% female, reflecting the well-known underrepresentation of women in tech and, more specifically, in the blockchain space (Cant, 2018). However, some studies suggest that women are more likely to be involved in blockchain start-ups than in other types of software start-ups (Ibba et al., 2018; Pantiuchina et al., 2017). Regarding occupation, 31% of respondents worked in software development, 30% in finance, and 8% in engineering. Most respondents were experienced professionals, with 46% having more than ten years and an additional 14% having more than three years of work experience.

Respondents were from over 40 countries, categorized into six geographical areas: Americas, Africa, Europe, former USSR, China, and Singapore. The survey was offered in 11 languages, but most respondents completed it in English (81.30%), followed by Russian (6.09%), Vietnamese (3.48%), Bahasa Indonesian (2.17%), Chinese and Korean (both 1.74%), German (0.87%), and French, Spanish, and Japanese (each 0.43%).

A majority (57%) of respondents self-assessed as risk-takers, while only 18% claimed to be risk-averse. The most common investment horizon (45% of respondents) was over six months, while 16% planned to resell once the token price reached a specific value. Regarding the stage of ICO investment, 36% preferred to invest during the pre-ICO stage, 27% during the ICO, and 16% once a new coin reached secondary markets. Additionally, 24% had invested in four or more ICOs. A significant minority (29%) reported involvement in at least one ICO project, either in an advisory role or as a team member. 45% pursued a somewhat diversified portfolio strategy by keeping their assets in at least three different cryptocurrencies.

The majority of respondents did not spend much time learning about a new ICO project; 24% spent less than two hours and 30% spent more than two but less than eight hours, aligning with findings about crowdfunders who typically invest small amounts without conducting thorough due diligence (Vismara, 2018).

The dependent variable, Willingness-To-Invest (WTI), consists of seven discrete ordered preferences that are not normally distributed. Because the gap between the seven values does not necessarily correlate with their mathematical distances—for instance, the gap between "very unlikely" and "rather unlikely" need not be the same as that between "neutral" and "somewhat likely"—we used ordered logit regression with cluster-robust standard errors to account for respondent-specific variance. To ensure the identified effects are also meaningful, we provide a graphical interpretation of the interactions using marginal effects figures created in Stata 16. Exploratory and confirmatory factor analysis of the FOMO scale showed responses loaded on a single factor. For ease of interpretation, we used the mean value of the responses to the ten statements in the FOMO scale as the variable.

5.2. Findings

The base model in Table 3 presents the regression analysis results, including control variables derived from the survey and the three non-focal scenario variables. The salience of the variables in the conjoint design corresponds to our interviews and expectations, with one exception. Interviewees expressed preferences for projects that were open-source ["*We prefer open-source projects, we do not look for patents, (because) we prefer if a project has ability to scale globally*"], technologically more advanced ["*do not go to ICO, if you are at ideation stage, with business idea and white paper only*"], and run by team members with whom they were connected ["*before considering to invest, I look at team… checking if I have mutual contacts and what they know*"]. The baseline model shows that our respondents prefer ICOs with proprietary code. This may imply that our respondents are less integrated in the crypto tribe as the experts were – which bodes poorly for our fourth hypothesis – or that crypto-investors are maturing in their thinking and behave more like business angels and VCs for whom proprietary intellectual property is typically important (Nadeau, 2010). We also find that those with advanced education degrees are more cautious and less willing to invest.

Hypothesis 1 argued that investors would favor ICOs with strong financial stewardship. This resonates with an interviewee who mentioned that "*a hard cap should be disciplined, i.e. the ICO team should be willing to proceed to the next round of financing; I do not participate in ICO without hard cap*". Model H1 shows that respondents favored financially responsible projects. Projects without financial caps were significantly less likely to be funded ($\beta = -0.402$, $p = 0.010$) while the difference between projects with only a soft cap and both a soft and a hard cap was, to our surprise, insignificant ($\beta = -0.258$, $p = 0.111$).

