

# **Predictability of ICO Success and Returns**

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*Initial coin offerings (ICOs) provide a platform to issue tokens to the public. This study analyses the determinants of ICO success and listing day returns using a dataset of 341 executed ICOs. Funds raised under an ICO are negatively related to target funding size and positively related to Cryptocurrency usage and ICO quality. ICO listing day returns are negatively related to the amount raised, the time period of the offer and time delay to listing. In contrast, ICO listing day returns are positively related to Blockchain usage, ICO quality and the ICO success to raise the target level of funds.*

*Keywords: initial coin offerings, white paper, blockchain, distributed ledger, cryptocurrency, digital tokens.*

## **INTRODUCTION**

Traditional early-stage funding has now been supplemented by crowdfunding. Crowdfunding is the practice of funding a project or venture by raising relatively small amounts of money from a large number of people, typically via the internet. Initially, crowdfunding was provided in exchange for rewards or deals on products, and more recently, in exchange for securities or shares of a firm. However, advances in blockchain technology have led to a new form of crowdfunding known as initial coin offerings (ICOs). ICOs are a relatively novel phenomenon but have grown rapidly surpassing venture capital funding in 2017 and 2018. ICOs raised \$6 billion in the first six months of 2018 which was more than the entire amount raised in 2017 (CoinDesk, 2018). The global nature of ICOs and the subsequent exposure to a large investor base remain a key draw for entrepreneurs to this particular financing mechanism. The financial and accounting industry, regulators, international standard bodies such as FASB, IAS and investors still seek to better understand this increasingly popular funding mechanism.

Given this setting, our study provides new insights into ICOs. We pose the following research questions: 1. What factors can predict ICO success (amount of money raised)? 2. What factors affect ICO listing day returns? We build upon and expand on previous qualitative studies on ICOs such as Kaal and Dell'Erba (2017) and Yadav (2017). In more detail, we analyse what factors or characteristics of ICOs affect both the amount of money raised during the ICO and the post-ICO returns. We find that the “pre-

listing” period of the ICO provides significant predictability regarding both the success and returns of the ICO. The ICO investor sentiment proxy and the time until listing variable possess significant explanatory power for the ICOs listing day returns. As investor sentiment and “hype” are key drivers of returns in the cryptocurrency market we use an expert rating created by icodrops.com. This rating is widely being used by ICO investors in their investment decision process. Moreover, this becomes a strong predictor of post-ICO returns. Our results provide further insights into the changing dynamics of the ICO marketplace and will be of interest to investors in ICOs, entrepreneurs and regulators alike.

## ICO MECHANISMS

### Mechanisms

ICOs provide several advantages such as providing funding mechanisms for blockchain based applications, providing liquidity and reducing transaction costs to investors and issuers alike.

ICOs are the cryptocurrency version of crowdfunding and it is one of the simplest and most efficient methods for companies and individuals to fund their projects. An ICO is an event that usually extends over a period of one week or more, where any member of the public is able to purchase newly issued tokens in exchange for cryptocurrencies such as Bitcoin (BTC) or Ethereum (ETH). Tokens are cryptocurrencies, for which all records and transaction data are protected by cryptographic methods. Entrepreneurs issue tokens to raise capital to help and develop their own online platform or ecosystem. Within their ecosystem, all transactions are required to use a unique token. Following the completion of the ICO process, and once the platform has gone through sufficient development to be approved for listing, tokens are listed on cryptocurrency exchanges. This provides liquidity to investors (token-holders) who purchased the token during the ICO and provides a potential signal of favourable prospects for the ICO. The timeline of an ICO can be explained as follows; (Li & Mann, 2018).

1. ICO stage:

- The entrepreneur/issuer sets the number of tokens for sale, the minimum price that each token will be issued at, the share of tokens the entrepreneur/issuer will retain, and whether the ICO is made contingent on whether a specific quantity of tokens are purchased ex-ante.
- The entrepreneur/issuer offers the tokens in an auction where investors can decide whether to invest or not.
- If the total purchases exceed the minimum threshold and raises enough money to continue the development of their digital platform (note they do not have to hit the maximum threshold), the venture proceeds.

2. Market stage:

- If the entrepreneur/issuer is successful in developing their coin to a stage where it is acceptable to list, they launch the platform in the market with tokens being the only accepted medium of exchange on it. This is subject to the exchange approving the listing of the coin through a voting process.
- Buyers trade tokens at a new market-determined exchange rate.

Buyers have interest in buying tokens from an ICO that has the potential to increase in value once listed on a cryptocurrency exchange post-ICO. A cryptocurrency exchange is an online platform in which you can exchange one cryptocurrency for another, or a cryptocurrency for fiat currency.<sup>1</sup> Fiat to crypto exchanges provide investors with an entry point into the market by providing a platform to trade their local fiat currency for cryptocurrency.

To become listed on a cryptocurrency exchange, the entrepreneur/issuer must submit an application and be approved. The criteria and process vary widely between each exchange. For example, a cryptocurrency exchange known as “Poloniex” bases their application decisions on how unique each project is and whether their current community would be interested in trading the token; whereas, more developed and bigger exchanges like “Bittrex” are more stringent in their choice of tokens being listed. Their criteria

involve the regulatory compliance set by the exchange surrounding the individual ICO and how the underlying team handles the platform. The exchanges allow initial buyers to sell their holdings, and new buyers to enter the market; the buyer of these tokens has no guarantee that the project will be developed, and if the project is not developed the current holders of tokens can lose all capital invested. More importantly, there is no current regulatory protection around the possibility of an ICO being a scam. A report by an ICO advisory firm known as Statis Group found that more than 80% of ICOs conducted in 2017 were identified as scams (Alexandre, 2018).

### **ICO Pre-Investment Disclosures**

Another key aspect of ICOs is the process by which investors invest and information is publicly observable. Almost every ICO has a white paper, which contains vital information regarding the project. Details provided in a white paper include but are not limited to the purpose, structure, mission, benefits, team members, roadmap and future plans of the tokens developed. Sources such as icodrops.com attempt to summarise key details from the white paper and provide expert reviews of the token. This source is utilised in our empirical analysis section.

More information is disclosed to the investor once the ICO has started raising funds. This provides investors with information such as; what cryptocurrencies are accepted as payment, live tracker of the progress of the ICO, soft cap and hard cap, and if applicable the set end date of the ICO. The hard cap of an ICO is the target (maximum) amount of funds that it aims to raise, although some ICOs will also accept oversubscriptions above the hard cap amount. The soft cap is the amount raised at which the ICO can be considered a success. Additional information that can be provided in the white paper include information regarding the regulatory status, technical aspects of the project, use of proceeds, token allocation information, information about the issuers and source code disclosures.

