What are the effects of the CEO's background on the success of his/her Initial Coin Offering (ICO), and how does it compare to other known determinants of success?

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WHAT ARE THE EFFECTS OF THE CEO'S BACKGROUND ON THE SUCCESS OF HIS/HER INITIAL COIN OFFERING, AND HOW DOES IT COMPARE TO OTHER KNOWN DETERMINANTS OF SUCCESS?

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List of Abbreviations

BTC = Bitcoin Token
CEO = Chief Executive Officer
DAO = Decentralized Autonomous Organization
DDoS = Distributed Denial of Service
DLT = Distributed Ledger Technology
ETH = Ethereum Token
ICO = Initial Coin Offering
IEO = Initial Exchange Offering
IPO = Initial Public Offering
KYC = Know-Your-Client
SEC = U.S. Securities and Exchange Commission
STO = Security Token Offering
S&P500 = Standard and Poor's 500
XRP = Ripple Token

A. Introduction

Initial Coin Offering (ICO) is a recently developed fundraising process that is especially used by nascent ventures that plan to use blockchain technology as the backbone for their products or services. They can be seen as a hybrid between an Initial Public Offering in the cryptocurrency world and a form of crowdfunding, but they differ from both processes in several ways. During an ICO, investors will, indeed, buy altcoin utility tokens, or smart contracts in a blockchain, that can be redeemed in the future business in the form of the product or service to be created. Alternatively, these tokens can be exchanged on a secondary market against other altcoins or fiat, as soon as the ICO has raised the amount of money needed to create the envisioned business. In pure ICOs, the tokens neither entitle their owners with any share of the venture nor confer any voting rights.
As the tokens are sold during the ICO before the business is even created, and as the sales are performed without controlling intermediaries (as blockchain technology allows), the investors must essentially rely on the business plan the entrepreneurs provide and the trust their team elicits. This creates a situation of information asymmetry, prone to moral hazard, i.e., situations where the information provided does not match the reality of the venture and misleads the investors. ICOs are therefore often referred to as risky investments, and many investors indeed display a lottery-betting-like behavior, hoping for big returns on their investments when the tokens hit the secondary market, rather than truly investing in the future use of the services or products to be created (Fahlenbrach, R., & Frattaroli, M. (2019)).
The moral hazard is however reduced when the cost of the embellishment of the fabrication of information exceeds the potential benefit of doing so (Momtaz, P. P. (2019)). Our study thus focuses on the influence of easy gathering and verifying information on the success of ICOs. Among these, the characteristics of the CEO will be reviewed in the light of other, better studied, potential determinants of ICO outcomes.

Our study also underlines that the interests of investors might differ from the ones of entrepreneurs. As a matter of fact, investors want to have an exit strategy to be able to have a return on their investment quite quickly and entrepreneurs want to raise as much money as possible during the ICO (hard cap), or, at least, raise enough money to reimburse their initial investment. We thus provide differential models to study these two outcomes and will show that (1) different ICO characteristics, including CEO characteristics, significantly correlate with these different outcomes, but also (2) that both outcomes are uncoupled from each other due to a phenomenon of breach of contract between up to one-fourth of the entrepreneurs and their investors, and that (3) some variables can influence these two outcomes in opposite directions. We additionally demonstrate that the influence of ICO characteristics on their success varies with time and that the predefined hard cap of given ICOs influences as well their success.
Finally, we will provide, two easy-to-use RPA models to help investors understand better which variables they should investigate if they want to increase their chances of finding the ICO listed on a secondary market or at least, decrease the risk of becoming a scam victim. (Disclaimer: of course, those RPA models need to be verified in additional cohorts of ICOs and validated prospectively).

This master thesis is organized in a sequence starting with some theoretical background, followed by the development of testable hypothesis, a description of our data and methodology, a presentation of our statistical models and empirical results, and a discussion of their implications for theory and practice, then of the limitations of our study, and some suggestion for follow-up research.

B. Literature Review

1. Initial Coin Offerings (ICOs)

a. Definition

To grow, a new venture needs to access financial resources (Momtaz, P. P. (2019)). Several funding options are available to entrepreneurs, such as initial public offerings, venture capital, crowdfunding, business angels, and, since 2013, token or Altcoins offerings.
As summarized by Momtaz (2020), ***"Initial Coin Offerings (ICOs), or token sales, are a mechanism to raise external funding through the emission of tokens. Conceptually, tokens are entries on a blockchain (or a digital ledger). The blockchain records all transactions made in the cryptocurrency chronologically and publicly. The owner of the token has a key that lets him/her create new entries on the blockchain to re-assign the token ownership to someone else"***. Blockchain technology is a novel approach to recording and transmitting data across a network in an immutable manner, using cryptographic proof (Colombo, M. G. et al. (2020), Thewissen, J. et al. (2022)) in the form of ***tokens***, or smart contracts based on the distributed ledger technology (DLT). These smart contracts, or 'entries' on the blockchain, are computer protocols that automatize value-exchange transactions directly between the entrepreneur and investors, creating in principle complete disintermediation. There are several types of tokens, which differ from each other based on the possibilities they entail their owners, which in turn determine the legal status of the token:

1. Utility tokens: this is the most common type of token. Utility tokens bear a right to redeem the token for a product or service of the business venture once this will be developed. There is no ownership right attached to utility tokens, and this type of token falls under a low degree of regulation in most jurisdictions. In fact, Momtaz, P. P. (2020): "*Utility tokens essentially charter a promise that the token can be redeemed for the ICO project's products or services once they are developed"*;
2. Security tokens (Momtaz, P. P. (2020), Colombo, M. G. et al. (2020)): These tokens convey voting power, entitle the token holder to a share of the venture's (future) profits, ownership, or other financial benefits, and are as a result subject to securities laws in many legal systems, including in the USA (see appendix 1: Lexicon – "Howey Test"). Security tokens represent only a fraction of all tokens (a mere 3% of all ICOs in 2018 (Momtaz, P. P. (2020));
3. Cryptocurrency tokens: These represent a general-purpose store of value, or medium of exchange, blockchain contracts. In terms of fiscal law, cryptocurrency tokens fall under asset laws in most jurisdictions. Examples of cryptocurrencies are Bitcoin and Ether.

b. Scope of use:

Nascent companies or ventures that issue utility tokens via ICOs[*] typically operate in the blockchain sector and work on technologically demanding projects. ICOs thus represent a crucial channel for funding highly innovative blockchain ventures (Colombo, M. G. et al. (2020)).

From these entrepreneur's perspective, ICOs - which are based on the ideas and principle of

[*] Recently, academics identified STOs (Security Token Offering) and IEOs (Initial Exchange Offering) as other ICO-related models. This approach involves the purchase of security tokens by investors, which are legitimate smart investment contracts that grant investors various ownership rights and are backed by real assets (e.g., ownership of shares, periodic dividends, cash- flows, payment of debts, the right to vote, etc.). STOs are extremely safe but, using them is time-consuming and difficult for start-ups. IEOs are more secure than ICOs and have fewer restrictions than STOs. In this style of crowdsourcing, businesses looking for capital are chosen via an online cryptocurrency exchange and trading platform that is governed by authorities. IEO-based businesses are exempt from the asset requirement of STOs. As a result, IEOs provide ventures with greater protection than ICOs and less limitation and difficulty than STOs (Chitsazan et al, 2022). However, **given the predominance of utility tokens in the setting of ICOs, this work will focus solely on ICOs.**

crowdfunding but use a different technology- are attractive as they offer funding at all stages of the development of their business venture, global investor outreach (through the internet), and almost inexistent transaction costs (Momtaz, P. P. (2020)). The main advantages of ICOs can be summarized as follows (Colombo, M. G. et al. (2020)).):

1. Intermediaries are not necessary for ICOs. Due to the disintermediated nature of blockchain technology, revenues are passed directly from ICO investors to ventures. This reduces both the time and financial expenses of transactions;
2. ICOs are largely unregulated (a review by the US Library of Congress on the regulations of ICOs and blockchain technologies around the world is provided in "The Law Library of Congress Global Legal Research Directorate. (2021, November)"), which, in combination with their lack of intermediaries, renders ICOs extremely unbureaucratic to set up and to carry out;
3. Due to its digital and intrinsic scalable nature, the blockchain technology enables businesses to raise funds from a large pool of investors with few geographical limits (see however below how *country regulations* can limit this advantage);
4. Tokens can be traded in a secondary market as soon as the ICO is over and listed on a crypto exchange. In contrast to successful traditional stock trading after an initial public offering, cryptocurrencies can be exchanged right away and continuously on this secondary market trading.

From an investor's perspective, the liquidity of token exchanges- implies that ICOs offer more rapid exit options than other forms of investments (Colombo, M. G. et al. (2020)). In ICOs indeed, tokens become listed even before any product prototype or service is created. This rapid exit possibility, contrasts with exits in venture capital or crowdfunding campaigns, where exits are often (1) impractical before a particular maturity stage of the business venture has been reached, and (2) usually require that a purchaser be found or that an IPO be planned. In addition, the liquid secondary token market adds a speculative dimension to ICO investments, as ICO investors can buy tokens that they hope will appreciate, without any intention of ever using the venture's products (i.e., to redeem the utility carried by the token) (Gan, R., et al. (2018)).
Still from an investor's point of view, however, ICOs are highly risky investments (Colombo, M. G. et al. (2020)). Indeed:

1. The (quasi) absence of regulations of ICO that offer utility tokens also means both:
    a. an increased risk of malignant behavior by the entrepreneurs, as described in the appendix 2 *"Events in the crypto world"* of this manuscript, and
    b. an absence of any right to enforceable claims in most jurisdictions in the case of ICO failure or scam. This increased risk of malignant behavior has prompted the *burgeoning* of ICO regulatory frameworks and even formal bans in some countries (Colombo, M. G. et al. (2020), The Law Library of Congress Global Legal Research Directorate. (2021, November)) as described below in the section *"Countries"*;
2. ICO ventures are typically in the very early stages at the time of the ICO, which hinders the assessment of the venture's underlying quality (Momtaz, P. P. (2019)). The tokens that are sold often refer to a future good, service, or profits that the venture may or may not realize (Howell, S. et al. (2018)). This creates a situation of information asymmetry and a risk of moral hazard (Momtaz, P. P. (2019)), as described below in the section "*Signaling theory, information asymmetry, and moral hazard in ICO*".