Hypothesis 2 posed that recognition from established stakeholders positively influences willingness to invest. One interviewee stated, "*when 'big whales' invest in your ICO, they send a positive signal to the investor community*". Model H2 shows that liken to significant social media followership (base level for stakeholder recognition), the average respondent considered partnerships with multinational corporations ($\beta = 0.0388$, $p = 0.014$) or VC backing ($\beta = -00.413$, $p = 0.014$) as stronger quality signals. There was no significant difference between the effect of social media followers or mainstream media appearances ($\beta = -0.126$, $p = 0.404$).

Our interviewees recognized the presence of herd behavior and FOMO. One said that many small-scale ICO investors "*tend to FOMO and invest in stuff that is moving high because of hype*". The full model shows support for Hypothesis 3, which suggested that ICO-funders who scored high on FOMO would be less averse to investing in financially irresponsible projects. The interactions between FOMO and "no caps" ($\beta = 0.417$, $p = 0.014$) and "soft cap only" ($\beta = 0.579$, $p = 0.012$) are positive and significant in the predicted direction. Finally, hypothesis 4 does not seem to be supported. While the signs are in the expected direction, only the interaction between FOMO and mainstream media attention is weakly significant ($\beta = -0289$, $p = 0.090$). To further investigate the interaction effects, we graphically represent the marginal effects of our main variables at low and high levels of FOMO.

Fig. 1 clearly shows that high FOMO makes ICO-funders more willing to overlook financial irresponsibility (H3). The effects are very pronounced and indicate that the social construct of FOMO has a role to play in financial decision-making as well. Fig. 2 shows the effects of established stakeholder recognition at different levels of FOMO. We only depict the effect for mainstream media appearances and VC funding. Both appear to follow our hypothesized logic, but the effect for VC backing is quite weak, as was already confirmed by the insignificant coefficient.

To get some intuition of the differential effect size of the levels of the conjoint experiment on willingness to invest, we computer the standardized dominance statistics for each level using the *domin* command in Stata/SE 16.1 (Luchman, 2015). Dominance statistics measure the

Table 3
Ordered Logit Regression with clustered standard errors.

