A SIGNALING PERSPECTIVE ON TOKEN DISPERSION AND VENTURE PERFORMANCE IN INITIAL COIN OFFERINGS

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A SIGNALING PERSPECTIVE ON TOKEN DISPERSION AND VENTURE PERFORMANCE IN INITIAL COIN OFFERINGS

Research in Progress

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Abstract

In entrepreneurial finance, investments by the founding team in their own venture are perceived as a signal of value that indicates a positive future performance. Yet, emerging funding models such as ICOs challenge established theories. For instance, utility tokens issued in an ICO, which sometimes raise millions of dollars for the venture, are listed on exchanges – just like shares – while they may also be utilized within the venture's ecosystem. Applying signaling theory and a resource-based view to ICOs, this study examines signals of post-funding venture performance. In contrast to established signaling concepts, we find a positive relation between higher token dispersion (i.e., lower token retention) and longer-term venture performance. We explain this with the unique features of tokens as both investment and utility tools. Further, results show that a venture’s endeavor to provide more information to investors regarding its strategy strengthens the relation of token dispersion and venture performance.

Keywords: Initial coin offering (ICO), Signaling theory, Resource-based view, Firm valuation.

1 Introduction

Initial Coin Offerings (ICOs) are an unprecedented funding model used by early-stage ventures to raise capital in exchange for tokens in a public call to investors (Fisch, 2019). Combining elements of various funding models, ICOs challenge established theories in entrepreneurial finance (Drover et al., 2017). ICOs are characterized by scarce regulation, little available information on the ventures and a diverse group of expert and non-expert investors, resulting in a noisy environment full of uncertainties (Momtaz, 2020a). In the presence of such uncertainties, ventures send signals to investors in order to convince them of their quality (Connelly et al., 2011). In young ventures, investors look for signals regarding the commitment of the venture team (Vismara, 2016). As the teams have insider knowledge on the future prospects of the venture, signaling theory suggests that insider investment represents a signal of value (Leland and Pyle, 1977; Busenitz, Fiet and Moesel, 2005). To determine investment by insiders in the ICO context, researchers look at a venture’s token allocation (e.g., to investors, to the team, to a reserve). Recent ICO literature supports the signal-of-value concept by explaining that higher token retention by the founding team increases the amount of funding raised and the probability of funding success (e.g., Giudici and Adhami, 2019). Equally, higher token dispersion is “punished” by investors during the ICO, resulting in lower funding success (Amsden and Schweizer, 2019).

Yet, a considerable amount of ventures fail within months after a successful funding campaign (Howell, Niessner and Yermack, 2020), indicating the need for a deeper understanding of these signals.
and their relation to longer-term, post-ICO venture performance. This constitutes an important gap in research for three reasons.

First, viewing tokens purely from a signal-of-value perspective discounts their full functionality in a venture’s ecosystem. Tokens are unique to ICOs, in the sense that they allow ventures to raise funds without giving up control and equity (Kher, Terjesen and Liu, 2020). Most ventures issue utility tokens, which contain an investment and a utility function (Block et al., 2020). While the investment function relates to the token’s continuous tradability on token exchanges, the utility function refers to the value provided to its holder when used within a venture’s ecosystem (e.g., to purchase the venture’s products at a discount or to receive access rights). By way of their utility function, tokens are key in driving activities within a venture’s ecosystem (Cong, Li and Wang, 2021). Thus, we argue that tokens represent a resource that is most effective when it is widely dispersed within the ecosystem. This contrasts the view of lower token dispersion as a signal of value, as proposed by established signaling theory concepts. Second, initial ICO studies mainly focus on examining antecedents of funding success with single-point-in-time measures (Roosenboom, van der Kolk and de Jong, 2020). Thereby, investors’ perception of venture signals drives ventures’ funding success (e.g., Fisch, 2019). However, drivers of funding success might not similarly relate to venture performance. Often, they are more subtle and hence more difficult to observe from the outside (e.g., Baum and Silverman, 2004; Busenitz, Fiet and Moesel, 2005). Third, initial research tends to examine signals of token dispersion in an isolated manner, neglecting the potential influence of the noisy environment of an emerging funding model (Belleflamme, Omrani and Peitz, 2015). This contrasts findings in recent information economics studies that promote the examination of sets of signals in noisy environments in order to reduce the risk for misinterpretation of signals (Anglin et al., 2018; Drover, Wood and Corbett, 2018).