c. A few numbers:

In practice, the use of ICOs by business ventures has begun in 2013, skyrocketed in 2017, and peaked begin 2018, decreasing thereafter and then stabilizing. The mid-2018 decrease is possibly due to the emergence of major scams that deterred investors from the crypto world in general and to the increase of regulatory guidelines aimed at thwarting ICOs. As of the end of 2018, the total fundraising

amounts through ICOs had already exceeded the whole European venture capital business. It also surpassed the total volume of funds raised by all crowdfunding campaigns on the top platform (Kickstarter) since its launch in 2009 (Momtaz, P. P. (2019)). Of all ICOs, the median token-offering period was only 31 days and the funding amount in terms of gross proceeds (before advisor and listing fees) was $15.1M for the average venture and $5.8M for the median (Momtaz, P. P. (2019)). The unadjusted and adjusted initial returns are approximate 8.2% and 7.6% for the mean and 2.6% and 3.3% for the median listing, suggesting that not only the early investors but also the investors in the aftermarket react positively to the majority of token listings. However, 13% of all ventures had also failed completely and over 20% of the ventures had rapidly become delisted (21%) (Momtaz, P. P. (2019)). In 2019, the money raised by ICOs had however plummeted by 95% as compared to 2018, to slightly recover in 2020.

d. Key phases and thresholds of ICOs:

As can be readily confirmed by a mere internet search on Google Scholar or Google, both researchers and consulting firms have become increasingly interested in understanding the mechanisms that underlie ICO and their success in the past four to five years.

Of note, however, there is no scholarly agreement on what the term ICO truly encompasses. As reviewed by Chitsazan et al. (2022), there are two main approaches to defining the concept of ICO:

1. To limit the definition to **the pre-ICO and main ICO launch periods**, i.e., to the period of time when capital is raised before the launch of the tokens on the secondary market where they become liquid. Many ICO entrepreneurs define a **Soft Cap** when launching an ICO- this is the minimum threshold amount of money that they intend to collect and that is needed to successfully bring their business to life/launch their product and, in principle, to list their tokens on the secondary market.
2. If a team fails to raise funds beyond its soft cap, it often returns the money to investors albeit some projects continue their operations with whatever amount they have accumulated. ICO entrepreneurs also often define a **Hard Cap**, i.e., the maximum amount of money (crypto valuta) that they plan to collect, corresponding to the maximum number of utility tokens that they plan to release in this phase of the ICO. Tokens are thus sold out (for that phase of development of the venture at least) once the hard cap has been attained. This cap thus defines the relative scarcity of the tokens, and can influence their trade value once they reach the secondary market;
3. To expand this definition to include **the post-ICO launch** (listing) phase as well, i.e., the evolution of the Altcoins after the initial coin offering. In particular, a key novelty for research in entrepreneurial finance is that (changes in) the value of start-ups become readily observable at a daily frequency as soon as the tokens become listed shortly after the ICO. This allows studying how ventures evolve between the initial funding round and when the start-up is already an established player in the industry in contrast to other start-up financing mechanisms where the firm values become only available often only years after the initial funding round when the start-up is acquired or goes public (Momtaz, P. P. (2019)).

At any rate, the aims, investors, founders, media, and platforms are emphasized as the key components of ICOs in both proposed definitions, and the semantics of the definition does not prevent sound research on the determinants of ICO functioning and success, and on the behavior of their entrepreneurs and investors.

In the present work, we will namely focus on the ICO launch period, as:

- for the entrepreneur, the primary goal of launching an ICO is to fund the initial steps of his/her venture and become able to proceed with the development of its business model- This goal is in principle reached at the end of the ICO proper. Subsequent variations of the token price, albeit they can help fund further development of the business if not all tokens have been sold during the ICO, or help remunerate the entrepreneurs by selling Altcoins

they have retained, do not immediately participate in this primary goal;
- for the initial investor, the success of the ICO launch means that (1) the venture will develop its business and that he/she will in principle be able to use the bought tokens for the utility they carry (utility tokens), and/or (2) that the tokens will be listed, providing him/her with an exit strategy and a possibility to cash in on the investment made.

2. Signaling theory, information asymmetry, and moral hazard in ICO:

The **signaling theory** was defined by Spence in 1973 about the job market applications, in The Quarterly Journal of Economics, (Akerlof, G. A., & Kranton, R. E. (2005)), and analyzed how candidates advertised their candidacy to managers who did not know them. In general, this theory aims to describe the behavior of two parties that have access to different information on a common field of interest and explains the relationship between qualities and signals (i.e., how these qualities are advertised). It analyses why signals are reliable or not, and whether the costs of deceptively fabricating a signal exceed the benefits of falsifying it (Mavlanova et al., 2012). Applied to the field of ICOs, strategic signaling refers to the actions taken by the entrepreneurs/management team (i.e. the signaler) towards the potential investors (the receivers) who examine these signals to estimate the credibility and the potential of the business venture (Mavlanova et al., 2012).

The products of ICO ventures are usually in the initial stages of development when their ICOs are launched, and the entrepreneurs behind them, have seldom a proven track record of the developed product (Momtaz, P. P. (2019), Howell, S. et al. (2018), Fahlenbrach, R., & Frattaroli, M. (2019)). As a result, in ICOs, the signaling is performed via websites, white papers, social media messages, videos, and messaging forums, i.e., purely through communication initiated by the ICO management team. As a result, ***signaling in ICO is asymmetric*** as it comes exclusively from the entrepreneurs, and is almost always based on mere prospects that are not, or ***difficultly verifiable*** by the potential investors.

Moreover, the technology on which most ICOs are based, the blockchain technology, is ***complex*** and lacks standardization (Momtaz, P. P. (2019)). This further decreases the likelihood that the receivers fathom signal misinformation. Likewise, the inherent ***absence of intermediaries*** acting in the sales of tokens in ICO is both an advantage (by decreasing the costs, reducing the administrative burden, and increasing access to potential buyers) of ICOs and a risk for the investors. Intermediaries indeed aim to foster and maintain the trust of their clients and therefore tend to exert a layer of control on the products they propose to the market. Of note, however, ICO reputation scores are available across multiple data sources on the internet. However, these metrics have been found to hardly correlate with ICO success and there is even a low correlation of ICO reputation across data sources.
Unlike cryptocurrency and security tokens, which fall respectively under asset and securities laws in most countries, the ***regulatory framework***, and the ***investor's protection*** for utility tokens (the most common form of Altcoins in ICOs) are minimal (Howell, S. et al., (2019)). In addition, blockchain technology intrinsically favors ***anonymity*** (Nakamoto, 2008, www.bitcoin.org): while wallet addresses are public, the identities behind these wallets are most often unknown (Rhue, L. (2018)), which accountability enforcement illusive. Finally, ***investors are individually too small*** to have an economic incentive to seek compensation and fail to coordinate their efforts, due to anonymity and (perceived) lack of incentive (Momtaz, P. P. (2019)).

A ***moral hazard*** occurs if one transacting party has an incentive to engage in unethical behavior at the expense of its counterparty (Christine Hurt, A. (2005)). This is certainly the case for ICOs, where information asymmetry creates fertile ground to exaggerate the qualities of the venture in the signals (Mavlanova, T. et al. (2012)). As noted by Momtaz (2019), "*with increasingly fierce competition for growth capital and absent institutions verifying signals and punishing biased ones, ventures that report truthfully might have a competitive disadvantage over those sending biased signals"*. Indeed,

informational exaggeration was shown to correlate inversely with the time-to-funding of ICOs, and positively with the monetary amount they raised (Momtaz, P. P. (2019)).

Perhaps sadly, research even shows that highly visionary projects (Momtaz, P. P. (2019)) and the obtention of patents before launching the ICO (Fisch, C. (2019)) do not influence the outcome of ICOs. This is rather disappointing in the context of information asymmetry and moral hazard, as such signals are costly to create or imitate and are readily verifiable by potential investors. Their lack of influence on the outcome of ICOs has been interpreted as uncertainty about how the market will develop (Momtaz, P. P. (2019)), but one can wonder if this sad constatation does not merely reflect a "lottery-like" behavior of the investors who simply 'bet' on ICOs rather than savvily analyze their fundamentals (Fahlenbrach, R., & Frattaroli, M. (2019)).

"The indulgence in moral hazard" however *"[…] eventually backfires on token issuers when dispersed investors are able to pool information"* (Momtaz, P. P. (2019)). Indeed, as soon as the token is listed, its price tends towards an equilibrium based on all the available information on the venture. The secondary market thus performs the coordination function that dispersed investors fail to perform on their own (*cf. supra*). This ***aggregate wisdom of the crowd*** is, from that moment on, readily available to all dispersed investors. As a result, if the venture has indulged in moral hazard, the equilibrium price drops with respect to that of the offering as soon as trading begins. This is deleterious for the entrepreneurs if they reckon on the secondary market to further finance the growth of their venture or cash in on their retained tokens. This aggregate wisdom of the crowd acts thus as a ***deterrent against information asymmetry and moral hazard***.

On the other hand, information asymmetry and moral hazard could lead to a general distrust and a global undervaluation of the ICO market. Indeed, they "*result in equilibrium pricing of the contracts*) *that is based on the population average instead of a more discriminatory pricing mechanism based on the underlying contract value. Consequently, high-quality contracts would sell at a discount, deterring them from entering the market entirely, which may create a* ***market for lemons***"[*] (Momtaz, P. P. (2019), Chod, J., & Lyandres, E. (2018b)). This consequence may explain the fact that the volume of ICOs has dropped significantly after 2018 when large investors' disappointment about exaggerated signals became public (Momtaz, P. P. (2020)).

It is thus in theory both in the interest of the entrepreneurs and of the investors that the ICO market finds (1) ways to reduce its inherent information asymmetry and (2) safeguards against moral hazard. While ICO regulations (and enforcement thereof) can help find the latter, research on the determinants of ICO success has some potential to assist with the former. One must however remain conscious that:

1. investors can display a gamble-like behavior and do not always take tangible information on ICOs into account (cf. supra);
2. entrepreneurs can also learn from previous experiences and published research, and adapt their communication behavior accordingly (Huang, W. et al. (2019b)).

