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RESEARCH ARTICLE

(De)centralized governance and the value of platform-based new ventures: The moderating role of teams and transparency

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Abstract Drawing on institutional and demand-side perspectives, we investigate performance implications of (de)centralized governance modes in platform-based new ventures, and the conditions under which (de)centralization generates more value. Using a sample of 1,431 Initial Coin Offerings (ICOs), a new source of entrepreneurial finance, we find that centralization of decision-making is positively associated with platforms' market value. Further, we consider how platform characteristics affect this relationship, finding that both the presence of an experienced Chief Technology Officer (CTO) and project transparency negatively moderate the positive relationship between centralization and market value. Thus, decentralized platforms need leaders with technical experience and project transparency to generate more value. Overall, this study provides a better understanding of the boundary conditions that increase the value of (de) centralized governance.

Plain English Summary This study investigates how different governance structures impact the market value of new blockchain-based ventures that conduct Initial Coin Offerings (ICOs). We explore the roles of centralized and decentralized decision-making and how these structures affect platform performance. Our findings show that centralized governance, where decision-making is concentrated, tends to increase a platform's market value. However, having an experienced Chief Technology Officer (CTO) and clear project transparency can reduce the reliance on centralization. This implies that decentralized platforms can also achieve high market value if they have transparent processes and skilled leaders who can

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manage the technical aspects. The primary implication for practice is that new blockchain platforms should focus on hiring experienced technical leaders and ensuring transparency in their projects to attract investors and customers.

Keywords Entrepreneurial finance · Platform governance · Decentralization · Platform performance · Initial Coin Offerings · Demand-side theory

JEL Classification G10 · G23 · G30 · L26 · M13

1 Introduction

Digital platforms disrupt markets, enabling new firms to enter into relationships with open communities to access knowledge, financing, and complementary resources to develop new products and services to better serve their customers (e.g., Bellavitis et al., 2023a, 2023b; Gulati et al., 2012; Shipilov & Gawer, 2020; Zahra & Nambisan, 2011). This phenomenon has considerable consequences for corporate governance (CG) as a growing number of *decentralized* platforms—i.e., platforms that are governed through community efforts, rather than a centralized actor—have emerged (Chen et al., 2021; Hsieh & Vergne, 2023; Lumineau et al., 2021). Platform-based new ventures bring together customers and investors with developers in open, possibly decentralized systems (Chen & Bellavitis, 2020). Although decentralized platforms can change the way firms engage in entrepreneurship, organize collaborations, generate and deliver value to customers, little is known about *the conditions* under which (de)centralized platforms generate more value.

Research has only started to study the effects of platform governance in terms of the (de)centralization of the decision-making process—i.e., how decision-making authority is split between platform owners/managers and community members, who often are also investors in the platform (Chen et al., 2021; Nguyen & Nguyen, 2022). Taking an agency theory lens, this research has focused on capital market participants and the CG preferences of investors. Specifically, investors are concerned about opportunistic behavior by managers when decision-making is centralized in managers' hands. Accordingly, investors value decentralized CG, which increases investor involvement in the process of decision-making (Chod et al., 2022; Kaal, 2021; Murray et al., 2021). However, a more recently developed demand-side perspective on CG suggests the need to consider product market customers' perceptions in evaluating the focal firm's governance (Priem, 2007). This perspective examines CG through the lens of customers, suggesting that their expectations are pivotal in shaping a firm's legitimacy and value. The legitimacy of a firm's CG structure among customers is crucial when they are at the core of a firm's competitive advantage, and thus possess great power to confer legitimacy on a firm (Krause et al., 2016, 2021). Customers can value firms with centralized CG systems more, because such systems can facilitate the speed of decision making (O'Mahony & Karp, 2022) and bring clarity with respect to who is responsible for execution of a product/service that meets their diverse demands (Krause et al., 2016).

However, past research has not considered the possibility that customers may also be endowed with ownership and control rights. Take, for example, the Initial Coin Offerings (ICOs), which are a novel way for ventures to raise capital (Bollaert et al., 2021; Farag & Johan, 2021; Fisch, 2019; Momtaz, 2021c). In ICOs, new ventures raise capital to fund the creation of an online platform that uses blockchain technology by selling "tokens" to a crowd of investors (Adhami et al., 2018; Catalini & Guns, 2019; Fisch, 2019; Howell et al., 2020). These tokens are often "utility" tokens, which provide a right to use them in the future once new ICO firms have developed a platform (Davydiuk et al., 2023; Momtaz, 2021b). Thus, token holders qualify as investors and prospective customers of the platform, resulting in a more collaborative and community-driven approach to entrepreneurship (Chen, 2018; De Filippi, 2017; Howell et al., 2020; Lee & Parlour, 2022; Momtaz, 2021a, 2021b). For example, the GLM token issued by Golem, a decentralized marketplace for computing power, allows network participants to loan out their idle computer's processing power to others who need it for complex applications (e.g., scientific calculation, machine learning, etc.). In these settings, factor and product market participants largely overlap, which creates a novel context for CG research.

To date, research has focused on the direct relationship between (de)centralization and market performance (e.g., Chen et al., 2021; Nguyen & Nguyen, 2022). However, we lack a thorough understanding of

the conditions that affect the value of (de)centralization of decision-making to platform owners/managers or decentralization towards external actors who have a dual role (i.e., investors *and* prospective customers). In contrast to prior research, we draw on institutional and demand-side CG perspectives to examine the relationship between a platform's governance (i.e., the (de)centralization of decision-making) and market performance (i.e., market capitalization).[1] We challenge the agency view that investors naturally value more decentralized CG systems because decision-making is transferred to them. When investors are also (prospective) customers, with diverse preferences and decision-making horizons, from the demand-side perspective, they can impose different and even conflicting pressures in terms of what is legitimate CG. Indeed, transferring decision-making to such a diverse group can hamper decision speed or even lead to inaction and a lack of clarity in terms of what will (or should) be developed. To reconcile the opposing forces among actors, who take dual roles of investors and customers, the concentration of decision-making power at the top (platform management level) may be more valued by the market participants.

We also develop extant research on the value of (de)centralization further by hypothesizing that the effect of CG modes will be contingent upon the internal characteristics of the platform (Boudreau, 2010) that can shape the effectiveness of the platform's management in the eyes of external actors. In the context of blockchain platforms, for example, the unique experience of ventures' leaders and transparency can play an important role in affecting specific governance mechanisms (Altman & Tushman, 2017; Chen et al., 2021; Howell et al., 2020) and can convey a higher value to the platform. We posit that the presence of an experienced top team (i.e., an experienced Chief Executive Officer (CEO) and Chief Technology Officer (CTO)), and greater transparency—in terms of project transparency, including publishing a "white paper" (i.e., a voluntary disclosure document that provides information on the project) and clarity of purpose of the platform—can shape actors' evaluation of different governance modes.

To test our theoretical predictions, we use the ICO context for several reasons. First, although blockchain's original idea was to "democratize participation" by enabling decentralized platforms, at present there are numerous platforms with different CG systems, ranging from decentralized (e.g., Blackcoin) to centralized (e.g., Ripple) (Tasca & Tassone, 2019). Second, ICOs entail significant information asymmetry because the issuers are typically in the early phase of development (Fisch, 2019; Martino et al., 2022). Indeed, an ICO firm often neither has a track record nor a developed product (Howell et al., 2020). Most ICOs also operate globally (e.g., Adhami et al., 2018; Bellavitis et al., 2022). Further, formal disclosure requirements are largely absent, and there is thus potential for fraud (Hornuf et al., 2022; Shifflett & Jones, 2018). Overall, ICOs provide an opportunity to study how markets value diverse CG modes in a context with large information asymmetry, and when market participants have dual roles of investors and customers.

Consistent with our expectations, we show that centralization of decision-making is positively associated with platform market value. Moreover, the presence of an experienced CTO and project transparency negatively moderate the relationship between centralization and market capitalization. These results underscore the importance for decentralized platforms to have experienced leaders who, in the absence of decision making-authority, can still play a key role in facilitating coordination and collaboration among the community members involved in decision-making. The results also show the crucial role of transparency in ensuring accountability and providing clarity on how decisions within the community are made.

This study makes several contributions. First, we contribute to the CG research in the context of new organizational forms based on ecosystems of networked firms (Cumming et al., 2019; Filatotchev et al., 2020; Wright & Siegel, 2021; Zahra & Nambisan, 2011). We do so by arguing that governance—i.e., the (de)centralization of decision-making—plays a key role in the legitimation of firms in the eyes of customers, i.e., demand-side legitimacy (Krause

[1] Specifically, our study is grounded in a perspective on CG which emphasizes *legitimacy* aspects of governance mechanisms (rather than their impact on monitoring and transaction costs). This choice is motivated by the importance of behavioral uncertainties, such as trust and transparency and the likelihood that a product/service will be developed, which are particularly relevant in the blockchain context where investors simultaneously act as customers, managing both the supply of capital and the demand for products/services.

et al., 2016, 2021; Priem, 2007). From the demand-side perspective, the governance modes that contribute to wealth *generation* (as opposed to wealth *protection* in agency theory) may command higher value among the platform members, an issue little explored in contemporary CG research (Filatotchev et al., 2020). Importantly, our study indicates that decentralized governance threatens the platform's value-creating perceptions among customers, who value centralization more.