We address this gap in research by conceptualizing a model that investigates two research questions: First, what is the association of signals regarding token dispersion (as displayed pre-funding) and post-funding venture performance? To examine token dispersion as an antecedent of venture performance, we interpret tokens as a valuable resource (Barney, 1991) and examine their efficacy from a signaling theory perspective (Spence, 1973). We argue that by communicating their intended token dispersion, ventures send signals regarding the employment of tokens as a resource, while also sending a signal of value. Second, how are these signals altered when they are embedded in a set of signals to account for the noisy ICO environment? Here, we draw on Saboo and Grewal (2013), who argue that a signal’s information value depends on its appropriateness and its credibility. We empirically examine these research questions based on a cross-industry, longitudinal dataset with 1,317 observations.

We contribute to signaling theory and ICO literature in three ways. First, we establish tokens as a resource that relates positively to longer-term venture performance. Thereby, we provide a theoretical framework grounded in the resource-based view (Barney, 1991) and the benefits of token employment (e.g., Sharma and Zhu, 2020; Cong, Li and Wang, 2021). Second, we expand signaling theory by explaining that signals of token dispersion incorporate two opposing elements: a signal of value (Busenitz, Fiet and Moesel, 2005) and a signal regarding the employment of the resource tokens. By theorizing and showing that the positive resource element supersedes the negative signal-of-value element, we advance signaling theory and demonstrate that the signal-of-value concept depends on the context in which the signal is sent. Further, by examining the signal-of-value concept in the ICO context, we answer a call by Drover et al. (2017) to apply established theories on emerging funding models. Our findings also reveal a misconception of ICO investors regarding signals of token dispersion, as prior studies reveal that higher token dispersion leads to lower funding success (e.g., Kher, Terjesen and Liu, 2020). Third, we add to recent signaling literature, which argues that ventures send sets of signals in noisy environments rather than isolated signals (Colombo, 2021): we examine amplifying factors (i.e., signal appropriateness and credibility) on the relation between token dispersion and venture performance (Saboo and Grewal, 2013). We find that lower information asymmetry strengthens the relation of token dispersion and venture performance, while higher human capital does not. We explain this with the characteristics of the examined signals (Anglin et al., 2018).

We structure our paper as follows: In Section 2, we develop our hypotheses. In Section 3, we explain the methodology, followed by the results in Section 4. The implications are discussed in Section 5.
2 Theoretical background and hypothesis development

2.1 Information asymmetry and signaling in the ICO context

Information is a prerequisite for any decision-making process (Connelly et al., 2011). The high level of information asymmetry in the ICO market complicates this process for investors (e.g., Block et al., 2020; Momtaz, 2020b). In such uncertainties, investors rely on the interpretation of a venture’s observable characteristics in order to predict its unobservable qualities, which are expected to allow conclusions on a venture’s future performance (Stiglitz, 2000; Drover, Wood and Corbett, 2018). Signaling theory states that an informed party (i.e., insiders) tries to convey information to an uninformed party (i.e., outsiders) through observable information that is associated with unobservable venture characteristics (Connelly et al., 2011). Thereby, the signaler’s intent may deviate from the receiver’s interpretation, as the environment in which the signal is sent or the receiver’s experience may affect the interpretation (Ehrhart and Ziegert, 2005; Colombo, 2021).

2.2 Token dispersion from a signal of value and a resource perspective

We argue that token dispersion signals can be interpreted from two theoretical lenses that result in opposing signaling effects – from a signal-of-value perspective and from a resource perspective.