[*] **Market for lemons** (Akerlof, G. A. (1970), 2001 co-Nobel Prize in Economic Sciences): This theory analyzes how the quality of goods traded in a market (in the initial study: secondhand cars) can degrade in the presence of information asymmetry between buyers and sellers, leaving only poor quality items available. In American slang, a lemon is a car that is found to be defective after it has been bought. When buyers cannot distinguish between a high-quality car (a "peach") and a "lemon", they become only willing to pay a fixed price for a car that averages the value of a "peach" and "lemon" together. But sellers know whether they hold a peach or a lemon. Given the fixed price at which buyers will buy, sellers will sell only when they hold "lemons", and they will leave the market when they hold "peaches". The more "peaches" leave the market, the smaller the average willingness-to-pay of buyers, leading to a negative feedback loop. In other words, the uninformed buyer's price creates an adverse selection problem that drives the high-quality merchandises from the market. This can lead to a market collapse. In 2001, Akerlof, along with Michael Spence, and Joseph Stiglitz, jointly received the Nobel Memorial Prize in Economic Sciences, for their research on issues related to asymmetric information.

3. The CEO and the team

With the high informational asymmetry of initial token offerings, and in the intrinsic absence of any concrete data on the performance of the venture-to-be-funded, ICO enterprises need to emphasize the merits of their venture (via their whitepapers that describe the business to be built and their websites) and the quality of their management team as signals of the quality of their enterprise (Connelly et al. (2010); Ahlers et al. (2012); Vismara, S. (2015); Huang, W. et al. (2019b), Howell, et al. (2028)). The CEO, who is often one of the company's founders, and the composition of the management team thus become surrogates of business qualities (Colombo et al, (2020)) that can positively correlate with the performance of initial coin offerings (ICOs) (Amsden and Schweizer (2018); Chod, J., & Lyandres, E. (2018b)).

a. The team:

Amsden & Schweizer (2018), showed that larger team sizes increase the likelihood of coin tradability (listing on a secondary market exchange platform after the ICO). This is in line with other types of crowdfunding: Ahlers, G. K. et al. (2012) also observed that human capital (measured as the number of board members) was positively associated with fundraising success on the Australian Small Scale Offerings Board, one of the earliest crowd investment platforms.
The presence in the start-up's founding team, next to the CEO, of a second person with business expertise, also appeared to increase the collected amount by $1.40 million, for an average amount of money raised in an ICO was roughly $13 million (An, J. et al. (2019)). The presence of an advisor team (Lyandres, E. et al. (2022)), as well as expert assessments of the management team also correlated with ICO funding (Momtaz, P. P. (2020)). Three factors help explain the relationship between (the size of) the team and ICO funding success:

1. ICO projects begin marketing and advertising their prospective qualities as soon as the project begins, and its vision is established. The first marketing steps are to create a credible website and make aggressive use of social media, slack, and telegram channels (Momtaz, P. P. (2020)). The basic reasoning to explain the positive effect of the team size on the ICO funding is thus that the size of the new token's network will significantly influence its value, and that larger core teams can engage with more potential investors and broader advertise their project. In short, a bigger project team means a wider network of contacts it can tap into to promote the ICO and aid in the project's continued development after the ICO (de Jong, A. et al. (2018));
2. Larger project teams also mean that more individuals are prepared to *actually work* on completing the project, hastening the blockchain project's actual launch (de Jong, A. et al. (2018)).
3. Finally, psychological effects could also be involved in the relationship between the team presentation and ICO success. In an experiment, pictures of ICO teams were shown to internauts recruited on the mTurk platform and selected from countries with a minimum of 5 ICO performed, but who were not specifically involved themselves in ICO investment. Based on these mere pictures, these internauts were asked to evaluate their sentiment of confidence in these teams, on a scale of 1 to 10, and the resulting 'visual impression confidence' was shown to correlate significantly with a significant increase in the fundraising amount of the corresponding ICOs (Huang, W. et al. (2019)). Interestingly, the percentage of smiling people in the team pictures was also by itself almost significantly ($P<0.1$).

b. The CEO

Better-connected CEOs (e.g., the amount of their LinkedIn connections) increase the likelihood of the ICO tokens being listed on a secondary market exchange platform after the ICO (Amsden & Schweizer (2018), Campino, J. et al. (2021)). The founder CEO's age and education (Kolbe, M. et al. (2021)), and

the founders' industry backgrounds were further shown to correlate with ICO valuations (Amsden & Schweizer, (2018); An, J. et al., 2019). An et al. (2019) likewise described a positive correlation between the success of an ICO and its CEO's experience in business, blockchain, or technology, a title of Professor, the status of board member in an existing company, and social connections. In contrast to Kolbe, M. et al. (2021), they did however not observe any correlation between the level of education (defined based on the highest degree reached: Bachelor, Master, MBA, or Ph.D./Doctor) of the CEO and ICO success.

CEO loyalty (i.e., the CEO's cumulative tenure on his/her past employment) is also adversely correlated with ICOs underpricing and favorably related to a firm's long-term success (Momtaz, P. P. (2018)). In the same vein, the amount of capital, operational effectiveness, and long-term performance of a venture all positively appear to correlate with this CEO loyalty (Momtaz, P. P. (2020)).

There even seems to exist a relationship between CEO emotions of apparent fear or rage (as seen on publicized images or videos) and ICO underpricing Momtaz, P. P. (2018)). Even more remarkable, there exists a 'beauty premium' of the CEO (as evaluated on photographs by multiple investors in the given ICOs) on ICO funding: a whopping $1.58 million for an average business worth of $11.9m (Colombo, M. G. et al. (2020))! This almost caricatural constatation could in fact, according to the authors, stem from two conceptual explanations:

(1) a statistical discrimination argument, i.e., the fact that companies with more attractive founder CEOs are more likely to be more productive because of their statistically proven CEOs' higher social skills (arguably related to a better physical appearance), or

(2) stereotypical biases that would simply incite investors to favor more attractive CEOs (Colombo, M. G. et al. (2020)).

All these observations suggest that the CEO characteristics could act as surrogates for the value of start-up businesses considering ICOs and help predict the success of these latter. In the practice, investors seem to have assimilated this idea, and diligently research background data on each team member before making a financial commitment (Xiong, H. et al. (2020)). Unfortunately, (nascent) businesses that launch ICOs and the entrepreneurs running them frequently lack any track record or developed product (Howell et al., 2018). Moreover, the information disclosed in the whitepapers and on the venture's websites and ICO repositories is not immediately verifiable, not all ICO ventures publish whitepapers (Momtaz, P. P. (2020)), and some entrepreneurial teams also opt to maintain their anonymity or refrain from disclosing too much personal information (Fisch, C. (2019)).

Unless the investors indulge in directly communicating with the members of the management team or perform time-consuming cross-verifications, this again leaves room for exaggeration of 'qualifications' and even for a scam. In short, the issues of moral hazard (cf. supra) could play at their full extent in this domain as well as in the rest of the ICOs' characteristics.

4. ICOs and country of origin

The management team of an ICO can decide to list it in the land where the venture to be funded will take place.[*] The relationship between the location of the business and that of the ICO is however not always straightforward[**] and in fact, developers of token-based platforms often work independently and are geographically dispersed (Momtaz, P. P. (2019)).

Multiple factors can influence the selection of a given country for the launch of an ICO (i.e., the land where the funds will be collected). As shown in **Frame 1**, this geographical selection will determine how the sold tokens will be considered financially (securities or mere utility tokens), the fiscal regimen to which the funds will be submitted, and the legal framework that applies to customer protection (information disclosure, restitution of funds or not in case of unsuccess, …) as well as the anti-money laundering regulations that will apply to the offer (e.g., obligatory "know your client" dispositions or degree of anonymity).

The selection of a geographical ICO location by its management team can in turn influence the attractiveness or availability of said ICO for potential investors:

1. First, while ICOs have the potential to reach investors globally through their use of online platforms, differential regulations in the land of registration and countries like the USA or China may push the management teams to forbid the access of some foreigners to their tokens. Typically, tokens that fail the Howey test (see appendix 1) can be offered and traded almost free of legal constraints in countries like Belarus or Anguilla, but would be considered as securities in the USA and expose the management team to legal repercussions if not properly registered there, as well as to US customer protection obligations and money laundering regulations;
2. ICOs provide a possibility of anonymous investment, which can be attractive to some investors. This possibility is however limited by anti-money-laundering and counter-financing of terrorism (AML/CFT) regulations that vary largely between countries.[***]
3. As underlined by Ahmad, M. F. et al. (2020), "*Culture, understood as a collective programming of the minds […] influences people's expectations, ways of thinking, and consequently, decisions, including business decisions*". They indeed observed that cultural characteristics – as defined by Hofstede, G. (2011) - such as the general index of uncertainty avoidance or the degree of 'masculinity' of the population seemed to correlate with the success of these ICOs. Whether this type of cultural element applies to all ICOs linearly is however debatable, given the amount of ICOs that take place in 'hub' countries and the worldwide reach of ICOs. Interestingly, however, Ahmad et al observed that their cultural dimensions are associated with the success of the ICOs rather than with the subsequent token valuation on trading platforms. This could thus signal that investors do tend to be local, and culturally related to the ICO venture, while secondary markets reach more international audiences (Ahmad, M. F. (2020)).
4. Additional, more subtle factors can also intervene: for instance, linguistic errors committed in the white paper of ICOs inversely correlate with their success, but this penalty is less prominent for ICOs launched in non-Native English-speaking countries (Thewissen, J. et al. (2022)).

[*] This was for instance the case for the (failed) Milkcoin ICO in which the 'Khokholskaya Agricultural Company' in Russia , looked to utilize the Blockchain technology and an ICO to fund the building and modernization of a local dairy farm. (https://www.facebook.com/MilkCoin/)

[**] e.g., MinerEdge, a cryptocurrency mining venture, planned to establish its mining facilities in Manitoba, Canada, but listed its ICO in Anguilla, a Caribbean tax heaven with clearly defined ICO regulations (since 7 May 2018).

[***] Additionally, the ICO white papers can define supplemental requirements (whitelists, know-your-clients policies, …) that may help attract law-abiding clients in countries with stricter regulations, and/of deter investors seeking discretion.