Second, we contribute to the literature on ICOs in entrepreneurial finance, which has examined the factors that foster ICO fundraising (Adhami et al., 2018; Fisch, 2019; Giudici & Adhami, 2019; Howell et al., 2020; Momtaz, 2021c), the motivations to invest in ICOs (Fisch et al., 2021), post-ICO performance (Fisch & Momtaz, 2020) as well as the geography of ICOs (Bellavitis et al., 2022; Huang et al., 2020), but less attention has been given to the impact of CG on ICO firms' market value. Our study contributes to the call (e.g., Colombo et al., 2023; Farag & Johan, 2021) for research into the drivers of firm valuations in alternative financial markets, such as ICOs. We uniquely characterize a platform's end-users (i.e., customers) as the most important and powerful audience, and show that decentralization exerts negative effects on the valuation of the platform in an ICO. This may be counter-intuitive in the context of blockchain-based platforms, as decentralization represents the core promise of blockchain as a way to create value (Chen & Bellavitis, 2020). Overall, we add to the emerging empirical evidence that decentralized governance is not value-optimal (e.g., Chen et al., 2021; Momtaz, 2024). Our findings do differ from Chen et al. (2021), who find that some degree of centralization is optimal. However, they transform distinct (de) centralization modes to a continuous variable, while we consider them (empirically more appropriately) as different categories. Using this approach shows that decentralization leads to *lower* platform market value, rather than an inverse U-shape relation between (de) centralization and market value.

Finally, we further deepen our insights on the value of (de)centralized governance and investigate the moderating role of both the experience of platform teams and transparency on the relationship between governance and platform value. We show that the market's assessments of CG structures are affected by the platform's characteristics, which can shape customers' evaluation of (de)centralization. Our findings highlight that the technical experience of the team, as well as project transparency, are contingencies of the relation between CG and platform value. Specifically, they are viewed as being able to mitigate the challenges of decentralization (including trust, free-riding effects, and matching different interests). Our theory and empirical findings therefore provide a better understanding of the boundary conditions that increase the value of granting access and/or authority to external actors (Rietveld & Shilling, 2021) and, more broadly, contribute to a contingency-based view on CG (e.g., Aguilera et al., 2008; Bell et al., 2014; Wiseman et al., 2012).

2 Theoretical background and hypotheses

2.1 Corporate governance in digital platforms

Platform-based (new) firms now dominate many industries (Cennamo, 2021; Rietveld et al., 2019; Zahra & Nambisan, 2011). These firms are organized around a digital platform, which functions as an interface between two (or more) groups of actors and facilitates value-creation exchanges (Cennamo & Santalo, 2013; Jacobides et al., 2018). Platform-based firms thrive on cooperation, coordination, and integration across hierarchically independent, yet interdependent heterogeneous actors (Jacobides et al., 2018; Thomas & Ritala, 2022). For example, a platform ecosystem usually consists of a platform owner/manager (i.e., integrator) that designs and governs the technical architecture and different groups of actors that interact on the platform, such as providers of complementary products and services to the platform (i.e., complements) and users that consume products or services (Jacobides et al., 2018; Rietveld et al., 2019; Schmeiss et al., 2019).

However, governing a diverse set of actors to pursue activities and outcomes that are acceptable to all is challenging. Thus, the platform owner/manager should apply appropriate CG mechanisms, including an allocation of decision rights, incentive structures, and control mechanisms, to manage the relationships with the community of external actors to enable joint value creation while guaranteeing value capturing for all (Schmeiss et al., 2019; Tiwana et al., 2010; Wareham et al., 2014; Zhang et al., 2022).

The rise of blockchain technology has led to a growing number of decentralized platforms that are governed less by platform owners/managers and more through community involvement (Chen et al., 2021; Chod et al., 2022; Schmeiss et al., 2019). These blockchain-based platforms rely on decentralized governance and distributed data infrastructure, which allows the different market sides connected to the platform to interact directly with each other, without the need for a central intermediary (Catalini & Gans, 2020; Chen & Bellavitis, 2020; Constantinides et al., 2018; Pereira et al., 2019). This has enabled the creation of a new type of multi-sided platform architecture, where the platform provider moves from being a pure intermediator—typical of a centralized platform—to a service enabler, allowing a decentralized network of users[2] to take charge of some activities, such as connecting the sides and assuring transactions between them[3] (Trabucchi et al., 2020).

Additionally, blockchain platforms tend to present a decentralized decision-making in which the community around the platform not only suggests changes to the code and rules of the platform but also decides which of these changes will be implemented (Chen et al., 2021; Pereira et al., 2019). In particular, the promise of the blockchain technology is to replace traditional models of governance based on centralized systems, characterized by clear hierarchies and decision-making concentrated in a leader or a group, with decentralized CG systems, where the distribution of power, the decision-making process, and responsibilities are spread out among many actors (Chen & Bellavitis, 2020; De Filippi & McMullen, 2018).

Although blockchain's original idea was to foster the development of decentralized governance systems in order to "democratize participation" (De Filippi & McMullen, 2018; Tapscott & Tapscott, 2017), today there are numerous blockchain-based platforms with different CG systems, ranging from decentralized (e.g., Blackcoin) to hierarchical-like or centralized platforms (e.g., Ripple) (Lafarre & Van der Elst, 2018; Tasca & Tassone, 2019). However, it remains unclear when platforms can successfully rely on decentralized governance models as opposed to centralized governance models to achieve higher value added (Rietveld & Shilling, 2021). Previous research has indeed investigated the direct effects of (de)centralized governance modes on platform performance (Cennamo et al., 2020; Chen et al., 2021), and the mediating mechanisms that explain this relationship (Nguyen & Nguyen, 2022). This research shows that there are cost–benefit trade-offs associated with different degrees of decision-making (de)centralization in blockchain firms. For instance, in a recent paper, Chen et al. (2021) examine trade-offs between centralization and decentralization and identify semi-decentralization as an effective governance structure. However, this research encounters two issues. First, these authors stop short of moving away from an investor-focused agency perspective to explain the underlying mechanisms. Second, they transform distinct (de)centralization modes to a continuous measure,[4] rather than as a categorical variable, which is more appropriate. Relatedly, Nguyen and Nguyen (2022) examine the indirect effects of decentralized governance on market value, identifying voluntary disclosures and developers' activities as mediating mechanisms that explain why decentralized governance leads to increased or decreased market value.

Although the literature has documented costs and benefits of (de)centralized governance modes, to date, there is a lack of research regarding the contingency factors that affect the relationship between governance and platform value (Rietveld & Shilling, 2021; Nguyen & Nguyen, 2022). This is an important gap, as more recent institutional-grounded research suggests that different CG practices may be more or less effective and/or appropriate depending on contextual organizational characteristics (Aguilera et al., 2008; Filatotchev et al., 2020). Addressing this gap below,

[2] In blockchain-based platforms, the community does not only include the end-users that consume complements and the producers of those complements (i.e. complementors), but also *developers*, who make use of platforms to build new applications on top of them, *validators* (e.g. miners), who verify transactions triggered by users, and *arbiters,* who have a role in resolving conflicts between actors involved in a transaction.

[3] Regarding the nature of the activities of blockchain platforms, while some are purely transactional, like Bitcoin whose goal is to exchange and store value, others use tokens associated to services or products (e.g. Filecoin).

[4] For example, Chen et al. (2021) give Centralized-Hierarchical platforms a score of "1" and Decentralized platforms a score of "4". However, it is difficult to argue that a decentralized platform is 4 times less centralized than a Centralized-Hierarchical platform (i.e., the values of 1 and 4 are purely arbitrary, and represent distinct categories of platforms).

we draw on institutional and demand-side perspectives to investigate performance implications of (de) centralized governance modes, and examine *the conditions* under which (de)centralized platforms generate more value.

2.2 Hypotheses

2.2.1 (De)centralization and market performance

The institutionalized perspective on CG (e.g., Bell et al., 2014; Krause et al., 2016, 2021) suggests that a platform's governance mechanisms influence the perceptions of the platform's value in the eyes of external assessors. Platform governance is related to how the power and influence over decision making is spread out among the different stakeholders toward the platform (e.g., centralization versus decentralization). It represents a key factor that may have profound implications for the development of the platform and, consequently, for actors' evaluation of the platform market potential (Di Tullio & Staples, 2013; Hsieh et al., 2017; Ondrus et al., 2015).

As the governance of blockchain platforms involves actors that can have the dual role of investors and prospective customers, the traditional agency-grounded perspective applied in prior studies (e.g., Chen et al., 2021) has its limitations in explaining the relationship between governance arrangements and platform value. Traditional agency-grounded research is based on a number of universalistic assumptions rooted within economics and finance literatures, and it prescribes actions that focus on the protection of investors against the negative effects of key decision-makers' opportunism inside an organization (e.g., Westphal & Graebner, 2010; Zajac & Westphal, 2004). One of the core suggestions of this perspective is that a decentralization of decision control may be an effective way to curb managerial opportunism and mitigate the associated agency costs, thereby enhancing value perceptions among investors.

However, this research has largely excluded the consideration of other stakeholders, who possibly possess great power to confer *legitimacy* on a firm, and who can view (de)centralized governance modes differently from investors. This is an important gap, as prior research suggests that product market customers form legitimacy judgments that are salient to firm outcomes (Krause et al., 2016, 2021). More importantly, investors in an ICO are, ultimately, at the same time future customers (end-users) of the platform (De Filippi, 2017; Howell et al., 2020; Momtaz, 2021b), who may have divergent interests (e.g., ideological and technological motives) in addition to the prospect of financial gains and different time horizons (Fahlenbrach & Frattaroli, 2021; Fisch et al., 2021). This means that their investment decision is not only based on the potential return on investment, but possibly even more so on their trust in the platform's ability to deliver its promised services or products that meet their needs as potential customers (Catalini & Gans, 2019; Cong et al., 2021). Accordingly, they may impose different, even conflicting, pressures in terms of what is required from platform owners/managers. When investors are also customers a demand-side perspective becomes particularly prominent (e.g., Krause et al., 2016, 2021).