## **LITERATURE REVIEW**

### **Importance of the ICOs White Paper**

White papers for an ICO contains the proposed business model and the technical aspects of the project. Prior research shows a positive association between voluntary disclosure in the white paper, liquidity and trading volume of ICOs (Howell et al., 2019). There is evidence that the identification of unique words in a white paper is positively associated with ICO success (Lyandres et al., 2018.) In addition, there is a positive association with the length of the white paper and the amount raised in an ICO (Amsden & Schweizer, 2019, Bourveau et al., 2018, and Fisch, 2018). The opacity of a white paper results in lower liquidity, and lower amount raised and returns in the long term (Bourveau et al., 2018). Prior research has also investigated disclosures made by entrepreneurs in the ICO white paper and create a rating for the underlying blockchain mechanism of the ICO. The findings show that ICO projects based on a blockchain with a higher rating raise more funds over the ICO period (Feng et al., 2019). This is consistent with ICO investors using the underlying blockchain technology as an investment signal regarding the quality of the ICO project. On the other hand, patents regarding the code and software of the entrepreneur's platform may not be an effective signal for ICO investment (Fisch, 2018). In terms of the white paper, ICOs that can communicate their idea more precisely and in more technical detail are more successful (Feng et al., 2019 and Fisch, 2018). One explanation is that the level of technical detail in the white papers may constitute a substitute for patents in the context of ICOs. The presence of publicly available source code of the ICO, presale organisation before the ICO, and ICO tokens allowing the customers to access specific services also results in more successful ICO's (Adhami et al., 2018). However, their results find that the availability of a white paper is not associated with the probability of success of the ICO (Adhami et al., 2018).

### **ICO Regulation**

The objective of regulation is to make ICOs more legally compliant and predictable, which will in turn increase investor protection and security. Increased scandals, media attention and popularity of ICO's have resulted in a wave of changes in ICO regulation.<sup>2</sup> However, regulators worldwide have not yet reached a

general consensus regarding legal rules of ICOs. U.S., Russia, U.K., Singapore and Estonia are the countries with associations to most ICOs globally (ICObench, 2018). While ICOs are banned in South Korea and China since September 2017, they are largely encouraged in small capital market countries such as Singapore, Switzerland, Malta and Estonia. For example, China justifies completely banning the cryptocurrency marketplace for investor protection and financial risk prevention. In New Zealand, ICOs associated with financial products are regulated and the Monetary Authority of Singapore issued a guide to ICOs in November 2017. Switzerland has designated a canton as a “Crypto Valley” and Malta has established a regulatory framework to attract foreign investors in crypto and blockchain technologies. The U.S. Securities and Exchange Commission consider some tokens of ICOs to be classified as securities and subject to standard securities regulations (SEC, 2017). However, both the SEC and the Ontario Securities Commission in Canada have issued a series of warnings against ICOs and the SEC maintains a website to inform investors about ICO scams.

### **Potential Investment Signals**

In general, ICO investment signals are not based on technical and other observable characteristics such as earnings per share when investing in stocks (Yadav, 2017). Rather, signals such as token liquidity, distribution of token holdings, digital community sentiments and quality of information in white papers is of key importance to making ICO investment decisions (Yadav, 2017). However, this study notes limitations with no empirical data to reinforce the theoretical suggestions. Related research finds that venture uncertainty, measured as the percentage of tokens offered in the ICO, is negatively correlated with coin tradability. High venture quality is also positively correlated with the success of an ICO (Amsden & Schweizer, 2019). This points to factors such as being connected to better CEOs and larger team size as positive signals towards investing in ICOs.

The disclosure of source code, platform information and high rating increases the likelihood of ICO completion and success respectively (Bourveau et al., 2018). Ratings are positively associated with ICO success, a quicker sale and the ICO amount raised (Lee et al., 2018). Etherscan ICO reputation scores can predict higher market capitalization (Rhue, 2018). Investor sentiment and first day returns are also found to be significant factors in predictions of long term ICO returns (Drobetz et al., (2019 & Lyandres et al., 2019).

### **Institutional Theory and ICOs**

A key factor for a large number of ICOs is the minimal or no cost to the issuer relative to an IPO, with high IPO underwriting and legal costs (Ellis et al., 2000). According to institutional theory, a more developed institutional environment with overly restrictive regulations may hinder the establishment of firms (Baumol & Blinder, 2009). ICOs may alleviate this issue in the current environment where only minor or no regulation is present.

An alternative method in which ICOs are reinforced is through entrepreneurs creating a product or service in an under-organised domain (Trist, 1983). ICOs may be more optimal relative to traditional venture capital financing, where there is a high risk of failure, right skewed payoff distributions, high idiosyncratic risk and low information asymmetry (Chod & Lyandres, 2018).

## **HYPOTHESES DEVELOPMENT**

### **Size Effect of the ICO**

The size of the ICO is measured by the target that each ICO sets and can affect ICO success. We hypothesise that ICOs seeking to raise more funds will more likely exhibit excess supply and not necessarily have the investor demand to match it. This effect for ICOs might be more prominent due to the high level of information asymmetry, no re-issuance of tokens prior to listing and no underwriters as in the IPO market. In addition, ICO investors may not find a complete information set in the white paper, especially regarding the founders’ and management teams’ ability, innovativeness and market trends about the

product, long term sustainability and financial outlook. Hence, relatively smaller ICOs would have a higher probability of success in terms of ICO returns and also the percentage of money raised. We hypothesise:

**H1a:** *The size of the ICO will have a negative effect on the percentage of the ICO target reached.*

**H1b:** *The size of the ICO will have a negative effect on the ICO listing day return.*

### **Length Effect of the ICO**

The length of time an ICO is active is the time period between the start date that the ICO seeks to raise funds and end date when the ICO closes funding to new investors. ICOs have a bar tracking the amount of funds they have raised and the target. Hence, if it is observed that the ICO is likely to reach its minimum funding target in a short-time frame, investors can use this as a signal of the ICOs quality; although the end result of funds raised cannot be known at that stage. An ICO closing or likely to close in a short-time frame would signal to investors that there has been high demand for the ICO and the ICO has likely raised sufficient funds over the soft cap amount for development. Similarly, investors may perceive ICOs that are open for longer periods to be low quality and less likely to attract funds to reach the hard cap amount (or greater).

**H2a:** *The length of ICO will have a negative effect on the percentage of the ICO target reached.*

**H2b:** *The length of ICO will have a negative effect on the ICO listing day return.*

### **Purpose Effect of the ICO**

ICOs can be defined by various categories which are based on the purpose of their platform. The two most common uses of these platforms are Blockchain and Cryptocurrencies; Blockchain is an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way. Cryptocurrencies are a digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank. The other usages of ICOs, which include uses such as gambling and gaming, are relatively unknown and less common. We hypothesise that investors may be reluctant to invest in ICOs which have less widely known uses, because of their unfamiliarity and lack of understanding.

**H3a:** *ICOs whose purpose is either “Blockchain or Cryptocurrencies” will have a positive effect on the percentage of ICO target reached.*

**H3b:** *ICOs whose purpose is either “Blockchain or Cryptocurrencies” will have a positive effect on the ICO listing day return.*

### **Market Sentiment / Experts’ View Effect on the ICO**

In the cryptocurrency marketplace, the price of tokens is subject to speculative pressures and uncertainty in demand. One of the first studies in this area found that the fundamental or intrinsic value of Bitcoin was zero (Cheah & Fry, 2015), with a fundamental value of zero, the market's positive sentiment surrounding the prospects of each ICO should have positive effects on the percentage of target reached for each ICO, and the listing day ICO returns. We use experts’ view or rating for each token as a proxy for sentiment and ICO quality. We hypothesise that those tokens with a high rating will achieve more success at raising funds and have greater ICO listing day returns.