Altogether, ICOs were shown to ***occur*** more frequently in countries with developed financial systems, public equity markets, advanced digital technologies, availability of investment-based crowdfunding platforms, and ICO-friendly regulations, but the tax regimes did not seem to influence this occurrence (Huang, W. et al. (2018), Ahmad, M. F. et al. (2020)).

In terms of ICO ***success***, several country-related variables – among which the 'legal friendliness towards ICOs and the financial development, were found to correlate with the likelihood of ICOs reaching their soft and/or hard cap (Ahmad, M. F. et al. (2020)). More recently, these results were extended by Shrestha et al. (Shrestha, P. et al. (2021)), who found in a cohort of 2077 ICOs from 105 countries that the national institutional strength (a composite of measures using six Worldwide Governance Indicators, namely, (i) control of corruption, (ii) rule of law, (iii) government effectiveness, (iv) regulatory quality, (v) political stability, and (vi) voice and accountability) and the presence of crypto-specific regulations significantly correlated with ICO success (both in terms of funding and of the likelihood of reaching the secondary market).

The most important determinants of the ultimate geographical listing seem to be:

1. The **regulatory framework** for ICOs differs between countries along several dimensions:
    a. Support of vs. restrictions against ICOs and/or Altcoins:
        i. A recent publication of the National Library of Congress of the USA lists countries that enforce explicit or implicit bans on cryptocurrencies as well as the anti-money laundering and tax regimen that applies to those media in a large series of countries (The Law Library of Congress Global Legal Research Directorate (2021, November)). For instance, Bolivia (6 May 2014, repeated in 2017, 2020, and 2021), Ecuador (8 Jan 2018), Egypt (15 Sept 2020, after warnings on Dec 28, 2017, and Jan 10, 2018), Nepal (14 March 2018), Bangladesh (24 Dec 2017), South Korea (28 Sept 2017, a ban that was lifted in 2020 and set to be abolished in 2022) and China (2 Sept 2017, Algeria (28 Dec 2017), Morocco (Nov 2017) have banned coin offerings (Williams, R. (2020, November 6)); Russia (Oct 2018) and Jordan(13 Sept 2021, after a warning on Feb 22, 2014) have also issued strict restrictions in the use of Altcoins[1] [23] Ahmad, M. F. et al. (2020), The Law Library of Congress Global Legal Research Directorate. (2021, November)).
        ii. Some countries officially discourage the use of cryptocurrencies but fail short of any formal interdiction. In *Macedonia* for instance, the President of the Republic issued in 2014 a tough warning against Bitcoin that has been -up to now- interpreted broadly on the internet and in much literature as an interdiction of all cryptocurrency and Altcoin transactions in the country. Both are however in fact allowed in Macedonia, where no laws or regulations apply to cryptocurrencies, altcoins, or their trade. The government of Macedonia has even recently shown direct support of the crypto economy including plans to launch, the denar coin, a digital currency intended to be used as a national payment system and backed by the country's reserves of denar. *India* also sends mixed messages, as it forbids the trading of Altcoins by its financial institutions and discourages (but does not formally forbid) their use and trading by businesses and individuals[1,2,3] [4] (The Law Library of Congress Global Legal Research Directorate. (2021, November)). As a potential result of these

[1] https://www.pwc.fr/fr/decryptages/data/les-initial-coin-offerings-un-systeme-de-financement-qui-cree-de-nouveaux-besoins-de-confiance.html
[2] https://www.cryptonewsz.com/ico-regulations-which-are-the-countries-with-restrictions/
[3] https://cointelegraph.com/news/from-russia-to-macedonia-how-cryptocurrencies-are-regulated-in-eastern-europe
[4] https://worldfinancialreview.com/progress-of-bitcoin-in-north-macedonia-and-the-world/

uncertainties, we only identified one Macedonian ICO in our sample, the Bitstars ICO (token: BST, for an online gambling platform aiming to use blockchain technology to avoid cheating). It was listed in 2019, raised 250,000 USD, and failed to proceed further. Likewise, only 0.8% of the ICOs in our sample originated from India, despite a population that covers more than 17 % of the world population.

iii. Finally, other countries have displayed strong governmental support for the development of ICOs. In December 2017 for instance, Belarus published a bill legalizing blockchain-based businesses, as well as all activities related to cryptocurrencies and digital tokens. It also uncoupled mining and token exchange operations from withholding taxes and even rendered the tax declaration of their profits facultative until January 1, 2023[5], and extended the application of its anti-money laundering frameworks to digital asset exchanges. Switzerland on the contrary has translated its strong support of the crypto economy by publishing clear regulatory frameworks for ICOs: the 'Regulatory treatment of initial coin offerings' [6](29 September 2017), and the 'Guidelines for inquiries regarding the regulatory framework for initial coin offerings (ICOs)' [7](16 February 2018).

b. The existence of a framework to qualify Altcoins (ICO tokens) as securities or not. This defines the (absence of) need to register and filing complex documentation for ICOs with the local financial authorities, as well as the related degree of customer protection linked to the ICO. For instance, the monetary authority of Singapore has published a guide (1 August 2017) that indicates the treatment of altcoins under the current security laws [8](Aslan, A. et al. (2021)), while the SEC in the USA qualifies the Altcoins as securities or not based on the Howey test (See appendix 1- Lexicon- The Howey test). Likewise, under Swiss law, tokens can be considered as uncertificated securities or intermediated securities based on whether they are suitable for mass trading and have the same structure (interest rate, term), same denomination (amount), are publicly offered, or are placed with more than 20 customers, and have not been created specifically for individual counterparties.
c. Anti-Money laundering regulations: Belarus and Malta, for instance, have extended the application of their anti-money laundering frameworks to digital asset exchanges (The Law library of Congress Global Legal Research Directorate. (2021, November));
d. The tax regime of the country concerning the eventual profits of an ICO or the business venture underlying it.

2. The general **development of the financial and technology infrastructure**, both in terms of financial and technical development and general reputation. For instance, even before profiling itself as an ICO-friendly country with specific ICO guidelines in 2017 and 2018, Switzerland profited largely:
    a. from its reputation as a financial hotspot;

[5] https://cointelegraph.com/news/from-russia-to-macedonia-how-cryptocurrencies-are-regulated-in-eastern-europe
[6] https://www.finma.ch/~/media/finma/dokumente/dokumentencenter/myfinma/4dokumentation/finma-aufsichtsmitteilungen/20170929-finma-aufsichtsmitteilung-04-2017.pdf?sc_lang=en&hash=C60E2C16FA2D0F81B1EF93636DDF0217.
[7] https://www.finma.ch/~/media/finma/dokumente/dokumentencenter/myfinma/1bewilligung/fintech/wegleitung-ico.pdf?sc_lang=en&hash=C9899ACF22747D56C800C6C41A7E28AB
[8] https://www.mas.gov.sg/news/media-releases/2017/mas-clarifies-regulatory-position-on-the-offer-of-digital-tokens-in-singapore

b. the fact the Ethereum Foundation[9]– with all its knowledge and proprietary tools for developing Ethereum-based tokens had settled there in 2014 for its ICO;
c. its attractive tax regulations (in particular in the Zug area, the 'Silicon Valley of ICO';
d. its reputation for financial discretion/respect of anonymity.

3. Miscellaneous practical legal requirements, such as the obligation (or not) that members of the ICO/venture team reside in the country during the ICO. The Isle of Man, for instance, requires that at least two members of the management team reside on its soil during the ICO proceedings, as opposed for instance to Estonia, which offers since 2014 a virtual residency program (e-Residency) for anyone who wishes to access its diverse digital services, regardless of citizenship or location. Of note, Estonia accounts for 7% of our ICO sample, ranking as the 4th most favored location for ICO in our cohort, after Singapore, the USA, and the UK. Notably, these four ICO leaders all have edited clearly defined regulations on ICOs and Altcoins, including their classification with respect to securities and other assets, tax regime, and AMF/CFT dispositions (The Law Library of Congress Global Legal Research Directorate. (2021, November))

Frame 1: Important determinants of the geographical listing of ICOs

5. The Investors

Thanks to the use of blockchain technology's digital and scalable nature, ICOs allow ventures to raise capital from a large crowd of investors with few geographical restrictions (Colombo, M. G. et al. (2020)) Aside from capital venture companies (the presence of which seems to affect positively the outcome of the ICO offering - (Chitsazan et al. (2022)) - ICO usually attracts various and large panels of individual investors (with a mean of 4700 per ICO) that invest a mean of 1200 USD in the venture (Fahlenbrach, R., & Frattaroli, M. (2019)) but with very significant variations (for examples, see for instance table 1 of Fisch, C. et al. (2021)).

ICOs often happen in two stages. A majority of ICOs hold a closed ***presale round*** for larger investors and insiders, during which the participating investors receive a sizeable (with a median of 30%) discount over regular investors. The second phase is the ***crowd sale stage*** during which regular investors participate (Fahlenbrach, R., & Frattaroli, M. (2019)). These regular investors can be driven by financial motives and non-financial motives (e.g., product interests, but also possibly feedback provision and even altruism), in contrast with conventional financing methods that usually attract more specific types of investors (e.g., early adopters and angel investors for reward and equity crowdfunding, sophisticated investors driven by financial motives for venture capital and IPOs) (Momtaz, P. P. (2020)).

ICOs have close-to-zero transaction costs and keep documentation needs and regulations at a minimum and are free of intermediaries (Momtaz, P. P. (2020), Colombo, M. G. et al. (2020)). In short, the project creates a (crypto wallet) address to which the funds will be sent. The token will then be paired with other virtual currencies or fiat that the project accepts as payment. Investors send then the paired currencies to the address and receive the equivalent number of tokens. *Successful* ICOs also offer a high likelihood of after-market liquidity and potential early exit strategy: many tokens get listed on a token exchange platform, which is open 24/7 for online trading, within three months after the ICO ends (Momtaz, P. P. (2020)). As a result, they also present an (often exaggerated) potential for return on investment in the short and long term, starting when the tokens are listed, and benefit from a generally positive crypto market sentiment. This *de facto* adds a speculative function to ICO investments, and ICO investors sometimes buy tokens that they think will appreciate in value without any intention of ever using the venture's products (Gan, J. R. et al. (2021)).