In the context of digital platforms, scholars suggest that customers may value negatively the lack of a central authority that manages the various demands of the broad and diverse stakeholders of a platform, as this creates uncertainty and a lack of trust (O'Mahony & Karp, 2022). A decentralized governance mode can indeed create a qualitatively different level of uncertainty as to whether the community members will work towards the achievement of platform goals or will use the delegated power to engage in self-serving behaviors (Hacker, 2019; Kyprianou, 2018). Moreover, with more actors involved in the decision-making process, consensus can become too difficult to achieve because platform participants may hold vastly diverse perspectives and interests, resulting in fragmentation and deadlocks that can hurt all parties (Chen et al., 2021; De Filippi & Loveluck, 2016). Without clear leadership, community members may fail to reach agreements on the future of a project and on how to move a project forward, especially in difficult or ambiguous situations (O'Mahony & Ferraro, 2007), potentially undermining the continued development of the platform. This can make customers feel uncertain about the future direction of the platform and, consequently, lead to a lack of trust in the platform's ability to deliver on its promises. Cennamo et al. (2020) provide evidence for the benefit of centralization, suggesting that retaining control over key strategic dimensions (e.g., data and rules for transaction) is essential for maintaining product quality, preventing ecosystem fragmentation, and ensuring user

safety, which contribute to higher trustworthiness in the platform.

The quote below by Christoph Jentzsch, one of the founders of the DAO, the first example of a decentralized autonomous organization, which then failed due to an issue with the smart contract and a consequent hack, indicates customers' appreciation for a centralized decision-making process, recognizing that numerous members in the community were seeking leadership regarding governance rules and key decisions about the development of the platform. In handling the 'hacking' of the DAO, for example, he explains that community members relied heavily on the opinion of Vitalik Buterin, co-founder of Ethereum (the blockchain platform on which the DAO works), despite the decentralized governance structure:

> "the lack of centralized authority needed to make quick decisions was felt strongly throughout the history of DAO. This is however the nature of decentralized systems, and is both a blessing and a curse. This is exemplified by the fact that even little posts by Vitalik were interpreted as decisions, even though he just gave his opinion." (Christoph Jentzsch, 2016)[5]

Overall, as ICO investors are also prospective customers, governance effectiveness valuations from the demand-side may dominate. Indeed, to reconcile potential conflicts when actors play multiple roles simultaneously, concentrated decision-making power at the top should be appropriate to build trust in the platform, as this can provide greater transparency, control, and thus ensure a clear path forward for the platform's development. Zahra et al. (2009) and Zahra and Filatotchev (2004) differentiate between the "wealth-protection" and "wealth-creation" functions of CG by looking at the high uncertainty context of entrepreneurial firms. These authors argue that the governance attributes of these two functions may be very different, and while control over managerial discretion may be important from an investor wealth protection point of view, governance factors contributing to wealth generation may be valued at the early stages of the organization's life-cycle. Moreover, prospective customers' perceptions may be particularly salient because customers are often at the core of a firm's competitive advantage in digital platforms (Cennamo, 2021; Taeuscher et al., 2021; Thomas & Ritala, 2022). Especially when a platform is in its earliest stage, as in the case of an ICO, customers and their loyalty are key to signal the viability of the platform and drive potential network effects that, in turn, foster the adoption of the platform by other participants (e.g., developers, complementors) (Chen, 2018; Thomas & Ritala, 2022). Concerns about slow decision-making and inaction that often go hand-in-hand with decentralized decision-making when actors have divergent perspectives may be particularly detrimental at the stage of ecosystem emergence for the adoption of the platform and, therefore, ultimately for value creation. Thus, ICO investors may put on their prospective customer's hat in terms of CG preferences. Combined, this leads to the following hypothesis:

> **Hypothesis (H1).** There is a positive relationship between centralization of decision-making and platform market value.

The above hypothesis indicates that, from the demand-side perspective, a positive relationship between centralization of decision-making and platform value is expected because centralization can be viewed as a more legitimate CG mode for value creation in the eyes of prospective ICO investors/customers. Below, we further hypothesize that the positive relationship between centralized CG modes and platform market value will be weaker when internal characteristics of platforms are already in place to limit ICO investors'/customers' legitimacy concerns. In this respect, the team (Colombo et al., 2022; Huang et al., 2022; Momtaz, 2021a) and transparency of the platform (Bourveau et al., 2022; Fisch, 2019; Momtaz, 2021b) can play an important role, as drivers of venture valuation in an ICO (Alshater et al., 2023; Kher et al., 2021).

2.2.2 The moderating effect of team experience

Given the value of managerial and technical experience for governing digital platforms (Chen et al., 2021; Fleming & Waguespack, 2007; O'Mahony

[5] Published on Medium, accessible at: https://medium.com/slock-it-blog/the-history-of-the-dao-and-lessons-learned-d06740f8cfa5. Last accessed on June 17th 2024.

& Ferraro, 2007), we first focus on the team behind the platform, and in particular on the CEO and CTO, who are viewed as powerful actors. In the ICO context, experienced CEOs and CTOs may serve as reference points for investors/customers, because the decisions they take are crucial for the platform's success (Colombo & Grilli, 2010; Colombo et al., 2022; Huang et al., 2022; Momtaz, 2021b). Even in a decentralized platform, where they hold no decision-making authority, an experienced CEO and CTO can still provide guidance, expertise, and technical support, which ensure that the community members can make informed choices regarding platform development (Hsieh & Vergne, 2023).

The CEO combines roles in strategy formulation, implementation, and leadership (Finkelstein & Hambrick 1990;Hambrick & Mason, 1984; Hambrick & Quigley, 2014). Their ability to formulate and implement strategic initiatives that capitalize on environmental opportunities, while mitigating external threats, is vital to firm success (Filatotchev & Bishop, 2002; Geletkanycz & Hambrick, 1997). Experienced CEOs are associated with leadership skills and the ability to run the firm given their power to make final decisions and shape the vision and direction of the firm (Ganotakis, 2012; Geletkanycz & Hambrick, 1997). For instance, according to Yang et al. (2011), experienced CEOs will be more likely to recognize and seize wealth-creating opportunities and, consequently, make important decisions about the development of the firm. Thus, having an experienced CEO can provide managerial guidance to the platform by managing conflicts within the community of stakeholders, who may have different purposes and time horizons (De Filippi & Loveluck, 2016; Hacker, 2019). This is particularly relevant for decentralized platforms as an experienced CEO can help the diverse groups of stakeholders involved in the decision-making process to reach agreements on key decisions in the best interest of the platform, especially in difficult and contentious situations. Notably, by fostering effective communication, promoting collaboration, and facilitating the exchange of ideas and perspectives, CEOs can play a pivotal role in the process of consensus-building within the community, thereby mitigating the risk of deadlock. Accordingly, customers can value an experienced CEO, who is able to lead communities towards the shared goals of the platform (Ahn et al., 2017; Chen et al., 2021; O'Mahony & Ferraro, 2007), especially when the platform is decentralized in nature.

ICO investors/customers may also incorporate the technical experience of leaders into their evaluation (Chen et al., 2021; O'Mahony & Ferraro, 2007). Given ICOs' technological context (Fisch, 2019), technological capabilities represent core competencies for platforms to understand the technological complexities of the blockchain and develop it further (e.g., Cohney et al., 2019; Long, 2018). The effective integration of technology into the strategy of blockchain-based platforms is essential for their success. Accordingly, having a leader with technological capabilities—i.e., a CTO—responsible for outlining the platform's technological vision, implementing technology strategies, and ensuring that the technological resources are aligned with the platform's business needs, can be crucial for platform success (Adler & Ferdows, 1990; Medcof, 2008; Medcof & Lee, 2017; Smith, 2003). Platform decision-makers make technical decisions about the architecture of the platform (Cusumano & Gawer, 2002; Dahlander & O'Mahony, 2011). However, the complex and sometimes conflicting nature of decisions associated especially with decentralized platforms can lend themselves to being particularly problematic (e.g., Altman & Tushman, 2017; Baldwin & Clark, 2006). This situation makes an experienced CTO particularly important for the value of decentralized platforms. An experienced CTO has the necessary skills and core competencies to master the technology, solve technical problems (Dahlander & O'Mahony, 2011; O'Mahony & Ferraro, 2007), understand users' needs, and consequently, make key decisions in the best interest of the platform. This may allow the CTO to overcome conflicts among the diverse groups of stakeholders when making decisions about the technology (e.g., changes to the code or how to respond to an attack) so as to achieve a consensus more efficiently—issues that are particularly key for decentralized platforms.

Based on the considerations above, we suggest that the presence of an experienced CEO and/or CTO can play an important role in affecting specific CG mechanisms (Altman & Tushman, 2017; Chen et al., 2021; Howell et al., 2020) and can therefore shape customers' evaluation of (de)centralized governance modes. Experienced CEOs and/or CTOs have the power and skills to set up adequate governance rules to manage the various demands of the broad and

diverse stakeholders of a platform, and provide managerial guidance to them in conceiving ways to create wealth (Chen et al., 2021; Giudici & Adhami, 2019; O'Mahony & Ferraro, 2007). For example, they can set up the long-term vision and strategic roadmap of platform development, as well as propose improvements to the platform (e.g., upgrades for the blockchain's core code), or solutions to technical problems. Thereby, they provide coordination around a narrower set of goals on which the community around the platform has then to take a decision. This would allow platforms to reap the benefits of decentralization (e.g., increased accountability of people), while mitigating potential costs (e.g., opportunistic behavior, coordination issues, or even inaction) among actors involved in the decision-making process (Tiwana et al., 2010). Under these conditions, therefore, the benefit of increasing centralization is relatively low as prospective customers/investors may be comfortable with an experienced CEO and CTO who are able to mitigate potential governance problems arising from delegating the decision-making process to the community members. Thus:

Hypothesis (H2a). The positive relationship between centralization of decision-making and platform market value is negatively moderated by the extent of CEO experience.

Hypothesis (H2b). The positive relationship between centralization of decision-making and platform market value is negatively moderated by the extent of CTO experience.