	(Base)	(H1)	(H2)	(Full)	(OLS)
Indirect connection	0.325*	0.343*	0.344*	0.336*	0.328**
	(0.149)	(0.149)	(0.150)	(0.155)	(0.120)
Direct connection	0.390*	0.399*	0.386*	0.380*	0.419***
	(0.161)	(0.160)	(0.159)	(0.160)	(0.122)
MVP is ready	0.653***	0.677***	0.664***	0.705***	0.673***
	(0.162)	(0.161)	(0.162)	(0.163)	(0.136)
Testnet stage	0.575**	0.602***	0.576**	0.633***	0.623***
	(0.178)	(0.178)	(0.180)	(0.179)	(0.141)
Mainnet stage	0.718***	0.722***	0.734***	0.788***	0.692***
	(0.170)	(0.171)	(0.174)	(0.174)	(0.131)
No open source code	−0.324**	−0.336**	−0.320**	−0.306*	−0.297**
	(0.121)	(0.123)	(0.122)	(0.127)	(0.103)
Learn >2 h & < 8 h	0.807**	0.808**	0.807**	0.801**	0.791**
	(0.262)	(0.262)	(0.266)	(0.266)	(0.255)
Learn >8 h	0.529†	0.505†	0.501†	0.518†	0.561*
	(0.297)	(0.297)	(0.300)	(0.283)	(0.262)
Learning hours NA	−0.438	−0.454	−0.474	−0.615	−0.464
	(0.426)	(0.433)	(0.429)	(0.433)	(0.371)
Undergraduate degree	−0.799*	−0.793*	−0.857*	−0.829*	−0.701*
	(0.354)	(0.362)	(0.357)	(0.342)	(0.288)
Postgraduate degree	−1.209**	−1.200**	−1.235**	−1.094**	−1.024**
	(0.384)	(0.391)	(0.385)	(0.375)	(0.320)
MBA or PhD	−1.355**	−1.329**	−1.365**	−1.331**	−1.146**
	(0.454)	(0.461)	(0.457)	(0.430)	(0.360)
Education NA	−0.530	−0.487	−0.551	−0.412	−0.365
	(0.645)	(0.637)	(0.636)	(0.640)	(0.552)
Blockchain experience	0.121†	0.119†	0.120†	0.107	0.063
	(0.069)	(0.071)	(0.070)	(0.066)	(0.053)
Blockchain exp. NA	0.822	0.852	0.789	0.946	0.507
	(0.781)	(0.800)	(0.781)	(0.767)	(0.661)
Risk attitude	0.007	0.009	0.004	0.010	0.016
	(0.130)	(0.132)	(0.132)	(0.131)	(0.113)
Risk attitude NA	−1.789**	−1.826**	−1.783**	−2.383**	−2.010**
	(0.689)	(0.677)	(0.681)	(0.805)	(0.774)
No caps		−0.402**		−1.325***	−1.213***
		(0.156)		(0.396)	(0.320)
Soft cap		−0.258		−1.503**	−1.041**
		(0.162)		(0.486)	(0.353)
Featured in newspapers			0.126	0.700†	0.521†
			(0.151)	(0.391)	(0.293)
Partnership with MNC			0.388*	0.403	0.618*
			(0.157)	(0.379)	(0.264)
Backed by VC firm			0.414*	0.747†	0.766*
			(0.168)	(0.437)	(0.345)
FOMO				0.061	0.137
				(0.226)	(0.184)
No caps X FOMO				0.417*	0.347*
				(0.169)	(0.136)
Soft cap X FOMO				0.579*	0.384*
				(0.230)	(0.154)
Newspaper feature X FOMO				−0.289†	−0.201
				(0.170)	(0.124)
MNC partner X FOMO				−0.016	−0.100
				(0.159)	(0.105)
VC partner X FOMO				−0.168	−0.159
				(0.185)	(0.145)
Constant					2.879***
					(0.708)
# observations	996	996	996	996	996
# respondents	200	200	200	200	200
Log Likelihood	−1775	−1771	−1770	−1751	
Pseudo R^2	0.055	0.057	0.058	0.068	$R^2 = 0.215$

Clustered standard errors in parentheses † $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, work experience and language dummies included but unreported. Columns 4 and 6 report results for all respondents, replacing missing values for gambling proclivity with respondent mean.

relative importance of sets of predictors to an index of model fit (the McFadden pseudo-R^2 for ordered logit regression) (Schillebeeckx, Kautonen, & Hakala, 2022). They can be interpreted as percentages: 16.6% of the explanatory power in the conjoint design comes financial stewardship while 27.6% is explained by stakeholder recognition. The stage of technology development explains 30.5% while the personal relationship with the founders explains 27.6%. The remaining 7% is explained by the availability of the code base. The five dimensions combined only bring us 4.3% closer to perfect prediction, liken to the intercept-only model. While this value appears low, this is quite normal for dominance statistics (Luchman, 2014).

5.3. Robustness checks

We performed the Brant test in Stata to check if the proportional odds assumption, inherent in the logit regression, actually holds. Initially, we

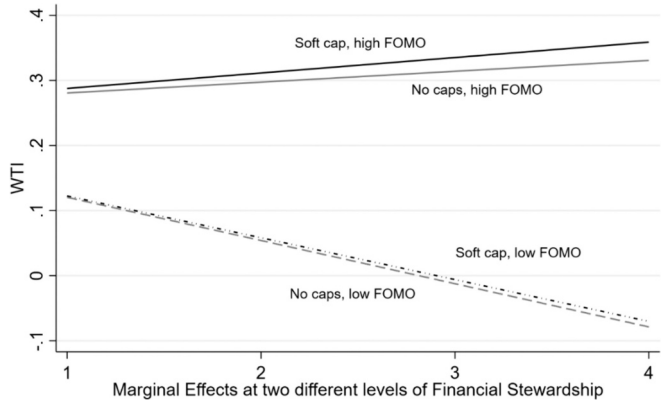

Fig. 1. Visualization of the marginal effects.