On the one hand, signaling theory argues that ventures can signal their potential to outsiders through investments by insiders (Leland and Pyle, 1977), as insiders will only invest when they expect positive returns (Prasad, Bruton and Vozikis, 2000). Thus, high investment by a venture team (i.e., low equity dispersion) represents a signal of value to investors (Busenitz, Fiat and Moesel, 2005). Studies in crowdfunding, venture capital and IPOs support this concept (e.g., Meles and Salerno, 2020; Vismara, 2016). Transferring this concept to ICOs, initial studies reveal that ICO investors also follow the signal-of-value concept (e.g., Li and Mann, 2018; Giudici and Adhami, 2019). They find a relation between higher token retention and ICO success (e.g., amount of funding, reaching the funding target).

On the other hand, the resource-based view is often cited when examining antecedents of venture performance (Barney, Ketchen and Wright, 2011). It postulates that valuable resources are crucial for achieving superior performance (Barney, 1991; Dimov and Shepherd, 2005). Thereby, a venture’s ability to develop and to deploy resources may lead to a sustainable competitive advantage (Barney, Ketchen and Wright, 2011). Applying the resource-based logic to tokens, we explain how higher token dispersion leads to a sustainable competitive advantage and thus, higher venture performance. Tokens are a means to develop a venture’s network and ecosystem. By selling utility tokens during the ICO, ventures enhance their investor base as well as grow potential users and customers, who are part of the venture’s network (Momtaz, 2020b; Cong, Li and Wang, 2021). A larger network affects venture performance in two ways. First, networks are a resource, which is particularly important for young ventures, as they can leverage their network for promotions, partnerships, feedback and further valuable resources that are not in their possession (Bhandari and Yasunobu, 2009; Mollick, 2014; Ahlers et al., 2015). For instance, through feedback from its network, a venture may develop exclusive knowledge that can be leveraged to achieve competitive advantages. ICO investors benefit financially from a venture’s success through token appreciation or improved products. Thus, they might be particularly motivated to support the venture. Second, besides network effects, Cong, Li and Wang (2021) theorize that a larger user base in combination with a high number of available tokens leads to more transactions within the venture’s ecosystem, which eventually enhances venture performance.

Ventures seek to send signals regarding their resources to investors, as the possession of resources indicates a higher venture quality (Baum and Silverman, 2004; Connelly et al., 2011). As tokens represent a resource that needs to be utilized in order to enhance a venture’s performance and which may be leveraged to obtain further resources (Bakos and Halaburda, 2018; Li and Mann, 2018; Cong, Li and Wang, 2021), we argue that the positive resource effect overshadows the negative signal-of-value effect. Thus, signals indicating higher token dispersion positively affect venture performance.

\[ \text{H1: A venture’s token dispersion is positively associated with longer-term venture performance.} \]
Information economics literature postulates that a signal’s strength can be enforced or weakened by its appropriateness and its credibility (Saboo and Grewal, 2013). Signal appropriateness reduces the degree of uncertainty for signal recipients by demonstrating the signal’s effectiveness and efficiency. During an ICO campaign, the level of information asymmetry between the venture (as signal sender) and the investor (as signal recipient) reflects this degree of uncertainty (Momtaz, 2021a). Signal credibility refers to the level of trust a receiver puts into a signal. Referring to a team’s inherent capabilities, human capital is a trusted signal and widely accepted success factor of early-stage ventures (Anglin et al., 2018). Thus, we examine human capital as an indication of signal credibility.

Ventures can affect the level of information asymmetry that surrounds the venture through the amount of information they provide to investors (Momtaz, 2021a). Lower information asymmetry allows to examine the true characteristics and objectives of a venture more clearly (Ahlers et al., 2015). Signals of higher token dispersion contain a positive element (i.e., employment of the resource tokens) and a negative one (i.e., signal of value). We argue that lower information asymmetry reinforces the positive element and mitigates the negative one, thus strengthening the signals of token dispersion.