2.2.3 The moderating effect of transparency

Informational asymmetry represents another powerful mechanism that impacts the evaluation process of investors/customers (Fisch, 2019). The ICO market is characterized by high levels of information asymmetry (Adhami et al., 2018; Colombo et al., 2022; Howell et al., 2020; Martino et al., 2022; Momtaz, 2021c). ICO issuers are often in the early phase of development, making it difficult to assess ventures' quality as they have neither a proven track record of performance nor a developed product/business model. Moreover, the lack of institutional/regulatory infrastructure and established intermediaries, as well as the absence of disclosure requirements, leads to a situation in which little information is available to ICO investors, who have to rely solely on the information released by the ICO venture (Momtaz, 2021b, 2021c).

Platforms vary in terms of transparency—i.e., the degree to which they provide information (Bourveau et al., 2022). Research indicates the disclosure of information is an important governance mechanism to, for example, enhance trust among investors (e.g., Bushman & Smith, 2001; Bushman et al., 2004; Schrand & Verrecchia, 2005). The disclosure of relevant information about firms reduces the level of information asymmetry (Chahine & Filatotchev, 2008; Colombo et al., 2023; Healy & Palepu, 2001; Verrecchia, 2001) between the owners and potential ICO investors/customers. Greater transparency represents a tool that allows the community to pre-assess the technical validity of the offer and the actual state of the project (Howell et al., 2020). It also offers valuable insights into various aspects of the platform's operations, including resource allocation, strategic decision-making processes, and accountability mechanisms. This can be especially important for decentralized systems, in which a group of uncoordinated people will need to collaborate in order to make decisions regarding the development of the platform.

In an ICO, the primary source of information provided to potential investors is a white paper. A white paper is a voluntary disclosure document that provides information on the ICO issuer to the public, including ICO details (e.g., terms and conditions, start and end dates, etc.), the project to be developed (e.g., business plan, development roadmap) and its technical specifications, such as IT protocols, adopted blockchain and token supply (Adhami et al., 2018; Colombo et al., 2023; Martino et al., 2020). Hence, it represents the main source of information on which investors/customers can rely to assess the underlying quality of the ICO issuer and thus reduce the information asymmetry surrounding the platform (Alshater et al., 2023). In this respect, prior research (e.g., Howell et al., 2020) shows that publishing a white paper is crucial for attracting investors in an ICO. Interestingly, a significant fraction of ICOs do not publish a white paper (e.g., Lyandres et al., 2022). Next to circulating a white paper, providing explicit information on the mission, values, and vision that inspired the undertaking of the project can also influence investors' decision to invest in an ICO (Block et al., 2021; Colombo et al., 2023; Momtaz, 2021a, 2021b). As Pereira et al. (2019) note, many blockchain platforms

indeed declare explicit political, social and even ideological aspirations with goals, values and beliefs being intermingled while guiding the way activities are conducted in those organizations. For example, the Bitcoin's social aim was to replace existing financial and governmental institutions, such as banks. In this respect, a study by Fisch et al. (2021) shows that ICO investors are motivated mainly by intrinsic motives and that the platform's overall purpose is one of the most important drivers in the early development of ICOs. This suggests that ICOs' initial investors are particularly attracted by a clarity of purpose motives, which reflect their personal beliefs and values, and thus indicates the vision and values of the platform as important factors in attracting investors in an ICO.

Thus, project transparency—i.e., publishing a white paper and clarity of purpose of the platform—can serve as a mechanism to build trust, provide clarity on what the platform wants to deliver, and allow investors/customers to verify the underlying quality of the project, which can enhance their confidence and perceptions about the platform. Transparency will be especially important for decentralized platforms, where information on platform characteristics (e.g. governance rules, coordination and voting mechanisms, etc.) and vision are crucial to overcoming the challenges of decentralization (i.e., the lack of coordination) and thus enhance customers' evaluation of decentralized platforms. Indeed, transparency has become a critical issue in some decentralized platforms, where the community members largely criticize the lack of transparency as to how decisions are made and little accountability of those who are responsible for their implementation (De Filippi & Lovelck, 2016; Shermin, 2017). On the contrary, ensuring transparency in decision-making processes and accountability mechanisms can foster trust in the platform's governance structure. Therefore, we expect that greater transparency will weaken the positive relationship between centralization of decision-making and platform performance, as prospective customers/investors are less sensitive to governance problems deriving from the decentralization of the decision-making process when the level of information asymmetry surrounding the platform is lower. Thus:

Hypothesis (H3a). The positive relationship between centralization of decision-making and platform market value is negatively moderated by the availability of a white paper.

Hypothesis (H3b). The positive relationship between centralization of decision-making and platform market value is negatively moderated by the clarity of purpose of the platform.

3 Method

3.1 Sample

We test our hypotheses by using a comprehensive sample of ICOs worldwide from 2013 to 2019. We collect the ICO data from CoinCheckup.com, an online cryptocurrency portal that tracks most of the blockchain-based platforms publicly traded on cryptocurrency exchanges. It provides comprehensive information on blockchain platforms, including data on market performance (e.g., price and circulating supply), ICO campaign, platform characteristics (e.g., governance, team, white paper, etc.) and community backing (e.g., GitHub and social media activities), among others. This website is regarded as one of the most representative sources of ICO data and has been used by prior studies (e.g., Chen et al., 2021). We end our data collection in 2019 because the portal stopped coding and reporting some of our main variables. Due to missing data for some variables we use in our analyses, our final sample includes 1431 ICOs.

3.2 Variables

3.2.1 Dependent variable

The dependent variable of our study is the *Market performance* of blockchain platforms at data collection (July 2019). We measure this variable using the natural log of market capitalization, which is operationalized as the price of a single unit of cryptocurrency (in US dollars) multiplied by the circulating supply, i.e., the number of coins that are currently in circulation. As previous studies suggest, market capitalization is an important indicator of blockchain-based platform performance to which key stakeholders pay particular attention (Chen et al., 2021; Nguyen & Nguyen, 2022; Perez et al., 2020). It is

indeed one of the metrics mostly used to compare different platforms with each other. In this respect, it is worth noting that, in contrast to traditional platforms, blockchain-based platforms have platform-specific tokens, meaning that each platform is usually associated with a market capitalization, thereby allowing one to directly assess the market value of each platform (Chen et al., 2021; Howell et al., 2020).

3.2.2 Independent variable

Our independent variable is platform governance in terms of centralization of decision-making (Chen et al., 2021; Tiwana et al., 2010), which refers to the extent to which power and control in governance structures and decisions are split between the platform owner (centralized) or decentralized across the community members of a platform (e.g., developers, users, miners). Based on data collected from CoinCheckup.com, we measure platform governance with three dummy variables: *Centralized* = 1 when a platform is sponsored and controlled by a company with a hierarchical decision structure or a hierarchical organization model (i.e., Centralized-Hierarchical), or it is sponsored and controlled by a company with a flat decision structure or a flat organization model (i.e., Centralized-Flat). Ripple (XRP)—a blockchain-based cross-border payment platform, represents an example in this respect: it is centrally managed by its sponsoring company—Ripple—which controls the project and makes decisions on major developments. *Semi-centralized* = 1 if the platform is mainly driven by the community but has some form of organized backing in the shape of a foundation or leading team/individual standing out in the community that has a weight in the overall decision making. The blockchain platform Cardano, for example, despite being run by its community members, has a foundation—the Cardano foundation—which is responsible for overseeing its ecosystem and shaping its blockchain governance. Finally, the dummy variable *Decentralized*, which forms the omitted reference case in our empirical analysis, refers to a platform that is exclusively community driven, where all aspects related to the project are decided by the community with a form of consensus and there is no central structure that handles decisions related to the project. Under this model, therefore, the team or foundation associated with the platform (if present) holds no decision-making authority. Instead, it can serve as facilitators and coordinators of the consensus-building process within the community, by providing technical insights, overseeing discussion forums and facilitating information sharing among community members (Hsieh & Vergne, 2023). Blackcoin represents an example of a decentralized platform, where community members decide about the directions of the platform. The team behind the platform, on the other hand, has no decision-making authority, but it supports the ecosystem by building a community around a guiding vision.

3.2.3 Moderators

Team experience We measure team experience using two separate variables to account for both the managerial and technical experience of the team behind the platform. To this end, we consider the professional experience of both the CEO and CTO (Fleming & Waguespack, 2007; O'Mahony & Ferraro, 2007). Based on data collected from CoinCheckup.com. we measure *CEO experience* as the total number of years of experience as a CEO (or COO), while *CTO experience* is defined as the total number of years of experience as a CTO. CoinCheckup.com measures the managerial experience of the CEO by taking into account their previous experience both as a CEO or a COO. This makes sense as the COO is typically delegated many of the executive powers that are otherwise held by the firm's CEO (Bennett & Miles, 2006; Hambrick & Cannella, 2004; Marcel, 2009). The COO is indeed considered the second-in-command executive within the firm, who is often a heir apparent to the CEO (Cannella & Shen, 2001).

Transparency Transparency is measured using two variables, which account for project transparency. First, a dichotomous variable—*White paper*—that takes a value of 1 if the platform published a white paper describing the characteristics of the project, and 0 otherwise (Giudici & Adhami, 2019). Finally, we measure the clarity of purpose of the platform with a variable developed by CoinCheckup. This variable (*Purpose clarity*) takes values of 0.1, 0.5 and 1, representing different degrees of the clarity of purpose and aspects of the platform and the idea. These variables are sourced from CoinCheckup, which conducted

primary research to investigate the existence of whitepapers and purpose clarity at the time of ICO launches.