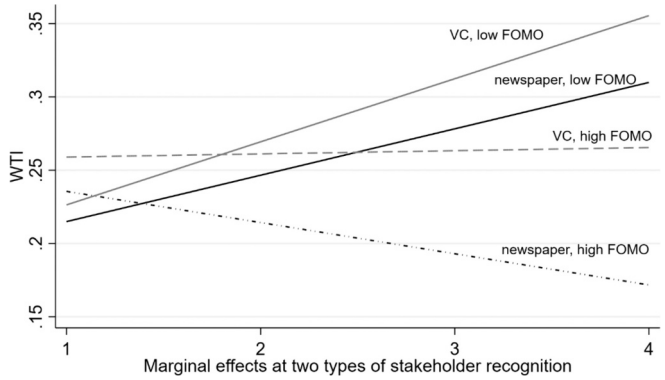

Fig. 2. Visualization of the marginal effects.

could not execute the test for two reasons. First, the respondent language variable made it impossible to retain all independent variables in binary logits, and second, the number of different response options (7-item Likert scale) seemed too high. We recoded the 7 items into four approximately equally distributed options (by combining 1 and 2, 3 and 4, and 6 and 7) and investigated which effects violated the proportional odds assumption. We report the results of this regression in Table 4 and focus exclusively on the main effects. Including the interaction effects made the violations of all variables of interest disappear, from which we inferred that our final model was unlikely to violate the logit assumptions in any significant way. We also ran our regressions as simple OLS and confirmed the direction and significance of our hypothesized effects (Table 3, final column).

Looking at Table 4, we see that the proportional odds assumption is violated for stakeholder recognition. Specifically, we find that this variable is only significant in the second cutoff (the decision between 'unwilling to invest or neutral' to 'willing to invest'). We infer that recognition of established stakeholders becomes important chiefly when potential ICO funders are on the fence. Similar dynamics seem to be at play when considering the investor's connection to the team. Our respondents consistently prefer technologically advanced projects that are not open source. The latter is somewhat surprising because it goes against the dominant ethos of the crypto-community. This finding may imply that our sample does not perfectly capture the typical crypto investor and could help explain why we find only partial support for our fourth hypothesis. The only variable for which the proportional odds violation results in opposing coefficients is blockchain experience. The negative coefficient at the low cutoff and the positive one at the higher cutoff suggest that more experienced respondents are more confident about their decisions to invest. They have a higher likelihood of making very positive as well as very negative judgments based on a specific

Table 4
Robustness check for proportional odds violation.