First, the benefits from higher token dispersion stem from network effects and from token employment within a broad community (Cong, Li and Wang, 2021). Investors feel more comfortable to support a venture when they have a clearer picture of its characteristics and its plans (Bergh et al., 2019). Thus, extensive communication (i.e., lower information asymmetry) increases investors’ understanding of the venture’s plans, enhancing the understanding for the benefits of higher token dispersion. On the other hand, the signal-of-value concept states that signals of higher token dispersion imply higher agency risks and less commitment by the team. However, lower information asymmetry reduces these risks, since investors can assess a venture’s true characteristics and plans more directly (Momtaz, 2021a). Therefore, lower information asymmetry mitigates the risks (i.e., the negative element) related to higher token dispersion. Thus, the positive elements become even more pronounced. In summary, we argue that investors appreciate obtaining more information regarding a venture’s token strategy, as they obtain a better understanding for the appropriateness of the token dispersion strategy.

\[ H2: \text{A lower degree of information asymmetry moderates the relation between token dispersion and venture performance such that their relationship will be strengthened.} \]

Human capital represents a costly signal (Federico, Rabetino and Kantis, 2012) that is widely acknowledged in entrepreneurial research (Ahlers et al., 2015). It relates to a team’s capabilities such as knowledge, skills and size (Martin, McNally and Kay, 2013) and increases the legitimacy of an early-stage venture (Cooper, Gimen-Gascon and Woo, 1994). A human capital signal is costly since it requires investments in obtaining an education, gaining experience or hiring and paying capable team members (Marvel, Davis and Sproul, 2016). By being able to incur these costs, ventures signal their team’s superior capabilities in executing their plans and reaching their goals (Anglin et al., 2018).

As discussed in H1, signals of token dispersion contain beneficial and risky elements. We argue that in the eyes of investors, signals of superior human capital enhance these benefits and mitigate the associated risks. First, as it indicates a team’s superior capabilities, higher human capital increases investors’ faith in the benefits of a venture’s communicated strategy (e.g., level of token dispersion). Ventures that possess higher capabilities might be able to leverage the benefits of higher token dispersion in a superior way (e.g., higher network effects due to superior token design). Second, costly signals of higher human capital may mitigate risks associated with underlying, related signals, thereby strengthening them (Anglin et al., 2018). Among others, investors are concerned with a venture’s higher token dispersion as it implies higher agency risks (Amsden and Schweizer, 2019). Signals of higher human capital may mitigate these concerns, as highly skilled teams are less likely to invest their time and their reputation in an unpromising business idea, or even a scam (Roosenboom, van der Kolk and de Jong, 2020). In short, signaling the possession of higher human capital increases the strength of the token dispersion signal, as the announced strategy gains credibility in the eyes of investors.

\[ H3: \text{The level of human capital moderates the relation between token dispersion and venture performance such that their relationship will be strengthened.} \]
3 Methodology

3.1 Data and sample

To build our longitudinal dataset, we rely on multiple data sources as there is no holistic database on ICOs. We download information on 5,773 ICOs that ended before January 2020 from ICObench, which contains the largest amount of information on ICOs (e.g., Momtaz, 2020b). Further, we retrieve 1,511 white papers from sources such as ICObench, ICOdrops or individual ventures’ websites. Then, we retrieve prices for 5,759 tokens and cryptocurrencies from Coinmarketcap, which contains the largest database of token prices (Masiak et al., 2020). Price information range from February 2014 to January 2020. Following Fisch (2019), we add industry affiliations on 2,114 ICOs from Coinschedule. We manually review venture’s websites and white papers to mitigate data gaps. Further, we mitigate data quality issues of ICO databases by comparing information across different websites (e.g., Coingecko, ICOalert; Lyndres, Palazzo and Rabetti, 2020). After matching venture information, token prices and white papers, we compile complete datasets on 478 ventures, which is in the range of related studies examining token prices (not funding success; e.g., Fisch and Momtaz, 2020). Token returns exist on average over three periods, resulting in 1,317 observations for the analysis.

3.2 Measures

To estimate venture performance (mean: -0.76, SD: 1.05), we calculate compounded abnormal returns by adjusting raw returns for the return of a market portfolio and the venture’s sensitivity (beta) to that portfolio (i.e., 1-factor model; Linter, 1965; Sharpe, 1964). The market portfolio includes the ten largest cryptocurrencies weighted by their respective market capitalization (Lee, Li and Shin, 2018; Momtaz, 2020b). When examining token returns, an adjustment for market movements is required to account for the volatility of the cryptocurrency market (Fisch and Momtaz, 2020). We estimate every venture’s sensitivity to the benchmark and regress returns of every individual venture against the returns of the benchmark (Mizik, 2010). We build our panel structure by compounding returns for semi-annual periods starting at the beginning of January or July each year. We choose semi-annual periods over annual periods due to the novelty of the ICO phenomenon (e.g., Fisch and Momtaz, 2020). Finally, we apply a log-transformation to ensure a normally distributed structure.