3.2.4 Control variables

In line with prior ICO research (e.g., Chen et al., 2021; Fisch, 2019; Fisch & Momtaz, 2020; Howell et al., 2020), we also include several control variables in our analysis to rule out alternative explanations for variance in platform market performance. The first set of control variables refers to platform characteristics which may affect how investors/customers perceive the value of the platform, and thus may be related to platform market performance. To this end, we consider the technical specifications of the platform and control whether the ICO firm develops its own independent blockchain or whether it operates on an already existing blockchain. Using a preexisting blockchain may signal greater interoperability, a more advanced infrastructure, and access to network externalities, which in turn enhance platform value (Colombo et al., 2022; Fisch & Momtaz, 2020; Momtaz, 2021b). We thus include a dummy variable – *Own blockchain* – to capture whether the ICO firm develops its own blockchain (=1) or not (=0). For a similar reason, we also consider the consensus method behind the blockchain, i.e., the mechanism through which transactions are approved and acknowledged by all parties in the network, and include a variable (*Proof of work*) that takes a value of 1 if the consensus method is the proof of work, and 0 otherwise. The proof of work is the first and most popular blockchain consensus mechanism (Martino et al., 2020). A further control variable captures whether the platform makes its source code freely available online (*Open source*). Having open-source code has been associated with ICO success (e.g., Adhami et al., 2018; Howell et al., 2020), since this source code is one of the core assets of the platform that enables a detailed technological due diligence (Fisch & Momtaz, 2020). We thus include a dummy variable that captures whether the platform has open-sourced its code (1) or not (0). Additionally, we include a variable that captures the product development stage, since prior research suggests that platforms with a fully working product are more likely to attract more customers (e.g., developers and social media followers) and, thus, to exhibit better market performance (Chen et al., 2021). Coincheckup.com measures *Product development status* on a scale ranging from 0 (unknown) to 50 (fully working product).[6] We also control for the number of days since launch to account for *Platform age*, since prior research suggests that it may be associated with platform performance, as time may allow platforms to improve their technologies and build network effects (Cennamo & Santalo, 2013; Chen et al., 2021).

The second set of controls relates to ICO characteristics. Since most ICOs operate globally, without any legal incorporation or physical presence in a specific country (e.g., Adhami et al., 2018; Bellavitis et al., 2021, 2022), we take into account the *Incorporation status* through a dummy variable which assumes the value of 1 when the project promoters have specified a jurisdiction of reference for the ICO token sale, and zero otherwise. Consistent with prior studies (e.g., Adhami et al., 2018), the incorporation of a jurisdiction of reference for the offering or the future operations of the platform can affect the value of the platform, as it can serve as a lever for the enforcement of investor rights in the case of fraud. Further, we include the variable *Coin* to capture whether the offerings (i.e., cryptocurrencies) can be characterized as coins (=1) or tokens (=0), depending on the functionality behind them, which may affect investors' valuation of the platform (Fisch, 2019). While tokens can be used to access products and services that the platform will provide in the future, coins function as a medium of exchange among users on the ICO venture's platform (Colombo et al., 2022). Finally, prior studies (Chen et al., 2021; Fisch, 2019; Howell et al., 2020) show that the market value of most blockchain platforms is heavily dependent on the value of Bitcoin, since a higher Bitcoin price generally indicates a more positive market sentiment, due to its predominance in the crypto-sector. We therefore include the natural log of the *Bitcoin's price* (in USD) at the time of specific ICO in our analysis in order to account for this market cycle effect. We also include quarter-year dummies in all of our models to control for macrotrends via quarter-year fixed effects (Fisch, 2019; Fisch & Momtaz, 2020).

[6] This variable takes a value of 0 if it is unknown; 10 if it is just an idea; 20 if Demo version; 25 if prototype/MVO; 30 if Alpha version; 40 if Beta version; and 50 if Fully working product.

4 Results

Table 1 shows the descriptive statistics and pairwise correlations for our variables. We run a VIF analysis to investigate whether multicollinearity is an issue in our sample. We find that the VIF values of all variables are well below the threshold of 10 (Kutner et al., 2004), with an average VIF of 1.86, which suggest that multicollinearity is not an issue of concern.

4.1 Main findings

Table 2 provides the results of regression analyses. As reported in Table 2, we run a series of ordinary least squares (OLS) regressions with robust standard errors to test the hypotheses: in Model 1, we report regression results for the baseline model without interactions, while in Models 2, 3, 4 and 5 we add interaction terms.

Hypothesis 1 proposes a positive relationship between centralization of decision-making and platform market capitalization. Model 1 shows market capitalization is significantly greater for both *Semi-centralized* ($\beta = 0.889$, $p = 0.000$) and *Centralized* ($\beta = 0.601$, $p = 0.002$) governance modes, relative to a decentralized mode. We plot the marginal effects of the relationship between centralization of decision-making and market performance in Fig. 1, which confirms the positive relationship. However, we do not find that moving beyond a semi-centralized governance mode, towards a fully centralized governance mode, further increases value (indeed, Semi-centralized and Centralized are not significantly different). While the semi-centralized governance mode seems to exhibit the greatest performance, the confidence bands show that semi-centralized and centralized modes are *not* significantly different from each other. Our evidence, therefore, contradicts the inverted U-shape pattern discussed in prior research (e.g., Chen et al., 2021). However, it is clear that decentralized governance performs significantly worse. Overall, the results show that centralization is associated with better market performance, consistent with Hypothesis 1. Furthermore, the other variables in Model 1 show that market capitalization is positively associated with *CEO experience* ($\beta = 0.065$, $p = 0.000$), *CTO experience* ($\beta = 0.038$, $p = 0.079$), *White paper* ($\beta = 0.843$, $p = 0.000$), and *Purpose clarity* ($\beta = 2.057$, $p = 0.000$).

Hypothesis 2 states that the positive relationship between centralization of decision-making and platform performance is negatively moderated by the presence of an experienced team, in particular an experienced CEO (hypothesis 2a) and CTO (hypothesis 2b). With specific regard to *CEO experience*, Model 2 shows that the coefficient for the interaction term is statistically insignificant for both Semi-centralized and Centralized governance modes. Thus, we fail to find support for Hypothesis 2a. This is also clear from Fig. 2. Conversely, we find support for Hypothesis 2b concerning *CTO experience*: Model 3 shows that the coefficient for the interaction term is negative and significant for both *Semi-centralized* ($\beta = -0.175$, $p = 0.003$) and *Centralized* ($\beta = -0.213$, $p = 0.000$) governance modes. In Fig. 3, we plot the relationships among CTO experience, governance and market performance. Figure 3 provides two main takeaways. First, an experienced CTO always leads to better market performance, no matter the governance structure. However, an experienced CTO is particularly valuable when the governance is decentralized. This suggests that managing a decentralized platform comes with numerous complexities and an experienced CTO is necessary to extract its full value.

Finally, Hypothesis 3 states that platform transparency—including the availability of a white paper (hypothesis 3a) and purpose clarity (hypothesis 3b)—negatively moderate the relationship between centralization of decision-making and market performance. In other words, transparency is especially needed for decentralization to create more market value. Investigating the results for *White paper*, Model 4 shows that the coefficient for the interaction term is negative and significant for *Centralized* governance mode ($\beta = -1.182$, $p = 0.002$), but statistically insignificant for the *Semi-centralized* governance mode. With regard to *Purpose clarity*, Model 5 shows that the coefficient for the interaction term is statistically insignificant for the *Semi-centralized* governance mode, while it is negative and significant for *Centralized* governance ($\beta = -1.943$, $p = 0.042$). Hence, we find support for both hypothesis 3a and hypothesis 3b. We plot these relationships in Figs. 4 and 5. As illustrated in the figures, strong transparency creates significant market value, especially for decentralized platforms. Consistent with our expectation, these results suggest that the positive effect of increased centralization on market performance weakens when

Table 1 Descriptive Statistics and Correlations

Variables	Mean	Std. Dev	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Market performance (ln)	13.73	2.75	3.99	25.95	1.00														
2. Decentralized	0.34	0.47	0.00	1.00	-0.27*	1.00													
3. Semi-centralized	0.29	0.46	0.00	1.00	0.14*	-0.46*	1.00												
4. Centralized	0.36	0.48	0.00	1.00	0.14*	-0.55*	-0.49*	1.00											
5. CEO experience	2.70	4.98	0.00	43.00	0.24*	-0.34*	0.03	0.31*	1.00										
6. CTO experience	1.44	3.15	0.00	47.00	0.19*	-0.29*	0.08*	0.21*	0.33*	1.00									
7. White paper	0.76	0.43	0.00	1.00	0.23*	-0.34*	0.09*	0.25*	0.19*	0.15*	1.00								
8. Purpose clarity	0.93	0.17	0.50	1.00	0.21*	-0.14*	-0.01	0.15*	0.12*	0.12*	0.26*	1.00							
9. Own blockchain	0.44	0.50	0.00	1.00	-0.14*	0.36*	-0.05	-0.31*	-0.22*	-0.21*	-0.33*	-0.21*	1.00						
10. Proof of work	0.18	0.39	0.00	1.00	-0.08*	0.22*	-0.04	-0.18*	-0.13*	-0.10*	-0.22*	-0.08*	0.40*	1.00					
11. Open source	0.76	0.43	0.00	1.00	0.05	0.07*	-0.05	-0.03	-0.01	-0.03	-0.06*	0.03	0.27*	0.14*	1.00				
12. Product development status	41.76	13.54	0.00	50.00	0.08*	0.08*	-0.04	-0.04	0.01	0.01	-0.03	0.15*	0.13*	0.10*	0.19*	1.00			
13. Platform age	699.68	511.76	29.00	2286.00	-0.00	0.12*	0.10*	-0.22*	-0.05	-0.05	-0.37*	-0.18*	0.43*	0.31*	0.14*	0.13*	1.00		
14. Incorporation status	0.28	0.45	0.00	1.00	0.19*	-0.32*	0.03	0.29*	0.28*	0.23*	0.19*	0.10*	-0.28*	-0.15*	-0.06*	0.01	-0.10*	1.00	
15. Coin	0.31	0.46	0.00	1.00	-0.14*	0.26*	0.05*	-0.31*	-0.14*	-0.15*	-0.41*	-0.27*	0.66*	0.38*	0.23*	0.15*	0.67*	-0.20*	1.00
16. Bitcoin's price (ln)	8.15	1.22	4.37	9.85	0.06*	-0.21*	-0.00	0.21*	0.10*	0.09*	0.41*	0.19*	-0.47*	-0.29*	-0.19*	-0.11*	-0.84*	0.13*	-0.64*