As briefly mentioned earlier, there are however also a number of risks associated with investing in cryptocurrency projects (Momtaz, P. P. (2020), Colombo, M. G. et al. (2020)):

[9] https://www.legalico.io/switzerland/

- A risk of total loss if the project does not reach listing or becomes delisted; another risk is inherent to the nature of cryptocurrency/altcoin wallets, which can be (albeit seldom) hacked by nefarious persons (for examples, see appendix 2, "*Events in the crypto world*");
- A risk of depreciation of the token price (the volatility of cryptocurrencies is much higher than that of regulated investments);
- A risk of scams. Tokens often have no current value and do not lead to any legal entitlement, potentially opening the door to scams (Fisch, C. et al (2019)). Actually, the number of scams amounts to a few tens of cases out of several thousand completed ICOs. A large number of blockchain-based start-ups are indeed unable to secure funding in ICOs, possibly due to initiatives like the Ether Scam Database that documents questionable activities and warns potential investors (https://etherscamdb.info) or educational/warning websites like the US government-run https://www.investor.gov/howeycoins. When scams take place, however, it is most difficult for national authorities to prosecute these global projects, and given the pseudo-anonymous nature of the blockchain, it is difficult to track and recover the embezzled funds.
- Due to information asymmetry, it is difficult to assess the venture's underlying quality, and the tokens often sold refer to a future good or service, or future profits that the venture may or may not realize (Colombo, M. G. et al. (2020), Momtaz, P. P. (2020)). Uncertainty and asymmetry of information are increased due to the absence of intermediaries, which could enforce disclosure requirements (Momtaz, P. P. (2019), Rhue, L. (2018)).
- Tokens do not convey voting power to investors, as this (cf. notably the Howey Test - see definition in appendix 1) would define them as securities in many countries among which the USA, and would imply the adherence of ICOs to stringent disclosure requirements to regulatory authorities and their application of stricter customer protection rules. It is unclear, however, how this lack of influence and corporate governance will affect project success and valuation as the project matures (Momtaz, P. P. (2019)).
- Network effects might turn out to be a major risk. as the gravitation toward Ethereum to design tokens generates systematic risks if this standard fails or evolves (Momtaz, P. P. (2019)).

In the practice, and despite the risks, ICO projects appear to attract many investors by offering an opportunity for substantial short-term financial rewards (Momtaz, P. P. (2020)). Most tokens sold in ICOs are 'utility' tokens that can be spent to buy a product or service produced by the issuer but do not confer cash flow rights. Fahlenbrach, R., & Frattaroli, M. (2019) have studied whether Initial investors primarily buy these tokens (or altcoins) because of an interest in the product, or for speculative purposes, and found evidence for the latter. According to them, ICOs attract "*a new type of investor to finance innovation, one that security market regulators typically seek to protect*" (Fahlenbrach, R., & Frattaroli, M. (2019)). These investors do not hold a diversified portfolio of ICOs, actively use the secondary market, and sell a significant fraction of their tokens shortly after the ICO, before the product of the company is even developed. They thus appear more interested in a potential financial gain than the underlying product when participating in an ICO. As such, ICO investors resemble other retail investors, who hold on average an undiversified portfolio of only four stocks, including highly volatile stocks with a strong correlation, high idiosyncratic volatility, and skewness (Fahlenbrach, R., & Frattaroli, M. (2019)).

As mentioned earlier, this "lottery-like" behavior helps explain the attractiveness of the ICO tokens to retail investors despite the lack of transparency and investor protection (Fahlenbrach, R., & Frattaroli, M. (2019)).

Additional research, performed by a direct survey of 517 ICO investors approached via an open online call, however, shows that financial gain is neither their sole nor their predominant *reason* to join these

ventures and that the business model/idea is nearly as important as the future sale of the token as a key reason to join an ICO (Fisch, C. et al. (2019)). Ideological *motives* (based on the potential of blockchain technologies for decentralization and anonymity) likely also play a role in motivating the investors, and when asked, investors even consider ranking their technological motives first, followed by financial motives, and ideological motives as third (Fisch, C. et al. (2019)). This is however not completely surprising as, in order to invest in an ICO, one must master or at least be attracted by the concept of tokens, digital wallets, trading exchanges, and cryptocurrencies.

Altogether, different profiles of investors, characterized by their predominant motives (Technological, Financial, or Ideological), differ in the importance they give to the different sources of information provided at the launch of the ICO, such as the whitepapers, but also differ in their geographical residence (less financial motivation in Europe than in the USA for instance) and even their fear for scams (which is larger in financially motivated investors) (Fisch, C. et al. (2019)).

C. Hypothesis

As discussed in the section '*The CEO and the team*', CEO characteristics could act as surrogates for the value of start-up businesses considering ICOs and help predict their success. However, the information disclosed in the whitepapers and on the ventures' websites and ICO repositories is not immediately verifiable. Some entrepreneurial teams also opt to maintain their anonymity or refrain from disclosing too much personal information, and not all ICO ventures publish whitepapers. It is thus possible that the presentation of CEO characteristics yields to the issue of moral hazard. However, the cost of faking CEO characteristics can carry a higher cost than benefit: once found and publicized, scam in this domain is impossible to negate and has consequences on one's career that will by far outlast the ICO duration. Our **main hypothesis** is thus that the intrinsic characteristics of the CEO do influence the fundraising success of an ICO, as a potential result of the social trust, attractiveness, and the dedication to business that they are linked to. We call this the ***CEO Impact Factor hypothesis***.

In addition, the entrepreneurs and the investors arguably aim at different goals. Indeed, while both the venture founders and the investors *presumably* wish for the venture's ultimate success (i.e., that the business model described in the white paper will indeed be brought to life as a sustainable enterprise), incentives may differ between these two financial partners:

- For the investors, the financial incentive is that the token of the ICO becomes listed on secondary markets, providing an exit strategy and a potential for speculation;
- For the entrepreneurs, financial compensation exists as soon as the money raised by the ICO covers the costs engaged for the development of the ICO- every cent earned above that threshold is already a benefit- (this has even, in extreme cases, led, to heavily publicized scam – *cf.* appendix 2;

These goals can be represented by specific outcome (dependent) variables, and the determinants that predict the *listing of a token* are likely to differ from those that correlate with the *money raised* by the ICO. As a result, different ICO characteristics – including perhaps components of the CEO impact factor- may be relevant or not from the point of view of the investors and of the entrepreneurs. We call this **the '*Parallax hypothesis*'**.

We finally also hypothesize that the influence of some parameters on the success of ICOs, both in terms of token listing and money collection, could change with time. We call this **the '*Remodeling Hypothesis*'**. We suspect that at least two major components influence such changes:

- First, an 'environmental component': regulations and their enforcement (e.g., the SEC is progressively more aggressive in its prosecution of presumed infractions to the securities rules), market sentiment, and other financially relevant parameters such as the availability and distribution of investment money vary in time;
- Second, an adaptative component: one can expect that both entrepreneurs *and the investors* react to major events in the crypto world and learn from previous (aggregate) experience of the ICO crowdfunding model, and/or through their own research, that published by scholars, or more likely, that posted online on specialized websites, social media, and crypto-oriented discussion fora. We suspect that the behavior of both financial partners can be influenced by this progressive knowledge because for instance:
    - The investors may seek to invest preferentially in ICOs that display *seemingly* favorable indicators, meaning that those that do not display such characteristics may become less and less favorable with time;
    - Entrepreneurs can alter the profiles of their ventures (e.g., token prices, the definition of a Soft Cap or not, size of the team, …) if these parameters have proven some ability to attract more funding and the cost of altering them (on paper at least) is not too high. This is in fact a key component of the information asymmetry and moral hazard that are inherent to the ICO market.

- Major events, such as the crash of the Bitcoin in January-February 2018 could lead to more fear in the market, diverting the investors towards safer appearing ICOs (e.g., KYC, origin in a regulated and developed country, …) and pushing entrepreneurs for instance to increase their advertised safety features.

As a result of both behaviors, some determinants of ICOs' determinants of outcome are likely to lose (or gain) value as time elapses**.**

D. Control variables

As described *supra* and summarized in a recent systematic review, several ICO and environmental characteristics can influence the outcome of ICOs. In short, these articulate along five signaling dimensions (Chitsazan, H. et al. (2022)):

- *the founder and his/her team*: among these, the number of team members and advisors, as well as the founder's educational background and experience in business, technology, academia, and other business' boards, or yet his/her 'beauty premium' and evoked sentiment on social media,
- *the ICO*: its structure, financial details, whitepaper framework, and governance characteristics are meant here, like the existence of a presale, bonus or bounty program, KYC rules, initial token price and distribution between investors and entrepreneurs, the definition of a hard or a soft cap, using an existing blockchain platform and the whitepaper framework (length, legibility, tone, linguistic details, …);
- *the venture*: such as the ICO project's sector (e.g., business, finance, gambling, or technology) and quality as rated by experts, the existence of patent(s), the quality and availability of the tokens' code online (usually on the GitHub repository), the geographical location of the venture,
- *the investors*: their motivations, interests, qualifications, culture, and aversion to risk for instance;
- *the context*: the sentiment of the market is here notably important, with its regulatory, financial, and mediatic (success and scandal) dimensions.