We retrieve token dispersion (mean: 0.56, SD: 0.19) initially from ICObench (Momtaz, 2020b) and extend missing values through manual search in white papers. Some ventures report different stages of a sale, such as a smaller pre-sale to finance the ICO or to test the market (Howell, Niessner and Yermack, 2020). We do not differentiate between sale, pre-sale or private sale as long as the tokens are sold to investors outside the company. The variable is measured in percent (Fisch, 2019).

White papers represent the main source of information for ICO investors (Florysiak and Schandlauer, 2018). Thus, several studies rely on white papers’ length as proxy for information asymmetry (mean: -0.70, SD: 0.11) between the venture and its potential investors (Howell, Niessner and Yermack, 2020; Momtaz, 2020a, 2021a). This is based on the rationale that longer white papers include more information on a venture, which only superior ventures can provide – especially since providing more information can even be harmful to ventures, as they might reveal detrimental information (Leland and Pyle, 1977). Following Momtaz (2020a), we divide the logarithm of a white paper’s length by the maximum value and multiply the value by -1. As a result, the longest white paper reports the lowest (most negative) value. Hence, we expect the interaction term to show a negative coefficient.

We measure human capital (mean: 6.29, SD: 5.95) as the size of the team (Ahlers et al., 2015). We retrieve human capital from ICObench, where companies present their team members, and mitigate data gaps through manual research in further databases (Fisch and Momtaz, 2020).

We add control variables for venture characteristics (e.g., social capital, communication), campaign characteristics (e.g., total funding, duration, pre-sale, market sentiment), industry-, time- and location-fixed effects and correction factors for sample bias and endogeneity, following related ICO research (e.g., Fisch, 2019; Giudici and Adhami, 2019; Fisch and Momtaz, 2020; Rohde and Benke, 2020).
3.3 Model

We test our hypotheses by employing a generalized estimating equation (GEE) to our cross-industry longitudinal sample (Liang and Zeger, 1986). We chose the GEE method due to its high degree of specification and as it allows to analyze token dispersion on venture performance in a panel structure with a high number of time-invariant variables (Pfarrer, Pollock and Rindova, 2010; Crossland et al., 2014). To account for potential heteroscedasticity of standard errors, we add Huber-White sandwich estimators to our model (Ballinger, 2004), which ensure a temporal stability of the predictors (Petersen, 2009). We specify the GEE with a Gaussian distribution, an identity link function and an autoregressive correlation structure in order to account for our time-series data and the interdependencies between observations (Ballinger, 2004). We include time-invariant effects for time, location and industry to account for effects resulting from events such as the ICO ban in China (Fisch and Momtaz, 2020). Finally, we apply a hierarchical regression model and estimate Wald-Chi-Square values to assess our model’s goodness of fit (Miller, Le Breton-Miller and Lester, 2011).