$N = 1431$. Correlations with * significant at $p < .05$

Table 2 Regressions results

	(1)	(2)	(3)	(4)	(5)
Own blockchain	0.302	0.306	0.297	0.291	0.263
	(0.223)	(0.223)	(0.224)	(0.224)	(0.224)
Proof of work	-0.076	-0.070	-0.065	-0.094	-0.067
	(0.205)	(0.206)	(0.206)	(0.206)	(0.206)
Open source	0.441**	0.436**	0.431**	0.444**	0.438**
	(0.164)	(0.165)	(0.164)	(0.164)	(0.164)
Product development status	0.009 +	0.009 +	0.009 +	0.008	0.008 +
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Platform age	0.004	0.004	0.004	0.005 +	0.005 +
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Incorporation status	0.337*	0.334*	0.330*	0.332*	0.321*
	(0.156)	(0.156)	(0.157)	(0.156)	(0.157)
Coin	-1.006***	-1.007***	-0.997***	-0.990***	-0.971***
	(0.270)	(0.269)	(0.270)	(0.270)	(0.270)
Bitcoin's price (ln)	-0.141	-0.149	-0.117	-0.131	-0.163
	(0.294)	(0.295)	(0.294)	(0.294)	(0.293)
CEO experience	0.065***	0.057 +	0.064***	0.065***	0.065***
	(0.015)	(0.034)	(0.015)	(0.015)	(0.015)
CTO experience	0.038 +	0.038 +	0.231***	0.039 +	0.039 +
	(0.021)	(0.021)	(0.049)	(0.022)	(0.022)
White paper	0.843***	0.836***	0.836***	1.257***	0.817***
	(0.195)	(0.195)	(0.195)	(0.273)	(0.195)
Purpose clarity	2.057***	2.025***	2.054***	2.039***	2.332***
	(0.408)	(0.408)	(0.406)	(0.406)	(0.576)
Semi-centralized	0.889***	0.796***	0.901***	1.263***	0.543
	(0.192)	(0.204)	(0.201)	(0.348)	(0.814)
Centralized	0.601**	0.679**	0.695***	1.524***	2.466**
	(0.193)	(0.209)	(0.203)	(0.341)	(0.910)
Semi-centralized X CEO experience		0.040			
		(0.042)			
Centralized X CEO experience		-0.008			
		(0.038)			
Semi-centralized X CTO experience			-0.175**		
			(0.058)		
Centralized X CTO experience			-0.213***		
			(0.055)		
Semi-centralized X White paper				-0.601	
				(0.410)	
Centralized X White paper				-1.182**	
				(0.386)	
Semi-centralized X Purpose clarity					0.368
					(0.883)
Centralized X Purpose clarity					-1.943*
					(0.956)
Quarter-year fixed effects	Yes	Yes	Yes	Yes	Yes
Constant	3.062	3.369	3.190	2.066	2.028
	(6.644)	(6.656)	(6.645)	(6.620)	(6.729)

Table 2 (continued)

	(1)	(2)	(3)	(4)	(5)
Observations	1431	1431	1431	1431	1431
Log Likelihood	-3308.035	-3306.833	-3305.823	-3303.999	-3305.746
r2	0.213	0.215	0.216	0.218	0.216

This table presents the main regression results. Model 1 shows regression results for the baseline model without interactions; Models 2, 3, 4 and 5 show regression results with interaction terms. The dependent variable is the natural log of market capitalization of the blockchain platform. Robust standard errors are shown in parentheses below the coefficients. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

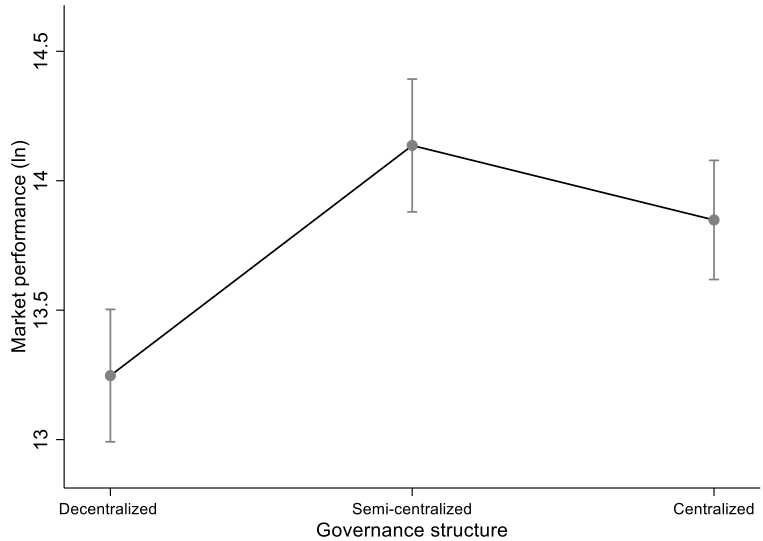

Fig. 1 Centralization of decision-making and platform performance

there is greater transparency, as customers are less sensitive to governance problems deriving from the decentralization of the decision-making process owing to the reduction of the information asymmetry surrounding the platform.

4.2 Supplementary tests and robustness

Endogeneity A possible concern with our results is endogeneity, i.e. corporate governance dimensions represent a choice and are not random (e.g., Shaver, 1998). Specifically, it may be that certain platform attributes may guide both the governance choice and the market performance of the platform. Following previous studies in the field of entrepreneurial finance (e.g., Mansouri & Momtaz, 2022) we use Heckman's two-step selection model (Heckman, 1979) to address this concern. In the first stage, we employ a probit model to explain governance choice using Decentralized as the dependent variable, which equals 1 if the platform governance is decentralized and 0 if it is either semi-centralized or centralized. We include all the explanatory and control variables from the baseline model in the selection equation. As Heckman selection models require exclusion restrictions that explain the selection process but do not directly influence the outcome, we use Own blockchain and Proof of work as excluded variables in the outcome (second stage) equation. As reported in Table 2, both Own blockchain and Proof of work have no effect on the market performance, while the selection equation in Table 3 shows they influence the governance choice. In the second stage, we re-estimate models 1–5 from Table 2 including as an additional control variable the inverse Mills ratio (IMR) computed from the parameters of the first stage. As Table 3 (Columns 2–6) shows, overall, our main results remain supported.

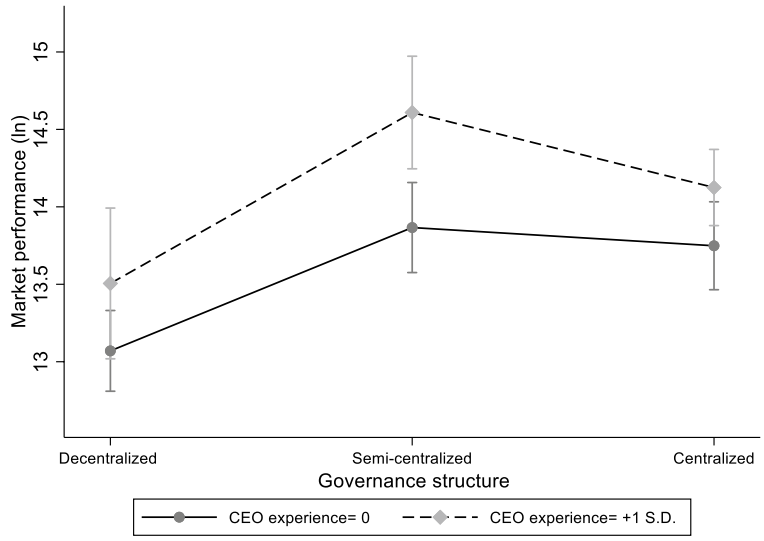

Fig. 2 Moderating effect of CEO experience on the relationship between centralization of decision-making and platform performance

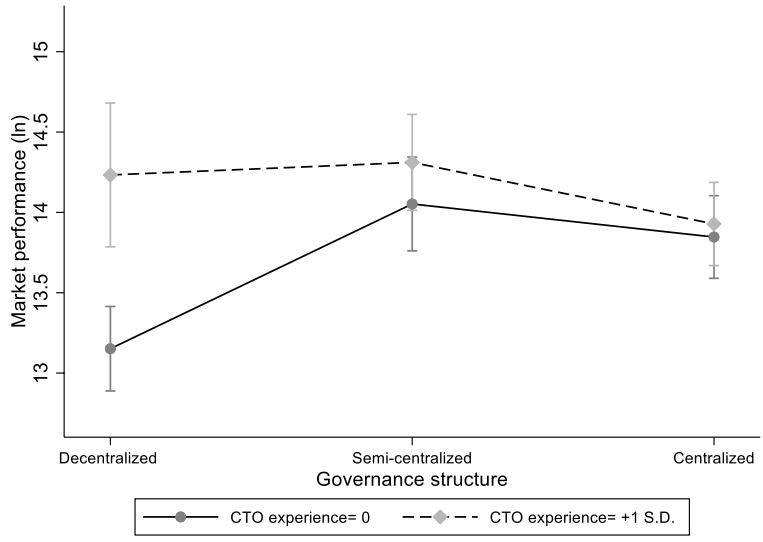

Fig. 3 Moderating effect of CTO experience on the relationship between centralization of decision-making and platform performance