Among these, and in the perspective of the small investor or entrepreneur who is looking for 'hard facts', i.e., easily to find and verifiable information on the ICOs that could influence its success, we retain *a priori* the following control (independent) variables for our ICO success prediction models:

- *Country Restrictions:* As underlined above (**Frame 2**), the stance of the authorities of some major economies, such as the US and China, are particularly strict towards ICOs, with either compliance obligations even if the issuing firm is not located in the country, or a strict ban on Altcoin transactions. Due to the added compliance burden and legal risks, some issuers restrict citizens from these countries. Likewise, India has sent mixed messages regarding the use of Altcoins, and several ICOs exclude citizens from this large country as investors. As these countries belong to the top ten of the largest economies in the world and represent a significant population and potential source of capital, such restrictions may have a significant influence on an ICO's outcome (Shrestha, P. et al. (2021)). Some ICOs also exclude, solely or not, citizens and residents from states defined as 'rogue states' by the USA administration. While these restrictions are – due to the generally low economic status of these 'rogue' states- unlikely to represent any significant loss of investors, they can send a signal that the management team is compliant with regulations, which could play (or not) in favor of the ICO. To account for these restrictions, we introduce the categorical variable *(***Var: *Country_Restrictions***, ordinal variable) that can take the following 4 values: None="0", Main="1", Rogue="2", Other="3" (restrictions limited to small countries that are not Rogue states per se);
- *Bonus* (**Var: *Bonus***, dummy, "0" = No, "1" = Yes): Bonuses are tokens offered at discounted prices during the pre-sale or the ICO proper, in order to attract investors and help raise funds. Such bonuses however have the potential to backfire if tokens become massively flipped on the market as soon as bonuses are no longer offered (Shrestha, P. et al. (2021));
- *Bounty* (**Var: *Bounty,*** dummy, "0" = No, "1" = Yes): Bounty programs are incentives offered to an array of participants for various activities associated with an initial coin offering (ICO). A bounty program usually pays out rewards or tokens for participants completing specified tasks that help *promote* the ICO, but can also reward feedback on the planned venture;

- *Caps:* ICOs can specify two key thresholds, a soft cap, and a hard cap. Soft caps indicate the minimum amounts targeted to be raised to proceed with the business venture, which can be a signal that the management team has a clear business plan (Y/N answer) and may give an idea of the feasibility or the ambition of the venture (possibly related to the size of requested funding). Hard caps indicate the maximum amount that the firm intends to raise and are meant to maintain token scarcity and help preserve the value of the issued tokens on the secondary market. We retain here the **Var: *SoftCapYN*** for our model as we aim to study the success of the ICO launch phase rather than the subsequent valuation of its tokens on the secondary market;
- *Standard:* Up to 85% of ICO entrepreneurs develop their venture and create their underlying Altcoin based on the Ethereum ERC20 standard, as this allows easy verification of the codes (transparency), facilitates investments as it can use standard crypto wallets, and speeds listing on exchanges as the standards already exist (Rhue, L. (2018), Fisch, C., & Momtaz, P. P. (2020), Amsden, R., & Schweizer, D. (2018)). Other ventures use other existing DLTs like NEO or Waves, or even choose to develop their blockchain (Shrestha, P. et al. (2021)). This last option requires greater resources and technical ability, which can signal the skills of the management team, or elicit fear of the unknown or code-embedded errors or even scams. We use the categorical variable (**Var: *ERC20,*** dummy, "0" = No, "1" = Yes) to mention whether the ICOs rely on the Ethereum Request for Comment 20 standard or not;
- *Know-your-customer (KYC) guidelines:* Implementing KYC guidelines in an ICO process is both a signal of regulatory compliance and a signal that the management team attempts to prevent illicit activities. Arguably, such signals help attract investors and capital (Shrestha, P. et al. (2021)), Chitsazan, H. et al. (2022)) but since KYC measures de facto reduce the degree of buyers' anonymity, they could theoretically also reduce the attractiveness of the ICO for some investors. The categorical variable (**Var: *KYC_YN,*** dummy, "0" = No, "1"=Yes) recapitulates whether the ICO enforces KYC guidelines or not;
- *Currencies:* Investments in ICO typically occur in the form of **cryptocurrencies**. Offering the option to use different currencies has been variably associated with the success of ICO (Howell, S. et al. (2018), Shrestha, P. et al. (2021)), possibly because while accepting multiple coins *"reduces the number of steps needed to complete the investment, thereby easing the transaction process"*. However, "*exchanging capital between currencies is relatively simple and cheap, and therefore, accepting more currencies may not have any significant role in ICO success"* (Shrestha, P. et al. (2021)). (**VAR: *MultipleCryptos,*** dummy, "1" = one, "2" = multiple) recapitulates whether the ICO accepts one or more cryptocurrencies. Likewise, accepting *fiat payments* could theoretically expand the pool of investors beyond those owning cryptocurrencies, but may also signal a lack of confidence in the venture's ability to raise funds through the blockchain ecosystem only. The acceptance of fiat currencies is taken into account in the categorical variable (**VAR: *Fiat_YN,*** dummy, "0" = No, "1" = Yes);
- *The number of team members* (**VAR: *TeamSize***, continuous) ***is*** a relatively crude, but easily gathered, measure of the potential power of the ICO team (Xiong, H. et al. (2020), Ahmad, M. F. et al. (2020)), and has been shown to correlate with the success of ICO by multiple scholars since April 2018 (Amsden, R., & Schweizer, D. (2018), Xiong, H. et al. (2020), Thewissen, J. et al. (2022)).
- *Availability of the source code* (**VAR: *Code_Available,*** dummy, "0"=No, "1"=Yes): According to Blaseg, D. (2018), start-ups that reveal source codes would be more likely to end up listed on a public exchange soon after ICOs;
- *Token Price***:** The sheer price of the tokens has the potential to attract different types and populations of investors while extreme prices can carry additional signals of ambition of the team and could arguably influence the perceived trust in the venture. (**Var: *Price_USD,*** continuous) recapitulates these token prices;

- *Ether Price*: most ICOs are supported by the Ethereum blockchain, and payments for tokens in ICOs are predominantly made in Ether, the cryptocurrency generated by the Ethereum platform. As a result, the price of ether – which depends on many environmental factors and is also a reflection of the market sentiment) could affect the amount raised by ICOs (Shrestha, P. et al. (2021)), albeit this has been discussed (Amsden, R., & Schweizer, D. (2018)). We thus use the numerical variable (**VAR: *EtherPrice***, continuous) to control for the Ether closing prices in USD on the starting day of the ICO, as obtained on "Investing.com".
- *The market sentiment at the time of the offering*: This sentiment is in principle best represented by the daily marketPsych Thomson Reuter index (Colombo, M. G. et al. (2020)), the access to which is unfortunately restricted. It is, however, arguably reflected as well by the fluctuations of the value of major crypto valuta throughout the ICO (Momtaz, P. P. (2019)). Variable (**Var: *Ether_ Fluctuation***, dummy, "-1"= decreasing; "0"=stable, "1"=increasing) which represents the fluctuation of the mean Ether price in the month of the ICO launch concerning the previous month. These data were computed based on the historical Ether prices obtained from "Investing.com";

In a set of 302 successful (i.e., listed for at least one day) ICO launched between August 2015 and April 2018 (Momtaz, P. P. (2020)) has observed a deleterious effect of adverse industry events on the first day return of ICO tokens when this first day occurred within 15 days or one month of this major adverse event. The impact of such events on the other parameters of ICO success (raised capital, reach of Hard Cap target, listing) is – to the best of our knowledge- however unknown. Examples of adverse events are serious hacks, regulatory limitations of ICO authorizations, or major 51% attacks, for instance.

Through literature and internet searches of specialized crypto news sites, we have reviewed the most significant major events that affected the 'crypto sphere' in the period April 2018-August 2020. While these events may certainly have impacted the behavior and trust of ICO investors, we fear that their impact on the ICO launch success cannot be reliably quantified for several reasons:

- First, both positive and negative events need to be taken into account. Positive events can stem from major industry endorsements or regulatory support for ICOs or cryptocurrencies, for instance;
- Second, some events (e.g., hard forking of cryptocurrencies, Bitcoin block's reward halving) have been interpreted variably, both as positive and negative pending on the analysts;
- Third, many positive and negative events occurred (almost) simultaneously on some dates.
- Fourth, with the partial exception of 2018, such events occurred almost continuously (i.e., on a monthly basis) during our own study period (April 2016-August 2020)
- Fifth, and most importantly, in contrast to the stock market where major regulatory or publicity events impact the market for up to 120 days, the effect of such events on the crypto markets only impact the markets significantly for a much shorter time: from 2-3 days before the positive events, due to rumors and leaks, to about 3-6 days after the event for negative events- (Hashemi Joo, M. et al. (2020)). In addition, the date of publicity of the events is not always those of the events themselves (Ramos, S. et al. (2021)), and the duration of the effects can vary with the type of event (e.g., sometimes less than one day for DDOS server attacks on exchange platforms versus up to 10 days for 51% attacks (Ramos, S. et al. (2021)). In all cases, however, these periods of time are much shorter than the reported median duration of ICO (31 days according to Momtaz, P. P. (2020), 21 days

according to Hsieh, H. C., & Oppermann, J. (2021)), which renders any interpretation of eventual correlations most difficult.

All these events are however also, in principle, integrated into the 'market sentiment' and in the value of major cryptocurrencies. Short of looking for specific correlations between adverse/positive events in the crypto sphere and our outcome measures of ICOs, these are thus taken into account in our models through the use of a correction factor for the value of Ethereum (on the platform of which most utility tokens are based, and which is single most important driver of ICO returns to investors after listing (Fahlenbrach, R., & Frattaroli, M. (2019)) and its fluctuations at the time of ICO launch (*EtherPrice* and *Ether_Fluctuation*).