<table>
<thead>
<tr>
<th>Method</th>
<th>GEE</th>
<th>POLS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td>Dependent variable</td>
<td>CAR</td>
<td>CAR</td>
</tr>
<tr>
<td>Periods listed</td>
<td>0.104***</td>
<td>0.091*</td>
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<tr>
<td></td>
<td>(-0.037)</td>
<td>(-0.038)</td>
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<td>Duration of ICO</td>
<td>-0.051</td>
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<td></td>
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<tr>
<td>Funding raised</td>
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<td>0.071**</td>
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<tr>
<td></td>
<td>(-0.024)</td>
<td>(-0.025)</td>
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<tr>
<td>Share of advisors</td>
<td>-0.056*</td>
<td>-0.059*</td>
</tr>
<tr>
<td></td>
<td>(-0.025)</td>
<td>(-0.025)</td>
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<tr>
<td>Pre-sale</td>
<td>-0.064</td>
<td>-0.07</td>
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<td></td>
<td>(-0.053)</td>
<td>(-0.053)</td>
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<tr>
<td>GitHub &amp; Telegram</td>
<td>-0.067</td>
<td>-0.066</td>
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<tr>
<td></td>
<td>(-0.058)</td>
<td>(-0.058)</td>
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<tr>
<td>Initial exchange offering</td>
<td>0.204</td>
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<td></td>
<td>(-0.111)</td>
<td>(-0.116)</td>
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<tr>
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<td>Public correction term</td>
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<tr>
<td>Token dispersion</td>
<td>0.059*</td>
<td>0.060*</td>
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<td></td>
<td>(-0.026)</td>
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<tr>
<td>Information asymmetry</td>
<td>0.016</td>
<td>0.022</td>
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<td></td>
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<td>Human capital</td>
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<td></td>
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<td>(-0.029)</td>
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<tr>
<td>Token dispersion x information asymmetry</td>
<td>-0.057*</td>
<td>-0.056*</td>
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<tr>
<td></td>
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<td>(-0.024)</td>
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<tr>
<td>Token dispersion x human capital</td>
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<td>0.001</td>
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<tr>
<td></td>
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<td>(-0.025)</td>
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<tr>
<td>Constant</td>
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<td>1.925***</td>
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<td></td>
<td>(-0.426)</td>
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<tr>
<td>Chi²/Adjusted R²</td>
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<td>415</td>
</tr>
</tbody>
</table>

Note: *** p<0.001, ** p<0.01, * p<0.05. Robust standard errors in parentheses. N=1,317 across all models.

Table 1. Regression on compounded abnormal returns (CAR) and on raw returns (Raw Ret).
4 Results

To examine our hypotheses, we calculate four hierarchical regression models (Table 1). All models are significant (p < 0.001) and Chi²-values continuously increase from Model 1 to 4. Model 1 includes all control variables. Model 2 incorporates token dispersion as a predictor. Model 3 adds the moderators and Model 4 displays the full model including the interaction terms between token dispersion and information asymmetry, as well as token dispersion and human capital. The described results are based on model 4. Hypothesis 1 states that higher token dispersion positively associates with venture performance. Our results support the hypothesis depicting a robust standardized beta coefficient (β = 0.059; p<0.05). We can also confirm Hypothesis 2, which states that a lower information asymmetry moderates the relationship of higher token dispersion and venture performance such that the relationship increases (βdispensation asymmetry = -0.057; p<0.05). Hypothesis 3 argues that human capital affects the relation between token dispersion and venture performance, and has been rejected. Throughout all models, we include an instrumental variable as magnitude factor and the inverse Mills ratio as public correction term to reduce potential endogeneity concerns (Fisch and Momtaz, 2020). Both variables remain insignificant across all models. Additionally, we recalculate all models and only include one or none of the two variables. As the coefficients remain robust across all models, we conclude that endogeneity does not pose an issue (e.g., Wang, Choi and Li, 2008).

We run additional robustness tests. First, we replace abnormal token returns as dependent variable with raw returns (Model 5). The existence of a factor structure (i.e., betas) in token returns is currently being debated by researchers (e.g., Li and Yi, 2018; Corbet et al., 2019; Momtaz, 2021b). Thus, we operationalize venture performance using a method that is independent of a potential factor structure (Mizik, 2010). Second, we run a pooled ordinary-least-squares regression (POLs) to test whether the results depend on the applied method (Model 6). POLs ignore the data’s panel structure and thus intra-venture correlations thereby providing unbiased estimations of parameters (Jiaju and Williams, 2020). The coefficients and significances of Model 5 and 6 remain stable, which supports our results.