To further address endogeneity concerns, we also assessed the potential of our results being confounded by omitted variables. Following the recommendation of Busenbark et al. (2022), we used the robustness of inference to replacement (RIR) approach to address this issue. This approach "provides insight into the percentage of a parameter estimate that would need to be biased in order to invalidate causal inference…" (Busenbark et al., 2022: 23). Specifically, "the RIR can indicate how much of a given effect size must be biased in order to overturn an otherwise statistically significant parameter estimate" (Busenbark et al., 2022: 44). It can account for all sources of bias from any source of endogeneity and is not limited to omitted variables only (Frank et al., 2013). We used the konfound command in Stata. The RIR results indicate that the bias from endogeneity has to be very large to drive our results. For instance, for *Semi-centralized*, we find that 57.68% of the estimate would have to be due to bias to make our results insignificant. In other words, to invalidate the inference 57.68% of the observations would have to be replaced with observations for which there is no effect. For *Centralized*, we find that 36.94% of the estimate would have to be due to bias to make our

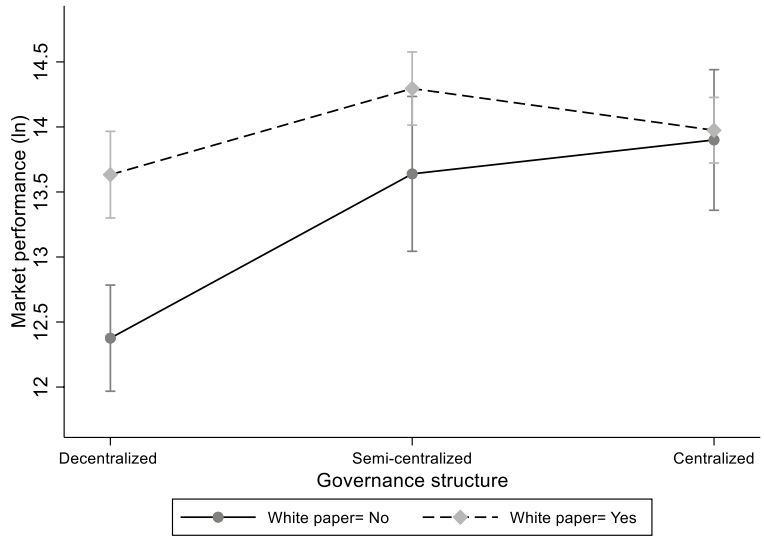

Fig. 4 Moderating effect of White paper on the relationship between centralization of decision-making and platform performance

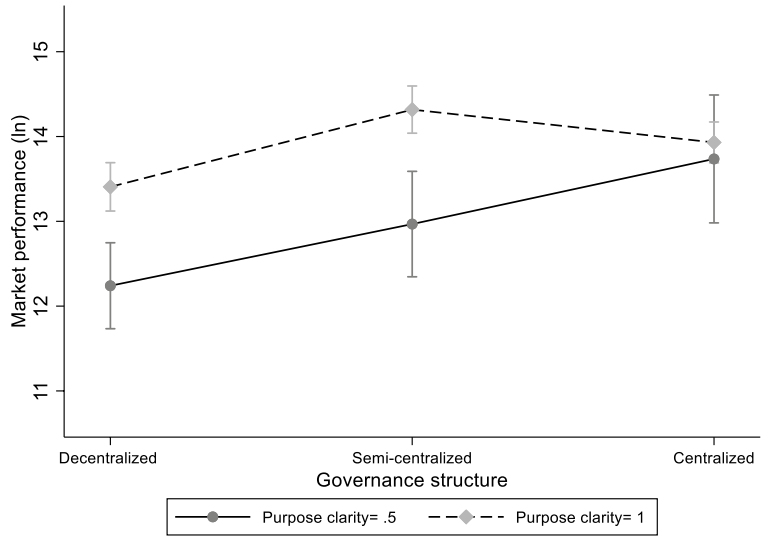

Fig. 5 Moderating effect of Purpose clarity on the relationship between centralization of decision-making and platform performance

results insignificant. In other words, to invalidate the inference 36.94% of the observations would have to be replaced with observations for which there is no effect. The percentages we find are similar to higher than thresholds accepted in prior work (Paeleman et al., 2023; Thatchenkery & Katila, 2023). Thus, endogeneity bias would have to be very sizable to overturn our results. This indicates that our results are unlikely to be affected by omitted variable bias in a manner that would alter our inferences. Moreover, our findings largely pertain to interaction effects between these variables and our moderators, and prior research has suggested that omitted variable bias induced endogeneity concerns "may be remarkably less pronounced in interaction terms than conventional variables…" (Busenbark et al., 2022: 25).

White paper To better understand the effect of white papers on platform market value, we followed the methodology of Meoli and Vismara (2022). We manually downloaded all the white papers we could find. We searched all the weblinks we obtained from CoinCheckup. However, since most of these ICOs were launched years ago, many links do not work anymore. We supplemented our initial search with

Google searches and from websites such as https://whitepaper.io/. In total, we retrieved 437 white papers. We then converted the PDFs into TXT for better analysis, cleaning the text with the use of an algorithm. We analyzed them in two ways.

First, in line with Meoli and Vismara (2022), we ran a polarity analysis. To perform this analysis, we use SentiWordNet which is a lexicon-based approach where we have a dictionary of words, and each word has an intensity value and a polarity (positive, negative, and neutral) (for more details on the methodology, see Meoli & Vismara, 2022). For each whitepaper, we then calculated the overall *Polarity score* of the text.

Second, Fisch (2019) suggests that there is a relationship between the "technical" content of a whitepaper and the amount raised during an ICO. Therefore, following the methodology of Meoli and Vismara (2022), we calculated a variable to represent the ratio between technical sentences over the whitepaper's total number of sentences and define a *Technical sentence* variable, with a range from 0 to 1. To build this variable, we used the same dictionary with "technical" words created by Meoli and Vismara (2022), and used it as a reference to mark each sentence as technical or not.

We test for the moderating effect of the white paper content on the relationship between governance and platform value (untabulated); however, the coefficient of the interaction terms are statistically insignificant for both *Technical sentence* and *Polarity score*, implying no moderating effect on the governance-platform value relationship. These insignificant results concerning the content of white papers can potentially be explained by the fact that investors in an ICO may not possess the technical expertise necessary to fully understand the content of a white paper. Indeed, as prior research shows, less sophisticated ICO investors tend to not do any fundamental research, while institutional investors have entered the market only later (Fahlenbrach & Frattaroli, 2021; Fisch & Momtaz, 2020). Consequently, rather than relying on the content of white papers to make informed evaluations, investors tend to view the mere presence of the document as a cue of legitimacy (e.g., Kirsch et al., 2009).

Finally, we manually verified the presence of white papers, in addition to using CoinCheckup, which allowed us to identify 37 additional white papers not listed on the platform. We re-ran the analysis with the *White paper* variable, now including these additional documents, and found that the results (untabulated) remain consistent.[7]

5 Discussion and conclusion

5.1 Summary of main results

Drawing on institutional and demand-side perspectives, we study the relationship between (de)centralization of decision-making and platform performance in the context of ICOs and examine the boundary conditions that contextualize this relationship. Our results provide empirical support for the existence of a positive relationship between centralization of decision-making and platforms' market value. These findings indicate, from a demand-side perspective, that when investors are also (prospective) customers of the platform to which they contribute, the concentration of decision-making power at the top may be more valued because it can avoid the perceived coordination issues and inaction of decentralized governance modes in the eyes of ICO investors/customers. Moreover, we consider how platform characteristics affect the relationship between governance and platform performance. In this regard, our findings reveal that both the presence of an experienced CTO and project transparency—in terms of both the availability of a white paper and clarity of purpose of the platform—negatively moderate the relationship between centralization of decision-making and market capitalization. This suggests that when there is an experienced CTO and greater transparency, the benefit of increasing centralization is relatively low, as they may mitigate prospective ICO investors'/customers' concerns related to the weaknesses of decentralization (e.g., coordination issues and inaction). In other words, decentralized platforms need transparency and qualified technical leaders to generate more value owing to the need to coordinate and manage different actors with divergent perspectives involved in the decision-making process.

[7] The untabulated analyses are available upon request.

Table 3 Heckman two-stage estimation procedure

	(1)	(2)	(3)	(4)	(5)	(6)
Own blockchain	0.369***					
	(0.101)					
Proof of work	0.196 +					
	(0.105)					
Open source	-0.112	0.561***	0.560***	0.548***	0.552***	0.550***
	(0.095)	(0.163)	(0.164)	(0.164)	(0.163)	(0.163)
Product development status	0.008**	-0.002	-0.002	-0.001	-0.002	-0.002
	(0.003)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Platform age	0.000	0.004	0.004	0.004	0.004	0.004
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Incorporation status	-0.618***	1.222***	1.230***	1.162***	1.118***	1.167***
	(0.121)	(0.309)	(0.312)	(0.314)	(0.315)	(0.311)
Coin	0.352*	-1.652***	-1.657***	-1.595***	-1.556***	-1.602***
	(0.148)	(0.312)	(0.314)	(0.315)	(0.315)	(0.313)
Bitcoin's price (ln)	0.440*	-0.717*	-0.721*	-0.663 +	-0.645 +	-0.709*
	(0.188)	(0.335)	(0.335)	(0.338)	(0.339)	(0.335)
CEO experience	-0.141***	0.286***	0.251***	0.273***	0.262***	0.276***
	(0.035)	(0.063)	(0.064)	(0.064)	(0.064)	(0.063)
CTO experience	-0.172***	0.309***	0.312***	0.441***	0.279***	0.297***
	(0.049)	(0.080)	(0.081)	(0.079)	(0.082)	(0.080)
White paper	-0.628***	1.533***	1.535***	1.485***	1.783***	1.477***
	(0.096)	(0.275)	(0.277)	(0.277)	(0.317)	(0.276)
Purpose clarity	-0.270	2.429***	2.408***	2.402***	2.370***	2.657***
	(0.226)	(0.414)	(0.415)	(0.413)	(0.414)	(0.573)
Semi-centralized		0.789***	0.687***	0.802***	1.097**	0.472
		(0.192)	(0.204)	(0.203)	(0.346)	(0.804)
Centralized		0.484*	0.532*	0.562**	1.220***	2.176*
		(0.191)	(0.208)	(0.202)	(0.350)	(0.906)
IMR		-1.776***	-1.793***	-1.668***	-1.577**	-1.691***
		(0.496)	(0.502)	(0.503)	(0.507)	(0.498)
Semi-centralized X CEO experience			0.070 +			
			(0.041)			
Centralized X CEO experience			0.026			
			(0.038)			
Semi-centralized X CTO experience				-0.135*		
				(0.059)		
Centralized X CTO experience				-0.165**		
				(0.055)		
Semi-centralized X White paper					-0.478	
					(0.406)	
Centralized X White paper					-0.929*	
					(0.393)	
Semi-centralized X Purpose clarity						0.345
						(0.871)
Centralized X Purpose clarity						-1.753 +
						(0.947)