	Cut 1	Cut 2	Cut 3
		0.295 (0.119) p	
Fear of missing out (FOMO)		*= 0.013*	
Financial stewardship (baseline = soft and hard cap)			
No soft, no hard		*−0.429 (0.152)*	
cap		*p = 0.005*	
		−0.236 (0.159)	
Only soft cap		*p = 0.139*	
Stakeholder Recognition (baseline = social media followers)			
	−0.102 (0.205) *p*	*0.36 (0.182) p =*	−0.049 (0.227) *p*
Mainstream news	= 0.618	*0.049*	= 0.831
		0.387 (0.157) p	
MNCs		*= 0.013*	
	0.260 (0.202) *p*	*0.579 (0.192) p*	0.048 (0.232) *p*
VCs	= 0.197	*= 0.003*	= 0.835
Connection to the team (baseline = no connection)			
		0.328 (0.153) p	
Indirect		*= 0.033*	
	0.052 (0.197) *p*	*0.479 (0.174) p*	*0.615 (0.201) p*
Direct	= 0.793	*= 0.006*	*= 0.002*
Project development stage (baseline = technology is explained but not developed)			
		0.674 (0.165) p	
MVP ready		*= 0.000*	
		0.676 (0.182) p	
Testnet ready		*= 0.000*	
		0.820 (0.182) p	
Mainnet ready		*= 0.000*	
Code (baseline = proprietary code, not on GitHub)			
		−0.324 (0.127)	
Open source		*p = 0.011*	
Time spent learning about project (baseline = <2 h)			
		0.932 (0.28) p =	
<8 h		*0.001*	
		0.536 (0.292) p	
>8 h		*= 0.066*	
	−0.787 (0.409)	−0.467 (0.377) *p*	*0.787 (0.433) p*
NA	*p = 0.054*	= 0.216	*= 0.069*
Level of education (baseline = secondary school)			
		−0.430 (0.340) *p*	
UG		= 0.206	
	−1.111 (0.405)	*−0.610 (0.365)*	*−1.156 (0.423)*
PG	*p = 0.006*	*p = 0.095*	*p = 0.006*
	−1.284 (0.432)	−0.628 (0.405) *p*	−0.592 (0.436) *p*
MBA or PhD	*p = 0.003*	= 0.121	= 0.175
		−0.127 (0.551) *p*	
NA		= 0.818	
Work experience (baseline = none)			
		0.466 (0.527) *p*	
<1 year		= 0.377	
	−0.156 (0.572) *p*	0.101 (0.521) *p*	0.877 (0.561) *p*
<3 years	= 0.784	= 0.846	= 0.118
	0.039 (0.605) *p*	0.295 (0.576) *p*	*1.09 (0.619) p =*
<10 years	= 0.949	= 0.608	*0.078*
		0.127 (0.530) *p*	
>10 years		= 0.811	
	2.042 (1.229) *p*	0.544 (0.804) *p*	−0.009 (0.796) *p*
NA	= 0.097	= 0.499	= 0.991
Blockchain	*−0.100 (0.059)*	0.040 (0.056) *p*	*0.188 (0.058) p*
experience	*p = 0.090*	= 0.469	*= 0.001*
Blockchain	−0.641 (0.643) *p*	0.241 (0.616) *p*	1.345 (0.686) *p*
experience NA	= 0.319	= 0.696	= 0.050
		0.030 (0.115) *p*	
Risk attitude		= 0.791	
		−1.445 (0.681)	
Risk attitude NA		*p = 0.034*	
	0.810 (0.757) *p*	*−2.073 (0.745)*	−4.245 (0.806) *p*
Constant	= 0.285	*p = 0.005*	= 0.000

Notes: 100 observations of 200 respondents. Model fit: Wald Chi(48) = 244.19, pseudo R^2 = 0.114 (p = 0.000). SE denotes cluster-robust standard errors. Willingness-to-invest was recoded from the original 7-item scale to a 4-item scale with 1 (very unlikely, rather unlikely), 2 (somewhat unlikely, neutral), 3 (somewhat likely), and 4 (rather likely, very likely). Recoding was necessary in order to be able to execute the Brant test. In addition, we needed to remove the respondent language variable to be able to verify whether the proportional odds assumption is upheld. Cut 1 contrasts category 1 of the dependent variable with

the higher categories 2, 3, and 4; Cut 2 contrasts categories 1 and 2 with categories 3 and 4; and Cut 3 contrasts categories 1, 2, and 3 with category 4. Cut-specific estimates are reported only for those variables that violate the proportional odds assumption.

scenario. This finding is intuitively appealing.