**H4a:** *Tokens rated as “High” will achieve a larger percentage of ICO target reached compared to tokens rated as “Low” or “Not Rated”.*

*H4b: Tokens rated as “High” will achieve higher ICO listing day return compared to tokens rated as “Low” or “Not Rated”.*

#### **Time Until Listing Effect**

The time between the end of the ICO and listing date is typically used by the ICOs to utilise the funds raised to develop their platform before listing on an exchange. ICOs with a lower time until listing have developed their ICO project faster. The process of listing on an exchange involves an application process. This could suggest that those tokens which are listed relatively quickly had fewer challenges in being accepted onto an exchange. Furthermore, it signals that the exchange itself feels favourably towards the prospects of the token. We hypothesise that the lower the time till listing, the higher the ICO listing day returns. In addition, we hypothesise that investors will infer ICOs that achieve a larger percentage of funds raised to be of higher quality.

*H5a: Time until listing will have a negative effect on ICO listing day returns.*

*H5b: ICOs with a high percentage of target funds achieved, will have a positive effect on ICO listing day returns.*

#### **Control Variables**

Evidence suggests that Bitcoin’s performance has an essential influence on investor’s overall perception of the ICO market (Rohr & Wright, 2017). With a high Bitcoin price we expect market sentiment to be higher. This suggests the momentum of Bitcoin’s price is a strong proxy for the current conditions of the cryptocurrency market and investor sentiment. Hence, we control for one month positive momentum of the price of Bitcoin. Large stock market movements may also affect the Bitcoin price and the ICO market. Thus, we also control for one-month S&P500 momentum prior to listing.

## **RESEARCH METHODOLOGY**

### **Dataset**

Our database compiled for this study is an amalgamation of databases for ICOs. The first database we utilize is <https://icodrops.com/> over the time period of our study between November 2016 and September 2018. This contains data on 432 completed ICOs; including the token sale price, the date the ICO was initiated and closed, the category of ICO, the amount of USD raised at the ICO, the target of the ICO and also an expert’s rating. In our empirical analysis, we use 341 ICOs, which have data for all variables. ICO Drops is widely regarded as one of the few sites in the cryptocurrency community as an extensive and reliable source for ICO data.<sup>3</sup>

Our second database is [coinmarketcap.com](https://coinmarketcap.com). This is regarded as one of the best and most accurate places to obtain prices of all cryptocurrencies. At the time of this study, it contained historical data on 1629 cryptocurrencies spanning 11363 crypto-exchanges. CoinMarketCap requires organisations to submit a form in order to list their currencies. Thus, there may be a small lag between the exchange listing date and the date when prices start appearing on the website. It is important to note that the price reported by CoinMarketCap is the average price of the token on all exchanges, value weighted for each exchange using the volume traded of that token on the exchange.<sup>4</sup> we compile these datasets up to 10<sup>th</sup> September 2018. Our third database is Datastream, which contains daily S&P500 index data.

### **Empirical Methodology**

We use cross-sectional analysis to investigate both the success and the listing day returns of ICOs. We measure the success of the ICO with the dependent variable *PercentTarget* in equation (1). The variable *PercentTarget* equals the percentage of the investment goal on the hard cap amount achieved at the end of the funding stage of the ICO.

$$\begin{aligned}
PercentTarget = & Intcept + B_1TargetSize + B_2LengthICO + B_3Blockchain + B_4Crypto + \\
& B_5High + B_6Low + B_7NotRated + B_8BitRetTargetPeriod + \\
& B_9S\&PRetTargetPeriod + B_{10}Bitcoin1M + B_{11}S\&P5001M + \\
& B_{12-19}Quarterly\ time\ dummies + \varepsilon
\end{aligned} \tag{1}$$

To examine the determinants of ICO listing date returns we use ICO returns measured by  $R_{START}$  (equation (2)) and  $R_{END}$  (equation (3)).  $R_{START}$  is daily compounded return between the ICO offer price at the start date of the ICO's funding period and the ICO price on the initial list date of the ICO on a cryptocurrency exchange.  $R_{END}$  is daily compounded return between the ICO offer price at the end date of the ICO's funding period and the ICO price on the initial list date of the ICO on a cryptocurrency exchange. We standardise the ICO listing day returns to daily returns to remove the potential bias from the varying time lengths of each ICOs listing between its start and end date and final listing date on an ICO exchange.

$$\begin{aligned}
R_{START} = & Intcept + B_1AmountRaised + B_2LengthICO + B_3Blockchain + B_4Crypto + B_5High + \\
& B_6Low + B_7NotRated + B_8TimeList + B_9PercentTarget + B_{10}BitcoinRetStart + \\
& B_{11}S\&PRetStart + B_{12-19}Quarterly\ time\ dummies + \varepsilon
\end{aligned} \tag{2}$$

$$\begin{aligned}
R_{END} = & Intcept + B_1AmountRaised + B_2LengthICO + B_3Blockchain + B_4Crypto + B_5High + \\
& B_6Low + B_7NotRated + B_8TimeList + B_9PercentTarget + B_{10}BitcoinRetEnd + \\
& B_{11}S\&PRetEnd + B_{12-19}Quarterly\ time\ dummies + \varepsilon
\end{aligned} \tag{3}$$

In addition, we also undertake regression analysis in equations (2) and (3) with the dependent variables being the abnormal Bitcoin adjusted return. The variable  $R_{BitcoinAdj}_{START}$  is equal to the variable  $R_{START}$  less  $BitcoinRetStart$ , where  $BitcoinRetStart$  is the daily compounded return on Bitcoin between the start dates of the ICO's funding period and the list date of the ICO on a cryptocurrency exchange. Similarly, we define the variable  $R_{BitcoinAdj}_{END}$  as being equal to the variable  $R_{END}$  less  $BitcoinRetEnd$ .  $BitcoinRetEnd$  is the daily compounded return on Bitcoin between the close or end date of the ICO's funding period and the list date of the ICO on a cryptocurrency exchange. This is similar to adjustments made by various studies that adjust for Bitcoin returns (Chuen et al, 2017).

### Other Variable Definitions

To examine the determinants of success of the ICO and listing day returns we use the following variables. The variable *TargetSize* is the natural logarithm of the funding target set by entrepreneurs/issuers at the start of the funding stage of the ICO. The variable *AmountRaised* is the natural logarithm of the funds raised under the ICO at the end of the funding stage of the ICO. The number of days from the start of the ICO's funding period to when the ICO is closed at the end of the funding period is the variable *LengthICO*. *Blockchain* is a dummy variable equal to one if the ICO is categorised by icodrops.com as "Blockchain" or "Blockchain Service" and zero otherwise. *Crypto* is a dummy variable equal to one if the ICO is categorised by icodrops.com as "Cryptocurrency" or "Crypto-exchange" and zero otherwise. A key aspect of our research model is the expert rating from the icodrops database which we use as a proxy for investor sentiment. ICO Drops has current and historical ratings for each ICO, based on the risk, speculation and possible returns of the project. This rating scale is based on "experts" views on the upcoming ICOs and publicly rated by the wider ICO community. This scale varies from "Very High" interest to "Very Low" interest. A large proportion of ICO investor communities uses these ratings as a base indicator for whether they should invest in an ICO project or not.