5 Theoretical and managerial contributions

Our study adds to the existing literature on signaling theory and entrepreneurship. By revealing that token dispersion positively relates to venture performance, we find support that tokens represent a valuable resource in a venture’s ecosystem, which may lead to a competitive advantage (Cong, Li and Wang, 2021). Thereby, we contribute to ICO literature by examining antecedents of positive longer-team venture performance (e.g., Fisch and Momtaz, 2020) and by specifying the theoretical link between performance and tokens as a resource. By considering that signals of token dispersion incorporate two opposing elements – a signal of value and a signal regarding tokens as a resource – we expand signaling theory, as we demonstrate that the negative perception of high ownership dispersion indicated by the signal-of-value concept ((Busenfiet, Fiet and Moeisel, 2005) depends on the issued financing tools (e.g., equity), and does not hold true in the case of tokens. We explain this by the dual function of tokens as a utility and an investment tool, in which the utility purpose is predominant (Sharma and Zhu, 2020). This way, our findings integrate literature on ICOs that regards tokens mainly as an investment tool and literature that takes a more “technical perspective”, focusing on tokens as utility tools (Kher, Terjesen and Liu, 2020). Finally, this finding expands ICO literature that examines lower token dispersion as a signal for higher funding success (e.g., Giudici and Adhami, 2019; Lyandres, Palazzo and Rabetti, 2020). By identifying a discrepancy in the efficacy of token dispersion as an antecedent of funding success and of venture performance, we add to the notion that ICO investors may not act strictly rationally or have non-financial motives (Fisch et al., 2021). Rational investors would not punish antecedents of positive post-funding venture performance during the ICO. This might be driven by a high share of non-expert investors (Kher, Terjesen and Liu, 2020).

By revealing that lower information asymmetry reinforces the token dispersion signal, we show that providing more information to investors enhances the appropriateness and thus the strength of the underlying token dispersion signal. In doing so, we contribute to a theory postulated by Saboo and
Grewal (2013), explaining that a signal’s efficacy depends on its appropriateness. Thereby, we add to an entrepreneurial research stream which argues that signals should not be viewed in an isolated manner, as traditional signaling theory suggests (Connelly et al., 2011), but embedded in a set of signals (e.g., Anglin et al., 2018). Finally, by showing that providing more information to investors can strengthen a signal’s efficacy, we reinforce findings of Drover, Wood and Corbett (2018), who emphasize that signalers should be aware of the receiver’s cognition and attention processes.

To our surprise, we cannot reveal a moderating effect of human capital. This might be grounded in the characteristics of the examined signals and the ICO context. In a noisy environment, investors may not recognize all available signals (Steigenberger and Wilhelm, 2018). Yet, signals with complementary characteristics are more likely to be recognized together (Anglin et al., 2018). Thus, they have a higher potential to reinforce each other. A signal of higher token dispersion requires investors to understand a venture’s plans, since it also incorporates higher risks for investors. The level of information asymmetry is an indication for a venture’s transparency towards its investors (Momtaz, 2020a), whereas human capital relates to a venture’s inherent capabilities (Martin, McNally and Kay, 2013). Thus, signals concerning inherent capabilities such as human capital, although important, might not be as relevant in comparison to a signal relating directly to the level of transparency around a venture.

Our study offers important implications for investors and ventures. First, since we find a positive relation between token dispersion and venture performance, ventures aiming for an ICO should consider selling a higher share of tokens to investors in order to grow their network and thus, user base. Thereby, to make a credible pitch, they should ensure that their business model can benefit from higher token dispersion (Cong, Li and Wang, 2021). Second, our findings show that lower information asymmetry reinforces the relation between token dispersion and venture performance. Thus, the strategic decision to disperse more tokens should be accompanied by extensive communication regarding the strategy’s appropriateness in order to mitigate investors’ concerns. Here, the publication of the actual equity distribution to highlight the founding team’s incentivization might be of help.

In the full paper, we extend the theoretical foundation with a literature review. Further, we expand on the methodology (e.g., correlations, endogeneity concerns, comparison with other ICO datasets) and the discussion of the interaction plots. Finally, we present additional analysis: we examine the relation between token dispersion and funding success (instead of venture performance). Thereby, we can demonstrate a change of the coefficient’s effect direction, which implies exciting theoretical and practical differences in the signal interpretation pre- and post-funding. This also validates our data sample, since several studies examining funding success find a negative relation with token dispersion.
References