6. Discussion

While many ICOs in 2016 and 2017 were get-rich-quick schemes and scams, the reckoning has already come. The bubble has burst, and over 70% of cryptocurrency value has disappeared since its peak. However, there is life after the hype (PWC & Valley, 2020; Rowley, 2020). After a drop in 2020, where ICOs declined to $55.6 million, the subsequent years showed fluctuating growth, resulting in $378 million in 2021 and $117 million in 2022 (ICObench.com, 2024).

A global, open-access ICO market is uniquely able to democratize risk capital provision and enable everyone to partake in next-generation technology on a micro-scale. Rather than banning ICOs outright and imposing minimal wealth requirements (as for accredited investors), governments may prefer to enlist digital, low-cost know-your-client (KYC) procedures for ICOs and limit the number of tokens any individual can buy, rather than throwing the baby out with the bathwater. This could potentially be accompanied by project-based accreditation, a small test to indicate familiarity with the focal venture, to combat the likelihood of uninformed investments and to counter the general finding that many investors spend little time learning before investing. In such a decentralized, open-access, global market, learning how candidate ICO-funders cope with outcome uncertainty and information asymmetry is valuable.

Because both outcome uncertainty and information asymmetry hamper economic exchange, ventures use signals to showcase quality to relevant audiences (Spence, 1973; Stiglitz, 2000). Quality signals like team experience, financial stewardship, and VC or business angel endorsements influence key entrepreneurial outcomes (Bruton, Chahine, & Filatotchev, 2009; Elitzur & Gavious, 2003; Mollick, 2014; Vismara, 2018). Our findings followed the literature and revealed positive effects of signals that reduced outcome uncertainty (financial stewardship) and information asymmetry (stakeholder recognition). Small-scale, non-accredited, ICO-funders thus appear to behave similarly to VCs and business angels when making investment decisions. This reduces the need for policy intervention to protect small-scale retail investors.

Audiences in the ICO space and in crowdfunding markets are more diverse and less institutionalized than VCs and business angels. In addition, ICOs imply greater investment risks compared to traditional investments, such as IPOs, due to the presence of uncertainties concerning the project, its potential outcomes, and the fundraising process (Benedetti & Kostovetsky, 2018; Momtaz, 2021; Moro & Wang, 2019; Šapkauskienė & Višinskaitė, 2020; Shrestha, Arslan-Ayaydin, Thewissen, & Torsin, 2021). Moreover, ICOs function within an environment characterized by very limited regulatory oversight (Collomb, De Filippi, & Klara, 2019) that does not require information disclosure as in the case of investment banks' underwriting services (Belghitar and Dixon, 2012). Instead, ICOs primarily rely on white papers that outline the project's concept and technology, although the levels of transparency and reliability may vary considerably (Samieifar and Baur, 2021; Thewissen et al., 2022). Therefore, studying how investors interpret signals is important. While some researchers have investigated how receivers calibrate signals based on strong personal values or the opinions of peers (Branzei, Ursacki-Bryant, Vertinsky & Zhang, 2004), others have found that signals can be interpreted differently based on social identification (Highhouse et al., 2007). We contribute to this school of thought by showing that signal salience is in the eye of the beholder. Individuals with above-average FOMO interpret signals of poor financial stewardship less negatively than those with low FOMO. Moreover, FOMO also reduces the willingness to invest in projects that have been featured in established news sources. One reason for this could be found in the use of the tribe's own communication channels. If information is already accessible via established, broad media, the shared information may lose its insider tip character and be perceived as mainstream. We attribute these findings to the tribe-like nature of the blockchain community and the heightened relatedness needs people with FOMO experience (Deci & Ryan, 2008; Przybylski et al., 2013; Ryu & Ko, 2019). This interpretation fits within Connelly et al. (2011)'s systemic model of signal interpretation (p. 57) in which receivers' signal interpretation is susceptible to the (imagined) perspective of other community members. We believe these findings underscore the significance of FOMO in diverse social and business contexts, reinforcing the concept that FOMO is socially constructed within specific communities or tribes with which individuals identify (Barry & Wong, 2020). This insight opens exciting new pathways for future research into the broader impacts of FOMO.