We convert the experts' views into dummy variables. The dummy variable *High* is equal to one if the token has a rating of "Very High" or "High" and zero otherwise. We also define a dummy variable *Low* equal to one if the if the token has a rating of "Very Low" or "Low" or "Neutral" and zero otherwise.<sup>5</sup> Lastly, we define a dummy variable *NotRated* equal to one if the token has no rating and zero otherwise. The omitted dummy variable is a rating "Medium" which is between our *High* and *Low* rating. The variable

*TimeList* is the number of days from the closing of the ICO till the day it is initially listed on a cryptocurrency exchange.

The variables in equations (1), (2) and (3) are defined in Appendix 1.

## EMPIRICAL RESULTS

### Descriptive Statistics

This section provides descriptive statistics for our key ICO success predictability factors. Table 1 shows the characteristics of 341 ICOs. We include two ICOs that sought to raise funds at the end of 2016 in the 2017 sub-sample. Initially, we observe the “average” ICO raised \$23.3 million USD, with a target or cap size of \$32.01 million USD, resulting in an average of 80.10% target for funds sought per each ICO.<sup>6</sup> The reduction in the average target size of funding sought in the 2018 compared to 2017 may reflect increased regulation or the relatively hot ICO market being flooded by low quality ICOs.<sup>7</sup> On average each ICO lasts for 20 days and then takes 57 days to list on an exchange following the end of the ICO’s funding stage. The average token price is around 0.63 in U.S. dollars which is defined by the ICO issuer.

**TABLE 1**  
**DESCRIPTIVE STATISTICS BY THE CHARACTERISTICS OF EACH ICO**

|                                       |       | Obs | Mean   | Median | SD     | Min    | Max     |
|---------------------------------------|-------|-----|--------|--------|--------|--------|---------|
| <i>PercentTarget</i>                  | Total | 341 | 80.10% | 99.88% | 45.00% | 0.54%  | 642.50% |
|                                       | 2018  | 156 | 90.28% | 99.99% | 21.56% | 17.63% | 144.18% |
|                                       | 2017  | 185 | 71.52% | 81.40% | 56.47% | 0.54%  | 642.50% |
| Token Price (USD)                     | Total | 341 | 0.636  | 0.110  | 2.264  | 0.0001 | 27.42   |
|                                       | 2018  | 156 | 0.369  | 0.087  | 1.532  | 0.0002 | 18.09   |
|                                       | 2017  | 185 | 0.86   | 0.210  | 2.718  | 0.0001 | 27.42   |
| Target Size or Hard Cap (USD million) | Total | 341 | 32.01  | 24.80  | 33.53  | 1.00   | 407.50  |
|                                       | 2018  | 156 | 29.05  | 22.05  | 35.72  | 2.00   | 407.50  |
|                                       | 2017  | 185 | 34.68  | 26.00  | 31.43  | 1.00   | 215.9   |
| <i>LengthICO</i> (days)               | Total | 341 | 20.01  | 15.00  | 26.66  | 0.00   | 327.00  |
|                                       | 2018  | 156 | 12.75  | 4.00   | 18.56  | 0.00   | 147.00  |
|                                       | 2017  | 185 | 26.14  | 24.00  | 30.68  | 0.00   | 327     |
| Amount Raised (USD million)           | Total | 341 | 23.3   | 18.75  | 27.27  | 0.22   | 320.00  |
|                                       | 2018  | 156 | 24.72  | 20.00  | 27.50  | 2.00   | 320.00  |
|                                       | 2017  | 185 | 22.09  | 15.3   | 27.1   | 0.22   | 257.00  |
| <i>TimeList</i> (days)                | Total | 341 | 57.04  | 27.00  | 82.93  | 0.00   | 489.00  |
|                                       | 2018  | 156 | 48.57  | 28.50  | 55.72  | 0.00   | 279.00  |
|                                       | 2017  | 185 | 64.18  | 26.00  | 99.91  | 0.00   | 489.00  |

This table contains summary statistics on ICOs listed on icodrops.com. The time period of these ICOs range from the 5th of November 2016 till the 10th of September 2018. ICOs are classified into year groups based on when the ICO started raising funds. The two ICOs in the 2016 time period are included in the 2017 year. Summary statistics are calculated on information derived from icodrops.com. Refer to Appendix 1 for a detailed description of variables *PercentTarget*, *LengthICO* and *TimeList*.

ICOs generally develop their own blockchain platform as in the case of “Blockchain” or issue tokens on existing platforms for a wide range of applications such as “crypto currencies” or “Other”. “Other” category may include using blockchain applications for gaming, storage services, ownership etc. In Table 2 we provide ICO listing day returns according to the usage of the ICO funds. In Panel A, the ICO listing day returns (unadjusted) are  $R_{Start}$ . Table 2, Panel B provides bitcoin adjusted ICO listing day returns equal to  $R_{BitcoinAdj_{START}}$ . Blockchain ICOs have significantly higher median ICO listing day returns than the



overall median return, with the Wilcoxon test showing this difference is statistically significant for the combined period and for 2018. This supports hypothesis 3b. Our finding that creating a new “Blockchain” platform being associated with higher ICO listing day returns maybe due to increased liquidity and a signal of higher technical expertise.

**TABLE 2**  
**DESCRIPTIVE STATISTICS BY THE UNDERLYING USAGE OF EACH ICO**

| Panel A - $R_{START}$ |       | Obs | Mean   | Median  | Std. Dev. | Min    | Max    |
|-----------------------|-------|-----|--------|---------|-----------|--------|--------|
| <i>Blockchain</i>     | Total | 107 | 0.078  | 0.002*  | 0.333     | -0.379 | 2.882  |
|                       | 2018  | 64  | 0.098  | 0.000** | 0.417     | -0.379 | 2.882  |
|                       | 2017  | 43  | 0.047  | 0.003   | 0.132     | -0.022 | 0.720  |
| <i>Crypto</i>         | Total | 15  | 0.011  | -0.001  | 0.030     | -0.014 | 0.101  |
|                       | 2018  | 6   | -0.008 | -0.010  | 0.006     | -0.014 | -0.001 |
|                       | 2017  | 9   | 0.023  | 0.016   | 0.034     | -0.012 | 0.101  |
| <i>Other</i>          | Total | 219 | 0.028  | -0.001  | 0.237     | -0.134 | 3.436  |
|                       | 2018  | 86  | 0.043  | -0.005  | 0.373     | -0.134 | 3.436  |
|                       | 2017  | 133 | 0.018  | 0.005   | 0.051     | -0.063 | 0.367  |
| <i>Total</i>          | Total | 341 | 0.043  | 0.000   | 0.267     | -0.379 | 3.436  |
|                       | 2018  | 156 | 0.064  | -0.004  | 0.385     | -0.379 | 3.436  |
|                       | 2017  | 185 | 0.025  | 0.006   | 0.078     | -0.063 | 0.720  |