Frame 2: The sensitivity of ICOs to positive and adverse industry events

- *Presale:* Many ICOs hold a closed presale round for larger investors and insiders, during which the participating investors receive a sizeable discount (on average 30%) over regular investors. The crowd sale stage follows, which is the ICO proper (Fahlenbrach, R., & Frattaroli, M. (2019)). The existence (or at least, the *disclosure*) of such a presale is represented by (**Var: *Presale_ICO_YN,*** dummy, "0" = No, "1" = Yes). The existence of a presale can have opposite effects on different phases of an ICO. On the one hand, institutional investors can act as a positive signal to small investors that the business venture appears viable and profitable, thus helping raising capital and reaching platform launch (Chitsazan, H. et al. (2022)). Institutional investors indeed have a better understanding of a firm's underlying quality and can thus better exploit information asymmetries than retail investors, exerting a 'screening and coaching' role in the process (Fisch, C., & Momtaz, P. P. (2020)). On the other hand, presale investors have been shown to lock in some profit by selling immediately after the ICO when the secondary market price is at or above the presale price, which is lower than the "list ICO price". This has the potential to discourage smaller investors, as it can alter the post-ICO success of Altcoins very early on the secondary market (Fahlenbrach, R., & Frattaroli, M. (2019)), but this view is disputed (Fisch, C., & Momtaz, P. P. (2020));
- *Rating* of the ICOs and their teams by experts (**Var: *Rating***, continuous). The quality of the management team and their business model is in principle core determinant of the likelihood of business ventures to succeed and should thus influence the success of the corresponding ICOs (if one forgets the 'lottery-like' betting behavior of many investors- Fahlenbrach, R., & Frattaroli, M. (2019)). Experts share opinions on these qualities that are displayed across several platforms on which ICOs are marketed and on ICO repositories. These opinions are supposedly based on the quality of the management team, the project's vision, and of its ICO profile (Momtaz, P. P. (2020)). Of note, however, these indicators display little interrater correlation (Momtaz, P. P. (2019)) and become 'updated' on the repositories after the launch of the ICO (Momtaz, P. P. (2019)), which renders their study difficult and their relevance, dubious. In the present work, given this doubt, and in order to avoid introducing too many variables in our models (which would result in a dilution of the power of the analyses), we choose, like Momtaz, P.P. (2020) and Shrestha, P. et al. (2021) to retain only the composite score presented on the ICOBench repository to account for the overall quality of ICOs according to the 'experts' as this score is both easy to find and to 'understand' for small investors;
- *Geographical localization of the ICO*: As discussed extensively above, the location from which an ICO is launched can influence its success, based on several parameters.
    - First, we have chosen to distinguish three categories of countries based on their regulatory armamentarium on ICOs. In line with Shrestha, P. et al. (2021), the first category includes countries that allow ICOs and provide designated ICO regulations or clear guidelines or statements that regulate various relevant aspects of ICOs (the legal status of the Altcoins, tax regulations pertaining to them, …). The second group

contains countries with no specific ICO regulatory framework or have only issued warnings or brief statements but that do not take a clear regulatory stance. This second group also includes countries that have released drafts and discussions of ICO regulations but have yet to implement them. Besides these two categories, we have also added a third group of countries that present either an explicit or an implicit ban on ICOs or Altcoins. This third category seems important to us given as we have observed that even countries with explicit bans on ICOs appear to have launched such ventures. (**Var: *Regulations***, ordinal, "0" = ban, "1" = Reg, "2" = unreg) recapitulates this information.

- Second, the general quality of the legal institutions can differ largely between countries. In line with Shrestha, P. et al. (2021), we use a composite variable (see below, "*Data Collection*") that recapitulates the Worldwide Governance Indicators of the World Bank (**Var: *Institutions***, continuous**)**.
- Third, the categorical variable (**VAR: *TaxHaven***) indicates whether the specified ICO country is a tax haven. For the definition of the tax haven status, we used the same list of 52 tax havens composed by Hines, J. R. (2010) that Shrestha, P. et al. (2021) used to show that this status could influence ICO outcomes. The choice of the list is crucial apparently since Amsden, R., & Schweizer, D. (2018) did not find this parameter to alter the success of ICOs using a different list prepared by the OECD;
- The general **technological/informatics development** of the countries can also be relevant in terms of access to the ICO and the trust in the chances of completion of the resulting venture. The Digital Competitiveness Score is computed yearly since 2017 by the independent Swiss IMD World Competitiveness Center, based on 3 dimensions: technological knowledge, preparedness for developing new technologies, and the capability to create and advance innovations. The variable (**VAR: *IMD_Tech,*** dummy, "0"=No, "1"=Yes) recapitulates whether the country of the specific ICO belongs or not to the top 20 countries of the IMD yearly ranking at the time of the ICO.

E. Data collection:

1. TORD_v3 database:

The quality of the data regarding ICOs that are available through secondary sources (online commercial repositories) has been criticized (Fahlenbrach, R., & Frattaroli, M. (2019), Lyandres, E. et al. (2022)). As a consequence, scholars unanimously recommend handpicking the data used for research exclusively from primary sources available during the fundraising such as the last version of the whitepapers, company announcements on social media (e.g., Medium, Twitter, and Telegram), and on the bitcointalk.org message boards, source code on Github, commercial registers and the Crunchbase database for information on venture funding.

In line with this recommendation, our sample makes ***partial*** use of the handpicked Token Offerings Research Database (TORD, version v3), collected, published, and made available for research use on October 2, 2021, by Paul Momtaz, available at: https://www.paulmomtaz.com/data/tord. The TORD_v3 database partly was specifically designed, collected, and validated to avoid some known issues of commercially available data, such as the survivorship bias. This bias results from the fact that the ICOs that have never been listed or that have been delisted due to business failure after an initial successful ICO and listing tend to disappear from such repositories (Momtaz, P. P. (2020), Benedetti, H. E., & Kostovetsky, L. (2018)).

The TORD_v3 database consists of 5978 hand collected ICOs, 437 IEOs, and 89 STOs, of which we only kept the ICOs to test our hypotheses. In order to analyze the outcomes of the ICOs, we first filtered out the ICOs for which the amount of money raised ("*Raised_usd*") during the funding campaign was not known. In order to allow the verification and retrieve of additional information on the profile of the ICOs and their entrepreneurs, we then selected the ICOs for which the dataset in the TORD_v3 database was complete for the following 3 items: "*Linkedin_link*" and "*Link_white_paper*". In order to be able to assess the value of the CEO characteristics in the light of publicly available estimations of the 'quality' and the size of the ICO management teams, we finally only retained the ICO samples with both a completed "*Rating*" (which takes in principle into account the vision, business plan and quality of the ICO management team into account) and a completed "*TeamSize*" fields (Chitsazan, H. et al. (2022), Momtaz, P. P. (2020), Colombo, M. G. et al. (2020), Momtaz, P. P. (2019), de Jong, A. et al. (2018)). This yielded a final sample of 1014 records (**Figure 1**).

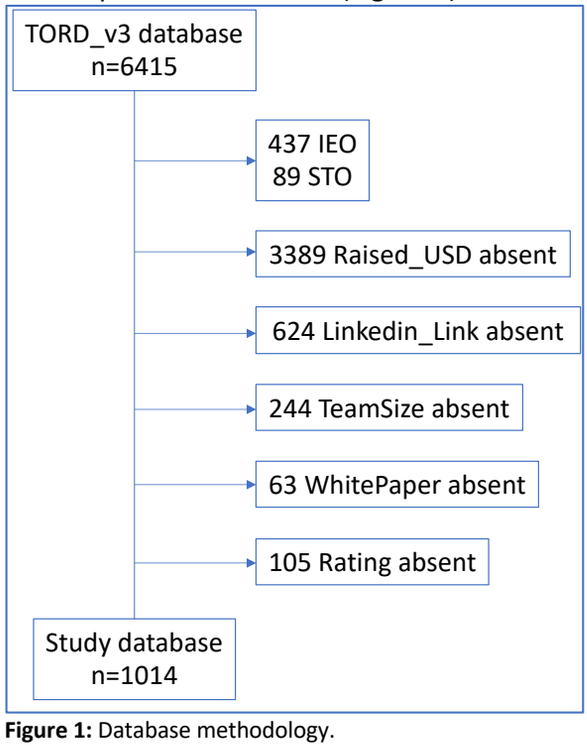

Figure 1: Database methodology.

2. Additional, handpicked, data:

2.1. CEO-related data:

We supplemented the database for all these records with the following founder CEO's personal data, hand-picked from the CEO's personal LinkedIn pages and from searches on the ICO's own websites as well as on the platforms ICObench.com, topicolist.com, icohotlist.com, icodrops.com, research.tokendata.io, ICOdata.io, coinmarketcap.com, and ICOmarks.com:

- "*Name*", this variable will not be used for the analytic part, but knowing the name of the CEOs is needed to retrieve data from their LinkedIn page. We retrieved the CEO of the ventures at the moment of their ICO and not the CEO that runs the business afterward. When a project listed more than one founder/CEO, we selected the first one named on the ICO's website or Whitepaper. We couldn't retrieve this information for all but 20 ICO (2%);
- "*Male_Female*", This dummy variable is valued as "0" if the CEO is a male and "1" if the CEO is a female. The gender of the CEO was assessed based on the pictures on their LinkedIn profile and/or additional websites (mainly the ventures' websites). There are 27 missing data for that variable (2.7%);
- "*Prior_ICO_Launch*": This dummy variable takes the values "0" =no or "1" =yes pending on whether the CEO had already launched any ICO prior to the one considered. To collect this information, we screened the CEOs' LinkedIn pages to analyze all prior companies they had worked in, then if one was a cryptocurrency venture, double-checking the information on ICOBench to look from there to see if he/she had been the CEO or a co-founder of the venture. We have 143 missing data for that variable (14.1%);
- "*Experience_Blockchain_industry*": Prior experience of the CEO in the blockchain industry was retrieved using the same methodology as for "*Prior_ICO_Launch*". Data of the dummy variable "*Experience_Blockchain_industry*" take the values "0" = no or "1"=yes - We have 143 missing data for that variable (14.1%);
- "*Experience_financial_institution*": Did the CEO work in a financial institution before this ICO launch? Same methodology as for the previous two variables; dummy variable: "0"=no or "1"=yes - We have 143 missing data for that variable (14.1%);
- "*Number_companies*": This continuous variable recapitulates how many companies the CEO had worked with before working for the ICO venture. The screening for this variable is the same as for the previous variables. We have 143 missing data for that variable (14.1%);
- "*Diploma_Level*": What is the highest diploma that the CEO received? All data have been gathered from the CEOs' LinkedIn pages. This ordinal variable takes the values "0"=none, "1"=Bac, "2"=Master, "3"=MBA, and "4"= Ph.D./Doctor - We have 191 missing data for that variable;

2.2. Additional ICO and environment-related data:

- "*SoftCap_YN*": This dummy variable recapitulates whether the ICO had defined a soft cap threshold ("0" = No; "1" = Yes). Data were retrieved from the whitepapers of the ICOs, and when not available there, from ICOBench or the other ICO repository websites enumerated above.
- "*Hard_Cap_M*": What is the *value* of the Hard Cap of the ICO? As for *SoftCap_YN*, this information was retrieved from the whitepapers of the ICOs, and when not available there, from ICOBench or the other ICO repository websites enumerated above. For the sake of comparison, all the data for that variable were converted into millions of US dollars. Data provided in ETH or BTC in the whitepapers were therefore converted into USD based on the historical valuation of those two cryptos on the starting day of the ICO (retrieved from

www.Investing.com). *Hard_Cap_M* is available for all ICOs of our dataset that had defined a hard cap (86.5% of the ventures).