Our key insight is that even ostensibly positive quality signals can be infused with negative valence by the receiver of the signal. We would posit that the opposite could hold as well. An ostensibly negative signal like being sued by a competitor could be perceived by some audiences as a badge of honor. Future research could investigate this proposition. While Fischer and Reuber (2007) proffer that consistent and coherent quality signals will lead to reputational consensus among audiences, our findings suggest that such consensus need not be reached as investor characteristics may alter signal valence. As personality traits affect how ICO-funders read and respond to signals, ICO teams, and perhaps also other entrepreneurial and managerial teams that are seeking to signal to large groups, could increase the likelihood of enticing specific subgroups by signaling certain aspects of quality more or less strongly, especially in tribe-like communities.

Our findings contribute to research by elucidating the complex interplay between psychological traits like FOMO and investment decisions in the context of Initial Coin Offerings (ICOs). We demonstrate that FOMO influences how investors interpret quality signals, often leading them to favor financially riskier projects while eschewing those recognized by mainstream entities. This finding reveals a tribal mentality among investors with high FOMO, characterized by an us-vs-them attitude that affects their investment behaviors. Our study contributes to signaling theory by showing how personal traits can modify signal valence and extends self-determination theory by exploring the tribal dimensions of FOMO. These insights highlight the non-rational aspects of investment decisions in the emerging and unregulated market of ICOs, offering a significant addition to existing literature on investor behavior and the psychology of financial decisions.

Practically, our findings underscore the dual role of ICOs in democratizing access to capital and potentially increasing investment risk for certain individuals. By identifying how FOMO can drive investors to make riskier choices, our study offers valuable insights for blockchain entrepreneurs and policymakers. Understanding the influence of tribal mentality and FOMO on investment decisions can help in designing better regulatory frameworks and investment advisories that protect investors from the pitfalls of hype-driven markets. Additionally, recognizing the traits that lead to non-traditional investment appraisal can assist entrepreneurs in crafting more effective communication and marketing strategies that align with the psychological profiles of their potential investors. This knowledge is crucial for mitigating risks and maximizing the positive impacts of innovations like ICOs in the financial landscape.

7. Conclusion

Since 2013, the Initial Coin Offering (ICO) has emerged as the killer application of blockchain technology. By democratizing the provision of risk capital, ICOs challenge our understanding of how entrepreneurial ventures signal quality to a vast, globally scattered pool of potential investors. While similar to crowdfunding campaigns, ICOs possess

enormous upside potential due to the hype-like nature of the crypto-sphere, where new tokens can surge by >1000% in a single day. This new gold rush remains largely unregulated, thus unsurprisingly attracting many scams. Therefore, it is crucial for both policymakers and blockchain entrepreneurs to better understand how potential investors interpret quality signals. Our study illuminates how prospective ICO funders interpret quality signals that reduce outcome uncertainty, such as financial stewardship, and decrease information asymmetry, like stakeholder recognition. A key insight from our research is that ICO funders with strong FOMO (Fear of Missing Out) attribute a negative valence to ostensibly positive quality signals, leading them to reduce their willingness to invest in projects that are financially responsible or endorsed by established news sources or venture capitalists. While FOMO is often characterized as a personality trait, our findings align with research suggesting it is also a socially constructed phenomenon within specific communities or tribes with which individuals identify. We encourage psychology researchers to further explore this finding and entrepreneurship researchers to consider how other individual traits may influence large groups of small-scale investors.

CRediT authorship contribution statement

Simon J.D. Schillebeeckx: Writing – review & editing, Writing – original draft, Formal analysis, Data curation. **Sandzhar Tazhibaev:** Writing – original draft, Data curation. **Johannes Gartner:** Writing – review & editing, Writing – original draft.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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