  

| Panel B - $R_{BitcoinAdj_{START}}$ |       | Obs | Mean   | Median  | Std. Dev. | Min    | Max   |
|------------------------------------|-------|-----|--------|---------|-----------|--------|-------|
| <i>Blockchain</i>                  | Total | 107 | 0.063  | 0.000** | 0.344     | -0.654 | 2.899 |
|                                    | 2018  | 64  | 0.102  | 0.005*  | 0.418     | -0.373 | 2.899 |
|                                    | 2017  | 43  | 0.005  | -0.004  | 0.177     | -0.654 | 0.724 |
| <i>Crypto</i>                      | Total | 15  | 0.006  | 0.001   | 0.032     | -0.042 | 0.105 |
|                                    | 2018  | 6   | -0.006 | -0.006  | 0.006     | -0.014 | 0.002 |
|                                    | 2017  | 9   | 0.014* | 0.002   | 0.040     | -0.042 | 0.105 |
| <i>Other</i>                       | Total | 219 | 0.010  | -0.004  | 0.253     | -0.599 | 3.432 |
|                                    | 2018  | 86  | 0.054  | -0.001  | 0.374     | -0.099 | 3.432 |
|                                    | 2017  | 133 | -0.018 | -0.006  | 0.118     | -0.599 | 0.330 |
| <i>Total</i>                       | Total | 341 | 0.026  | -0.002  | 0.280     | -0.654 | 3.432 |
|                                    | 2018  | 156 | 0.071  | 0.000   | 0.385     | -0.373 | 3.432 |
|                                    | 2017  | 185 | -0.011 | -0.004  | 0.131     | -0.654 | 0.724 |

This table contains summary statistics on ICOs listed on icodrops.com. The time period of these ICOs range from the 5th of November 2016 till the 10th of September 2018. ICOs are classified into year groups based on when the ICO started raising funds. The two ICOs in the 2016 time period are included in the 2017 year. In Panel A, summary statistics are calculated as the ICO listing day returns (unadjusted) equal to  $R_{Start}$ . In Panel B the ICO listing day returns (Bitcoin adjusted) equal  $R_{BitcoinAdj_{START}}$ . T-tests and Wilcoxon tests are conducted on the difference in means and medians between “Blockchain” and “Other” and “Crypto” and “Other”, \*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01. Refer to Appendix 1 for a detailed description of each variable.

Table 3 provides ICO listing day returns according to the expert rating of ICOs. In Panel A, the ICO listing day returns (unadjusted) equal  $R_{Start}$ , and in Panel B the ICO returns (Bitcoin adjusted) equal  $R_{BitcoinAdj_{START}}$ . Expert ratings play a key intermediary role in ICOs due to the lack of underwriters,

complex technology and high information asymmetry. The results show that high expert ratings are associated with significantly higher average and median returns in both Panels A and B. This results support hypothesis 4b.

**TABLE 3**  
**DESCRIPTIVE STATISTICS BY THE RATING DUMMY VARIABLE OF EACH ICO**

| Panel A - $R_{START}$ |       | Obs | Mean    | Median   | STD   | Min    | Max   |
|-----------------------|-------|-----|---------|----------|-------|--------|-------|
| <i>High</i>           | Total | 55  | 0.197** | 0.030*** | 0.630 | -0.379 | 3.436 |
|                       | 2018  | 24  | 0.330   | 0.019*** | 0.930 | -0.379 | 3.436 |
|                       | 2017  | 31  | 0.094** | 0.042*** | 0.160 | -0.021 | 0.720 |
| <i>Medium</i>         | Total | 98  | 0.028   | 0.002    | 0.094 | -0.134 | 0.685 |
|                       | 2018  | 44  | 0.044   | -0.001   | 0.133 | -0.134 | 0.685 |
|                       | 2017  | 54  | 0.014   | 0.003    | 0.035 | -0.063 | 0.145 |
| <i>Low</i>            | Total | 50  | 0.011   | 0.003    | 0.035 | -0.035 | 0.165 |
|                       | 2018  | 23  | -0.001  | -0.007   | 0.026 | -0.035 | 0.090 |
|                       | 2017  | 27  | 0.021   | 0.010    | 2.451 | -0.016 | 0.165 |
| <i>NotRated</i>       | Total | 138 | 0.003   | -0.005   | 0.043 | -0.086 | 0.332 |
|                       | 2018  | 65  | 0.002   | -0.007   | 0.057 | -0.086 | 0.332 |
|                       | 2017  | 73  | 0.005   | -0.002   | 0.027 | -0.034 | 0.111 |
| <i>Total</i>          | Total | 341 | 0.043   | 0.000    | 0.267 | -0.379 | 3.436 |
|                       | 2018  | 156 | 0.064   | -0.004   | 0.385 | -0.379 | 3.436 |
|                       | 2017  | 185 | 0.025   | 0.006    | 0.078 | -0.063 | 0.720 |

  

| Panel B - $R_{BitcoinAdj}_{START}$ |       | Obs | Mean    | Median   | STD   | Min    | Max   |
|------------------------------------|-------|-----|---------|----------|-------|--------|-------|
| <i>High</i>                        | Total | 55  | 0.177** | 0.018*** | 0.643 | -0.654 | 3.432 |
|                                    | 2018  | 24  | 0.337*  | 0.024*** | 0.931 | -0.373 | 3.432 |
|                                    | 2017  | 31  | 0.053** | 0.018*** | 0.207 | -0.654 | 0.724 |
| <i>Medium</i>                      | Total | 98  | 0.009   | -0.002   | 0.129 | -0.599 | 0.561 |
|                                    | 2018  | 44  | 0.049   | 0.002    | 0.123 | -0.099 | 0.561 |
|                                    | 2017  | 54  | -0.023  | -0.005   | 0.126 | -0.599 | 0.160 |
| <i>Low</i>                         | Total | 50  | 0.008   | 0.000    | 0.044 | -0.125 | 0.184 |
|                                    | 2018  | 23  | 0.004   | -0.004   | 0.030 | -0.035 | 0.115 |
|                                    | 2017  | 27  | 0.011   | 0.003    | 0.053 | -0.125 | 0.184 |
| <i>NotRated</i>                    | Total | 138 | -0.015  | -0.009   | 0.093 | -0.420 | 0.311 |
|                                    | 2018  | 65  | 0.012   | -0.003   | 0.071 | -0.141 | 0.311 |
|                                    | 2017  | 73  | -0.039  | -0.013   | 0.103 | -0.420 | 0.212 |
| <i>Total</i>                       | Total | 341 | 0.026   | -0.002   | 0.280 | -0.654 | 3.432 |
|                                    | 2018  | 156 | 0.071   | 0.000    | 0.385 | -0.373 | 3.432 |
|                                    | 2017  | 185 | -0.011  | -0.004   | 0.131 | -0.654 | 0.724 |

This table contains summary statistics on ICOs listed on icodrops.com. The time period of these ICOs range from the 5th of November 2016 till the 10th of September 2018. ICOs are classified into year groups based on when the ICO started raising funds. The two ICOs in the 2016 time period are included in the 2017 year. In Panel A, summary statistics are calculated as the ICO listing day returns (unadjusted) equal  $R_{Start}$ . In Panel B the ICO listing day returns (Bitcoin adjusted) equal  $R_{BitcoinAdj}_{START}$ . T-tests and Wilcoxon tests are conducted on the difference in means and medians between “High” and “Low”, \*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01. The variable “Medium” is a dummy variable equal to one where the ICO is not rated either “High” or “Low” or has no rating. Refer to Appendix 1 for a detailed description of all the remaining variables.