Table 3 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)
Quarter-year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-2.655	8.240	8.612	8.002	6.837	7.093
	(3.887)	(6.833)	(6.852)	(6.838)	(6.854)	(6.928)
Observations	1614	1429	1429	1429	1429	1429
Log Likelihood	-697.708	-3298.612	-3297.430	-3297.303	-3296.182	-3296.720
r2	0.341	0.217	0.218	0.219	0.220	0.219

This table presents the results of the Heckman two-stage estimation procedure. Model 1 shows results for the probit model, which is the selection model, with Decentralized (dummy) as the dependent variable. Models 2, 3, 4, 5 and 6 show regression results for the second stage with the Inverse Mills Ratio (IMR) approach. The dependent variable is the natural log of market capitalization of the blockchain platform. Robust standard errors are shown in parentheses below the coefficients. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

5.2 Theoretical contributions

Our study makes several important theoretical contributions. First, our paper contributes to platform governance research by identifying the boundary conditions that increase the value of (de)centralized governance. Extant research has focused on the direct effects of (de)centralized governance modes on platform value, finding that decentralized governance is not value-optimal, and reintroducing some centralization could improve the platform's market value (Cennamo et al., 2020; Chen et al., 2021). Relatedly, in a recent paper Momtaz (2024) examines the general trade-off between centralization and decentralization in the ICO context, suggesting that centralization in the form of institutional investors that intermediate ICOs may improve the market's overall efficiency. Our evidence is consistent with the emerging view that decentralized governance is not value-optimal. However, extant research has not considered the boundary conditions that affect the value of centralization of the decision-making process to platform owners/managers or decentralization towards external actors. This is an important gap to address, as a more contextualized, contingency-based perspective on CG (e.g., Aguilera et al., 2008; Bell et al., 2014) suggests that different CG practices may be more or less effective depending on organizational characteristics. Thus, we extend research by theorizing and reporting empirical evidence on the moderating role of experienced CTOs and/or greater project transparency (i.e., white paper and purpose clarity). We find that in the presence of experienced CTOs and/or greater project transparency the benefit of increased centralization is very low as they may mitigate the challenges of decentralization (such as coordination issues and inaction) and, consequently, they can shape customers' perception and evaluation of (de)centralization. Conversely, our results suggest that decentralization creates market value when internal characteristics of platforms (i.e., experienced CTO and transparency) are already in place that limit prospective ICO investors'/customers' concerns about the weaknesses of a decentralized governance mode. Overall, we address an important gap in the literature by providing a better understanding on when platforms can successfully rely on decentralized modes of governance as opposed to centralized governance modes (Rietveld & Shilling, 2021; Nguyen & Nguyen, 2022).

Second, our research offers a novel perspective on the implications (i.e., market value) of centralized/decentralized governance modes for platform-based firms. Prior research grounded within agency theory has typically viewed decentralization of control as an important factor in reducing managerial opportunism, agency costs and, as such, to enhance value perceptions among investors (e.g., Chod et al., 2022; Kaal, 2021; Murray et al., 2021). However, this research (e.g. Chen et al., 2021) has not considered the possibility that customers may also be endowed with ownership and control rights to various degrees, providing a rather restricted view on the underlying mechanisms explaining performance implications of decentralized governance modes. This creates the need for new thinking about the best approach to structuring the relationships among a broad and diverse set of new stakeholders (Bellavitis et al., 2023a, 2023b; Cumming et al., 2021). A demand-side governance perspective, such as we employ in this paper, suggests that customer perceptions of the effectiveness

of the focal firm's governance are also crucial to consider, especially when they are at the core of a firm's competitive advantage and can thus impose different and even conflicting pressures in terms of what is an effective governance (Krause et al., 2016, 2021; Priem, 2007). This is particularly true for blockchain-based platforms that conduct an ICO, where investors are at the same time prospective customers of the platform to which they contribute (De Filippi, 2017; Howell et al., 2020; Momtaz, 2021b). The evidence presented here suggests that when investors are also prospective customers of the platform, with diverse preferences and decision-making horizons, governance effectiveness valuations from the demand side are dominating and concentrated decision-making power at the top is more valued. By considering the dual role of investors/customers, and their different CG preferences, our theory and empirical findings therefore provide a more holistic perspective on the relationship between governance and platform performance in the blockchain context.

We also provide new insights to the demand-side governance theory by theorizing and empirically analyzing how governance (centralization of the decision-making process) impacts the valuation process of the platform, an issue little explored in the contemporary CG research (Krause et al., 2016, 2021; Priem, 2007). Our research indicates that, from the demand-side perspective, the governance configurations that contribute to wealth generation may command higher value among the platform network members, even if this contrasts with agency theory prescriptions for investors' wealth protection. Specifically, we suggest that centralized CG modes can enhance the platform's value-creating perceptions among customers because such systems can facilitate the speed of decision making and bring clarity with respect to who is responsible for execution of a valuable product/service that meets the diverse demands from customers.

Third, we contribute to the growing literature on ICOs (e.g., Adhami et al., 2018; Fisch, 2019; Howell et al., 2020; Momtaz, 2021a, 2021b). Actually, only a small set of studies has investigated the key question of how CG and (de)centralized governance impact platform market value (i.e., Cennamo et al., 2020; Chen et al., 2021; Momtaz, 2024; Nguyen & Nguyen, 2022). While our study is not unique in bringing to the foreground platform governance—in terms of (de) centralization of the decision-making process—as an important factor influencing platform market value, we do highlight hitherto unexplored and undertheorized boundary conditions that increase the value of granting access and/or authority to external actors (Rietveld & Shilling, 2021). In so doing, we provide novel evidence on the role played by governance structures in the evaluation process of new ventures in the eyes of customers and, consequently, in determining new ICO firms' market value (Colombo et al., 2023).

5.3 Practical implications

Our study also provides important practical implications. First, our findings are interesting for platform-based firms seeking external finance through ICOs, since we provide information on when platforms can successfully rely on decentralized governance as opposed to centralized modes. In particular, we highlight that an experienced CTO and greater transparency are needed for decentralized platforms to enhance the platform's value-creating perceptions among customers and, thus, to create market value. Accordingly, new blockchain platforms should focus on hiring experienced technical leaders and ensuring transparency in their projects to attract investors and customers. In the absence of such mechanisms, concentrating decision-making at the top should be more appropriate.

For investors, this study underlines the importance of considering platform governance (i.e., the (de)centralization of the decision-making process) in their investment decisions as it represents a key factor that may have profound implications for the development of the platform and its overall performance. This is particularly useful in an investment context like ICOs, which are characterized by considerable information asymmetry and uncertainty due to the limited objective information surrounding them.

5.4 Limitations and avenues for future research

As with any research, our study has some limitations that may be addressed by future research. A first concern relates to the external validity of our findings. ICOs represent an appropriate setting to examine how markets value different governance structures in a context with considerable information asymmetry and uncertainty and when market participants

have dual roles of investors and customers. However, it is unclear whether our findings can be extended to other settings outside the blockchain context. Future research should assess the performance implications of (de)centralization in other types of digital platforms or in context with different characteristics, such as more regulations (e.g., investor protection) or more information available for investors.

Finally, in investigating the boundary conditions that increase the value of decentralization we focus on two moderating factors, namely team experience and transparency. Future research may further explore other moderators that could shape the governance-platform performance relationship, such as the presence of other CG mechanisms (e.g., board, incentive structures and other control mechanisms) that can mitigate the challenges of decentralization. Additionally, future research could investigate whether the preference for centralized governance modes is stable over a venture's lifecycle. In a recent paper, Drobetz et al. (2024) show that ICO campaigns are most successful when conducted at an optimal time in the venture's lifecycle, particularly during the product piloting stage. Therefore, future studies using longitudinal data may examine whether the venture's lifecycle (e.g., product piloting stage) serves as a boundary condition where the benefits of centralized governance shift in favor of decentralized governance.

5.5 Concluding remarks

This study sheds light on the general trade-off between centralized and decentralized corporate governance in platform-based new ventures. Our results show that centralized decision-making is positively associated with platform market value during an ICO, and this relationship is negatively moderated by the presence of experienced CTOs and project transparency. This implies that decentralized platforms can create market value when they have transparent processes and qualified technical leaders who mitigate ICO investors' and customers' concerns about the weaknesses of decentralization. Overall, this study provides theoretical insights into the nexus between governance structures and platform success, offering a better understanding of when platforms can successfully rely on decentralized rather than centralized governance to achieve higher value added.

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Declarations

Competing interests The authors declare no competing interests.

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