## Empirical Results

The results of our OLS regression for equation (1) to examine the factors that may explain the success of the ICOs are presented in Table 4.<sup>8</sup> Hypothesis 1a is supported as *TargetSize* has a statistically significant negative effect. There is no support for hypothesis 2a with the coefficient on *LengthICO* having the predicted sign but with no significance. We find that ICOs with crypto-currency based applications raise higher percentage of funding in both models (1) and (2) by 0.17 and 0.16 at 5% and 10% significance. This result supports hypothesis 3a. ICOs with a high independent expert or analyst ratings are associated with greater ICO success, with the coefficient on *High* being equal to 0.15 and 0.14 and significant at the 5% level in both models (1) and (2) respectively. The coefficient on *Low* and *NotRated* is significantly negative in both models. Wald tests also report the magnitude of the coefficients are significantly different between ICOs with *High* versus *Low* rating and *High* versus *NotRated*. Overall, our results strongly support hypothesis 4a.

**TABLE 4**  
**FACTORS WHICH DETERMINE THE SUCCESS OF AN ICO**

|     | Variable                          | Predicted Sign | Model (1)                    | Model (2)                    |
|-----|-----------------------------------|----------------|------------------------------|------------------------------|
|     | <i>Intercept</i>                  |                | 2.8559<br>(11.27)***         | 2.9314<br>(9.54)***          |
| H1a | <i>TargetSize</i>                 | -ve            | <b>-0.1110</b><br>(-6.35)*** | <b>-0.1149</b><br>(-6.57)*** |
| H2a | <i>LengthICO</i>                  | -ve            | -0.0010<br>(-0.67)           | -0.0010<br>(-0.73)           |
| H3a | <i>Blockchain</i>                 | +ve            | 0.0189<br>-0.6700            | 0.0216<br>(0.75)             |
| H3a | <i>Crypto</i>                     | +ve            | <b>0.1712</b><br>(2.04)**    | <b>0.1598</b><br>(1.80)*     |
| H4a | <i>High</i>                       | +ve            | <b>0.1494</b><br>(2.56)**    | <b>0.1438</b><br>(2.17)**    |
| H4a | <i>Low</i>                        | -ve            | <b>-0.1367</b><br>(-3.49)*** | <b>-0.1374</b><br>(-3.20)*** |
| H4a | <i>NotRated</i>                   | -ve            | <b>-0.1707</b><br>(-2.27)**  | <b>-0.1709</b><br>(-2.26)**  |
|     | <i>BitRetTargetPeriod</i>         |                |                              | -0.7326<br>(-0.75)           |
|     | <i>S&amp;PRetTargetPeriod</i>     |                |                              | -2.3524<br>(-0.33)           |
|     | <i>BitcoinIM</i>                  |                |                              | 0.1295<br>(1.24)             |
|     | <i>S&amp;P500IM</i>               |                |                              | 0.5019<br>(0.78)             |
|     | Wald test: <i>High - Low</i>      |                | <b>0.017***</b>              | <b>&lt;0.01***</b>           |
|     | Wald test: <i>High - NotRated</i> |                | <b>0.009***</b>              | <b>&lt;0.01***</b>           |
|     | Quarterly time dummies            |                | Yes                          | Yes                          |
|     | Adjusted R-squared                |                | 0.297                        | 0.296                        |
|     | Number of observations            |                | 341                          | 341                          |

The left-hand variable is the percentage of ICO target reached or *PercentTarget*. Regressions are ordinary least squares regression using standard errors clustered by quarterly time periods and usage. *t*-values are in parentheses. \*p < 0.10, \*\*p < 0.05, \*\*\*p < 0.01. Refer to Appendix 1 for a detailed description of each variable.

In Table 5 we change our independent variable to the unadjusted ICO listing day returns, as observed in equations (2) and (3). In models (1) and (2) of Table 5 the dependent variable is  $R_{START}$  and in models (3) and (4) the dependent variable is  $R_{END}$ . Models (2) and (4) test the robustness of the results by adding the market return of the S&P500 and Bitcoin return factors to the regression models (1) and (3). The coefficients on the variable *AmountRaised* are significantly negative in models (1) to (3), which supports hypothesis 1b that the size of an ICO has a negative impact on ICO listing day returns. In models (1) and (2) the coefficient on *LengthICO* is also significantly negative at the 5% and 1% level respectively, providing support for hypothesis 2b. The coefficient on *Blockchain* is positive and statistically significant in all models (1) to (4), supporting hypothesis 3b. The variable *High* is positive and statistically significant at the 5% level and 10% level in models (1) - (2) and models (3) - (4) respectively, supporting hypothesis 4b. The results of Wald tests also report that the magnitude of the coefficients is significantly different between ICOs with *High* versus *Low* rating and *High* versus *NotRated*. Overall, the results show that the higher the experts' views for the token, the higher the listing day returns for ICO investors. Lastly, the coefficient on the variable *TimeList* is significantly negative in all models, which supports hypothesis 5a that the shorter the time to listing, the higher the daily raw returns. Longer listing time may suggest an over complicated project and low liquidity, with interest in the project waning away as time goes. In models (2) and (4), the control variables *S&PRetStart* and *S&PRetEnd* are significantly positive. Higher ICO listing day returns are positively associated with a positive return on the S&P500 index.

**TABLE 5**  
**FACTORS WHICH DETERMINE UNADJUSTED ICO LISTING DAY**  
**RETURNS FOR INVESTORS**

|                      |                        | Predicted Sign | Model (1)                    | Model (2)                    | Model (3)                    | Model (4)                   |
|----------------------|------------------------|----------------|------------------------------|------------------------------|------------------------------|-----------------------------|
| Independent Variable |                        |                | $R_{START}$                  | $R_{START}$                  | $R_{END}$                    | $R_{END}$                   |
|                      | <i>Intercept</i>       |                | 0.3627<br>(2.99)***          | 0.3902<br>(3.30)***          | 0.6623<br>(2.96)***          | 0.5148<br>(1.68)            |
| H1b                  | <i>AmountRaised</i>    | -ve            | <b>-0.0170</b><br>(-2.53)**  | <b>-0.0189</b><br>(-2.67)**  | <b>-0.0305</b><br>(-2.15)**  | -0.0249<br>(-1.37)          |
| H2b                  | <i>LengthICO</i>       | -ve            | <b>-0.0004</b><br>(-2.73)**  | <b>-0.0005</b><br>(-3.02)*** | -0.0004<br>(-0.88)           | -0.0002<br>(0.50)           |
| H3b                  | <i>Blockchain</i>      | +ve            | <b>0.0293</b><br>(3.38)***   | <b>0.0294</b><br>(3.71)***   | <b>0.0576</b><br>(4.45)***   | <b>0.0532</b><br>(4.82)***  |
| H3b                  | <i>Crypto</i>          | +ve            | 0.0035<br>(0.41)             | 0.0064<br>(0.72)             | 0.0231<br>(0.96)             | 0.0272<br>(1.08)            |
| H4b                  | <i>High</i>            | +ve            | <b>0.0665</b><br>(2.75)**    | <b>0.0700</b><br>(2.83)**    | <b>0.1220</b><br>(1.91)*     | <b>0.1447</b><br>(1.99)*    |
| H4b                  | <i>Low</i>             | -ve            | -0.0127<br>(-0.79)           | -0.0126<br>(-0.92)           | -0.0235<br>(-0.56)           | -0.0169<br>(-0.50)          |
|                      | <i>NotRated</i>        | -ve            | <b>-0.0133</b><br>(-1.99)*   | <b>-0.0133</b><br>(-2.24)**  | 0.0004<br>(0.01)             | 0.0112<br>(0.42)            |
| H5a                  | <i>TimeList</i>        | -ve            | <b>-0.0002</b><br>(-3.05)*** | <b>-0.0002</b><br>(-3.16)*** | <b>-0.0004</b><br>(-2.87)*** | <b>-0.0004</b><br>(-2.78)** |
| H5b                  | <i>PercentTarget</i>   | +ve            | <b>0.0412</b><br>(3.11)***   | <b>0.0405</b><br>(2.56)**    | 0.0531<br>(1.07)             | 0.0518<br>(1.21)            |
|                      | <i>BitcoinRetStart</i> |                |                              | -0.1139<br>(-1.21)           |                              |                             |
|                      | <i>S&amp;PRetStart</i> |                |                              | <b>2.6016</b>                |                              |                             |

|                                   |          |          |                |                            |
|-----------------------------------|----------|----------|----------------|----------------------------|
|                                   |          | (2.14)** |                |                            |
| <i>BitcoinRetEnd</i>              |          |          |                | 0.8425<br>(0.39)           |
| <i>S&amp;PRetEnd</i>              |          |          |                | <b>24.054</b><br>(2.96)*** |
| Wald test: <i>High - Low</i>      | <0.01*** | <0.01*** | <b>0.016**</b> | <b>0.027**</b>             |
| Wald test: <i>High - NotRated</i> | <0.01*** | <0.01*** | <b>0.040**</b> | <b>0.043**</b>             |
| Quarterly time dummies            | Yes      | Yes      | Yes            | Yes                        |
| Adjusted R-squared                | 0.141    | 0.147    | 0.034          | 0.053                      |
| Number of observations            | 341      | 341      | 341            | 341                        |

The left-hand variable is the unadjusted post-ICO daily return for investors. In models (1) and (2) the dependent variable is  $R_{START}$  and in models (3) and (4) the dependent variable is  $R_{END}$ . Regressions are ordinary least squares regression using standard errors clustered by quarterly time periods and usage.  $t$ -values are in parentheses. \* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ . Refer to Appendix 1 for a detailed description of each variable.

In Table 6 we adjust the daily returns for Bitcoin's price movements. In models (1) and (2) of Table 6 the dependent variable is  $R_{BitcoinAdj_{START}}$  and in models (3) and (4) of Table 6 the dependent variable is  $R_{BitcoinAdj_{END}}$ . Overall, our results are somewhat weaker compared to Table 5. In models (3) and (4) the coefficient on *AmountRaised* is negative and significant at the 10% level, providing partial support for hypothesis 1b. There is still strong support for hypothesis 3b, with the coefficient on *Blockchain* positive and significant at the 1% level in all models. The coefficient on the variable *High* is positive and significant at the 5% level in models (1) and (2) and at the 10% level in models (3) and (4). Similar to the results in Table 5, the Wald tests report that the magnitude of the coefficients is significantly different between ICOs with *High* versus *Low* rating and *High* versus *NotRated*. The results in Table 6 provide additional support for hypothesis 4b, that ICO tokens with a high expert rating are associated with higher listing day returns. Lastly there is further support for hypotheses 5a and 5b, with the coefficients on *TimeList* being significantly negative in models (3) and (4) and the coefficients on *PercentTarget* being significantly positive in models (1) and (2).

**TABLE 6**  
**FACTORS WHICH DETERMINE BITCOIN ADJUSTED ICO LISTING DAY**  
**RETURNS FOR INVESTORS**

|                      |                     | Predicted Sign | Model (1)                  | Model (2)                  | Model (3)                  | Model (4)                  |
|----------------------|---------------------|----------------|----------------------------|----------------------------|----------------------------|----------------------------|
| Independent Variable |                     |                | $R_{BitcoinAdj_{START}}$   |                            | $R_{BitcoinAdj_{END}}$     |                            |
|                      | <i>Intercept</i>    |                | 0.2110<br>(1.14)           | 0.2000<br>(1.00)           | 0.5816<br>(2.67)**         | 0.4979<br>(2.44)**         |
| H1b                  | <i>AmountRaised</i> | -ve            | -0.0137<br>(-1.41)         | -0.0122<br>(-1.03)         | <b>-0.0268</b><br>(-1.96)* | <b>-0.0241</b><br>(-1.83)* |
| H2b                  | <i>LengthICO</i>    | -ve            | -0.0004<br>(-1.40)         | -0.0004<br>(1.59)          | -0.0003<br>(-0.73)         | -0.0002<br>(0.45)          |
| H3b                  | <i>Blockchain</i>   | +ve            | <b>0.0230</b><br>(3.29)*** | <b>0.0235</b><br>(3.23)*** | <b>0.0534</b><br>(4.24)*** | <b>0.0509</b><br>(4.94)*** |
| H3b                  | <i>Crypto</i>       | +ve            | 0.0047<br>(0.39)           | 0.0020<br>(0.12)           | 0.0208<br>(0.89)           | 0.0268<br>(1.17)           |
| H4b                  | <i>High</i>         | +ve            | <b>0.0587</b><br>(2.38)**  | <b>0.0554</b><br>(2.18)**  | <b>0.1150</b><br>(1.87)*   | <b>0.1379</b><br>(1.99)*   |
| H4b                  | <i>Low</i>          | -ve            | 0.0032                     | 0.0013                     | -0.0206                    | -0.0170                    |

|     |                                   |     |                    |                |                |                |
|-----|-----------------------------------|-----|--------------------|----------------|----------------|----------------|
|     |                                   |     | (0.12)             | (0.06)         | (-0.51)        | (-0.43)        |
|     | <i>NotRated</i>                   | -ve | <b>-0.0121</b>     | <b>-0.0119</b> | 0.0006         | 0.0106         |
|     |                                   |     | (-1.06)            | (-1.01)        | (0.02)         | (0.39)         |
| H5a | <i>TimeList</i>                   | -ve | 0.0000             | -0.0001        | <b>-0.0004</b> | <b>-0.0004</b> |
|     |                                   |     | (-0.34)            | (-1.42)        | (-2.77)***     | (-2.59)**      |
| H5b | <i>PercentTarget</i>              | +ve | <b>0.0744</b>      | <b>0.0717</b>  | 0.0523         | 0.0512         |
|     |                                   |     | (4.28)***          | (4.08)***      | (1.10)         | (1.21)         |
|     | <i>S&amp;PRetStart</i>            |     |                    | -2.6283        |                |                |
|     | <i>S&amp;PRetEnd</i>              |     |                    | (-0.46)        |                |                |
|     |                                   |     |                    |                |                | <b>23.615</b>  |
|     |                                   |     |                    |                |                | (2.99)***      |
|     | Wald test: <i>High – Low</i>      |     | <b>0.105</b>       | <b>0.117</b>   | <b>0.022**</b> | <b>0.023**</b> |
|     | Wald test: <i>High – NotRated</i> |     | <b>&lt;0.01***</b> | <b>0.018**</b> | <b>0.045**</b> | <b>0.040**</b> |
|     | Quarterly dummies                 |     | Yes                | Yes            | Yes            | Yes            |
|     | Adjusted R-squared                |     | 0.105              | 0.109          | 0.031          | 0.052          |
|     | Number of observations            |     | 341                | 341            | 341            | 341            |

The left-hand variable is the unadjusted post-ICO daily return for investors. In models (1) and (2) the dependent variable is *RBitcoinAdjSTART* and in models (3) and (4) the dependent variable is *RBitcoinAdjEND*. Regressions are ordinary least squares regression using standard errors clustered by quarterly time periods and usage. *t*-values are in parentheses. \**p* < 0.10, \*\**p* < 0.05, \*\*\**p* < 0.01. Refer to Appendix 1 for a detailed description of each variable.

## CONCLUSION

In this study we investigate factors which determine the success and ICO listing day returns. ICOs are a novel and new innovative financing mechanism, which warrants much greater empirical research. The need for such research is important due to the investments involved, in terms of the billions of dollars raised in ICOs and very limited regulation globally. We compile a database of 341 ICOs and identify key factors which can be used by ICO investors and other market participants to aid in making informed investment decisions.

We find that ICOs with a high experts' rating had significantly higher listing returns compared to ICOs with a low or no experts' rating. ICO listing day returns are also positively related to Blockchain usage and the success of the ICO to raise the target level of funds. All these factors are likely to provide a signal to ICO investors of "high quality" and promotor or managerial technical expertise. In contrast, ICO listing day returns are negatively related to the amount raised, the length of the time period of the offer and the time delay to listing on an exchange. ICOs with a high independent expert or analyst ratings are associated with greater ICO success as measured by the percentage of the investment goal or hard cap amount.

Our results have significant policy implications for regulators. For example, regulators could require a mandatory rating for each ICO to enable better decision making by investors and to avoid ICO scams. In addition, ICO exchanges can collaborate with regulators to provide more stringent disclosure and verification processes for ICO white papers that might reduce time to listing as identified by our study, being a key factor for ICO success.

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## ENDNOTES

1. Fiat currency is “legal tender” backed by a central government.
2. The following studies analyse ICO regulation globally: Collomb et al. (2018) and McCullagh & Flood (2019).
3. The only potential limitation of this dataset is that for an ICO to be listed on this site, they need to go through an application process. Notwithstanding this, it is the best viable source of data for our study.
4. As seen in our literature review, many previous researchers have been unable to obtain price and ICO data. However, now coders have released a publicly available application programming interface (API) which can read the data on two aforementioned data sources (Ico Drops and CoinMarketCap) and convert this to raw data on an excel spreadsheet. This API is utilised to extract the required data from the aforementioned databases.
5. This recognises that there are only a few ratings with “Very High”, “Low” and “Very Low”.
6. Note that some funds allowed over-subscriptions and raised more funds in excess of their hard cap amount.
7. These results suggest that ICO projects which are at an early stage, with minimum regulation and lower costs relative to IPOs, high information asymmetry and no financial intermediaries still raised a considerable amount of funds from investors in 2018. For example, EOS and Telegram raised 4.2 and 1.7 billion U.S. dollars in 2018 via ICOs.
8. The correlation between the variables do not give rise to any significant multi-collinearity issues in our regression.

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## APPENDIX

| <b>Variable</b>                     | <b>Definition</b>   |
|-------------------------------------|---|
| <b><i>Dependent Variables</i></b>   |   |
| $R_{START}$                         | Daily compounded return between the ICO offer price at the start date of the ICO's funding period and the ICO price on the initial list date of the ICO on a cryptocurrency exchange. |
| $R_{END}$                           | Daily compounded return between the ICO offer price at the end date of the ICO's funding period and the ICO price on the initial list date of the ICO on a cryptocurrency exchange.   |
| $R_{BitcoinAdjStart}$               | Bitcoin adjusted return equal to $R_{START}$ less $BitcoinRetStart$   |
| $R_{BitcoinAdjEnd}$                 | Bitcoin adjusted return equal to $R_{END}$ less $BitcoinRetEnd$   |
| $PercentTarget$                     | The percentage of the investment goal or hard cap amount achieved at the end of the funding stage of the ICO.   |
| <b><i>Independent Variables</i></b> |   |
| $TargetSize$                        | Natural logarithm of the funding target or hard cap amount set by entrepreneur at the start of the funding stage of the ICO.  |
| $AmountRaised$                      | Natural logarithm of the funds raised under the ICO at the end of the funding stage of the ICO.   |
| $LengthICO$                         | Number of days from the start of the ICO's funding period to when the ICO is closed at end of the funding period.   |
| $Blockchain$                        | Dummy variable equal to 1 if the ICO is categorised by icodrops.com as "Blockchain" or "Blockchain Service"   |
| $Crypto$                            | Dummy variable equal to 1 if the ICO is categorised by icodrops.com as "Cryptocurrency" or "Crypto-exchange"  |
| $Other$                             | Dummy variable equal to 1 if the ICO is not categorised by icodrops.com as "Cryptocurrency" or "Crypto-exchange"  |
| $High$                              | Dummy variable equal to 1 if the experts' rating is either "Very High" or "High" and zero otherwise.  |
| $Low$                               | Dummy variable equal to 1 if the experts' rating is either "Very Low" or "Low" and zero otherwise.  |
| $NotRated$                          | Dummy variable equal to 1 if the ICO has no experts' rating and zero otherwise.   |
| $TimeList$                          | Number of days from the closing of the ICO till the day it is initially listed on a cryptocurrency exchange.  |
| $BitRetTargetPeriod$                | Daily compounded return on Bitcoin between the start date of the ICO's funding period and the end date of the ICO's funding period.   |
| $S\&PRetTargetPeriod$               | Daily compounded return on S&P500 between the start date of the ICO's funding period and the end date of the ICO's funding period.  |
| $Bitcoin1M$                         | Percentage price change in bitcoin in the month before the ICO starts raising funds.  |
| $S\&P5001M$                         | Percentage price change in the S&P500 index in the one month before the ICO starts raising funds.   |
| $BitcoinRetStart$                   | Daily compounded return on Bitcoin between the start date of the ICO's funding period and the list date of the ICO on a cryptocurrency exchange.                                      |
| $S\&PRetStart$                      | Daily compounded return on S&P500 between the start date of the ICO's funding period and the list date of the ICO on a cryptocurrency exchange.                                       |
| $BitcoinRetEnd$                     | Daily compounded return on Bitcoin between the close or end date of the ICO's funding period and the list date of the ICO on a cryptocurrency exchange.                               |
| $S\&PRetEnd$                        | Daily compounded return on S&P500 between the close or end date of the ICO's funding period and the list date of the ICO on a cryptocurrency exchange.                                |