- "*CoinMarketCap_listed*": Has the ICO ever been listed on the CoinMarketCap.com website? We used the CoinMarketCap website to track all the tokens that had ever been listed (currently active and retracted listings (n=0 in our dataset). This website[*] contains historical data and is considered almost devoid of survivorship bias[**]. It also provides information on 'untracked' tokens, i.e., tokens from projects that don't meet the minimum criteria to achieve a full listing but had been advertised earlier as being listed: these tokens have in fact been linked to potential scam[***] and are considered as non-listed in our database. There is no missing data for this variable.
- "*Regulations*": The information regarding this variable was carefully extracted and cross-verified from the following sources[10]: Ahmad, M. F. et al. (2020), The Law library of Congress Global Legal Research Directorate. (2021, November), Huang, W. et al. (2018), Fisch, C., & Momtaz, P. P. (2020), Shrestha, P. et al. (2021, table 7), Amsden, R., & Schweizer, D. (2018). **Different values can be allocated to one same country pending on the timing of the ICO** (See **Frame 3**): The status ('Reg', 'Unreg', or 'Ban') indeed depends on the changing landscape of ICO regulations around the world during the period that corresponds to the launch dates of our cohort of ICO (e.g., Luxembourg specified its stance on ICO on 28 March 2018, i.e., after all, 3 ICOs of our cohort, but Lichtenstein enacted its regulations in 2017 after an ICO had earlier been launched under an 'Unreg' status in 2016). Of note, our classification, based on these different cross-checked sources, slightly differs from previous works (e.g., Poland is considered unregulated here, like in Amsden, R., & Schweizer, D. (2018), but not as in Shrestha, P. et al. (2021));

The regulatory framework to which altcoins (and ICOs) has varied over the time period analyzed in our sample population of ICOs. This complexifies the categorization of countries for the analysis of the influence of the geographical localization of an ICO on its chances of success. Interestingly, the influence of an evolution of the legal frame and the number of ICOs taking place in the country (ICO activity) is not always straightforward. For instance, only 2 ICOs of our cohort were launched after October 2018 in Russia, versus 59 in the period before that date (when governmental restrictions on the use of Altcoins were issued) while 292 and 755 respectively took place in the rest of the world after and before this date ($P<0.0001$, Fischer's exact test). This seems logical. On the contrary, however, the impact of the change in Swiss bank regulations regarding the secrecy of transactions that followed an FBI investigation into UBS practices and resulted in the automatic collection and sharing of financial information on Swiss bank accounts held by citizens of certain countries since January 1st, 2017[11] and the issuance thereafter of the clear-defined FINMA regulatory statements and guidelines did not impact the *distribution* of ICO's in Switzerland in our cohort (5 ICOs took place in Switzerland versus 86 in the rest of the world before 10/17, versus 66and 987 respectively thereafter, $P>0.9999$, NS, Fischer's exact test). Even more complex is the situation of South Korea, which *reportedly* enacted a ban on cryptocurrencies and ICO in 2017 [12], but would have lifted it somewhen in 2020, and has even announced in May 2022, (not yet introduced to date) crypto-friendly legislations to boost this sector of the economy [13]. Surprisingly, five ICOs (LNC, HYC, EDN, XCSS, and ZIK), four of which

[*] For more information: https://support.coinmarketcap.com/hc/en-us/articles/360043659351-Listings-Criteria
[**] https://medium.com/geekculture/trading-algorithms-for-cryptocurrencies-without-survivorship-bias-c7507ee2c108
[***] https://cryptobriefing.com/coinmarketcap-transparency-crypto-exchange/
[10] See Appendix 4: Links 1 to 38
[11] https://www.cnbc.com/2017/01/02/swiss-banking-secrecy-nears-end-following-new-tax-rules.html
[12] https://www.reuters.com/article/us-southkorea-bitcoin-idUSKCN1C408N
[13] https://www.cryptopolitan.com/korea-set-to-remove-ban-on-ico/

were successful, were launched in South Korea during the time of the *purported* ban on these operations thus raising some concern as to the reality and/or enforcement of the said ban. Likewise, one ICO (UCBI banking) was listed in 2019 as taking place in Morocco, a country that forbids this type of fundraising since November 2017. It managed to raise 3,000,000 USD but its token (UCBI) does not seem to have been listed afterward and is currently inactive. One ICO (Bankcoin (BCASH, BKC) Platform) was also apparently launched from Bangladesh in 2019 despite an absolute ban on cryptocurrencies since December 2017 in that country. Interestingly, despite a small amount of money raised (11341 USD), its token is to date still listed on exchange platforms. These findings raise altogether the question of the validity of the information available on the internet and in research papers regarding the legal status of ICOs in several countries of the world and render the definition of relevant country-related control variables most difficult, as well as the interpretation of their effects.

Frame 3: Impact of time on the ICO regulations

- "*Institutions*": The World Governance Indicator (WGI) covers a comprehensive set of institutional dimensions (i.e., control of corruption, rule of law, government effectiveness, regulatory quality, political stability, and voice and accountability), and was accessed at http://info.worldbank.org/governance/wgi/Home/ (Fisch, C., & Momtaz, P. P. (2020)). These indicators, available, have been updated yearly from 1996 until 2020 and cover 200 countries, including those of our cohort with the exception of Gibraltar (which accounts for 26 ICO but is in fact UK territory with specific prerogatives, and for this variable is assimilated with their mainland), the Isle of Man (1 ICO) and the British Virgin Islands (19 ICO). For each ICO, we calculated the mean of all 6 WGI indicators for the country **in the year of each ICO start date** and allocated it to the variable (Var: Institutions);
- "*Tax_Heaven*": For the definition of the tax-heaven status, we used the list of 52 tax havens composed by Hines, J. R. (2010). Despite a change in its regulations since 2010 (https://www.cnbc.com/2017/01/02/swiss-banking-secrecy-nears-end-following-new-tax-rules.html), we considered the Tax_Haven status of Switzerland had NOT changed after January 1, 2017, despite the introduction of an automatic collection and sharing of financial information on Swiss bank accounts held by citizens of certain countries an opinion that is not shared by Swiss authorities but well around the world, including by the US administration (https://www.swissinfo.ch/eng/-the-definition-of-a-tax-haven-is-changing-/47190224);
- "*IMD_Tech*": The IMD World Competitiveness Center indexes are based on technological knowledge, preparedness for developing new technologies, and the capability to create and advance innovations, as assessed and computed by the independent Swiss IMD World Competitiveness Center (data: IMD World Competitiveness Center. (2021)). These data are available since 2017. Countries were classified as belonging to the top 20 countries (**Table A**) of this ranking or not **at the time of the specific ICO start** in order to fill the variable field. Given its relationship to the UK, Gibraltar was considered part of this country for this variable, and the score of 2017 was used for the few ICOs launched in 2016 in our dataset.

IMD Ranking	2017	2018	2019	2020
1	Singapore	USA	USA	USA
2	Sweden	Singapore	Singapore	Singapore
3	USA	Sweden	Sweden	Denmark
4	Finland	Denmark	Denmark	Sweden
5	Denmark	Switzerland	Switzerland	Hong Kong
6	Netherlands	Norway	Netherlands	Switzerland
7	Hong Kong	Finland	Finland	Netherlands
8	Switzerland	Canada	Hong Kong	South Korea
9	Canada	Netherlands	Norway	Norway
10	Norway	UK	South Korea	Finland
11	UK	Hong Kong	Canada	Taiwan
12	Taiwan	Israel	UAE	Canada
13	Israel	Australia	Taiwan	UK
14	New Zealand	South Korea	Australia	UAE
15	Australia	Austria	UK	Australia
16	Austria	Taiwan	Israel	China
17	Germany	UAE	Germany	Austria
18	UAE	Germany	New Zealand	Germany
19	South Korea	New Zealand	Ireland	Israel
20	Luxembourg	Ireland	Austria	Ireland

Table A: Top 20 countries ranked by IMD technology score (per year).

3. Availability:

Our final database is digitally available upon request via the author of this manuscript.

F. Results

1. Statistical methods

All statistics were performed with the above-mentioned curated database, using a statistical significance threshold of P<0.05 (two-tailed) for their interpretation. Calculations were conducted with the SPSS Statistics v27 software (IBM®) for macOS.

2. Descriptive statistics

Tables 1 and 2 summarize the descriptive statistics of the 21 independent variables that we have retained to help predict the outcome of the ICO of our dataset: 5 that relate specifically to the CEO, and 16 control variables retained from our literature review.
Data were available for most variables in a minimum of 85,9% of the ICOs of our database, with the exception of country restrictions, which could not be retrieved in 544 cases.
A few salient facts emerge from these descriptive statistics:

1. The majority of CEOs in our sample are male, with only 4.35% of female CEOs in our sample. This is a bit less than the women that have a CEO position in S&P 500 companies between 2016 and 2020 (5,88%)[*;]
2. Overall, only 179/870 (20,57%) CEOs of ICOs had an experience in the Blockchain industry and 281/869 (32,33%) had an experience in a Finance Company before launching their ICOs.
3. Offering a Bonus was most uncommon in our set of ICO, with only 10/1014 ICOs (<1%) proposing such a program. This is significantly less than the percentage of bonus programs in the complete TORD-v3 database: 423/5978, or 7.1% of ICOs in the complete database indeed offered a bonus (*P*<0.0001, Chi-square test). *Given that almost none of our ICOs offered a bonus program, we discard this variable from consideration in our models*.
4. Proposing a bounty program was common: 339/1014, or 33,4%, in our dataset. This is significantly more than in the complete TORD_v3 database (26.6%, *P*<0.0001, Chi-square test);
5. Two-thirds (68.9 %) of our ICOs made their code publicly available on Github. This is significantly more than in the complete TORD_v3 database (50.8%, *P*<0.0001, Chi-square test);
6. 51.3% of the ICOs in our sample employ a Know Your Customer policy. This is significantly more than in the complete TORD_v3 database (40.7%, *P*<0.0001, Chi-square test);
7. For most of the ICOs that we have data on set countries' restrictions for their token sales, only 40 out of 476 did not mention any country restriction. The large majority of the ICOs seem to mention country restrictions, most of which are aimed at main economies (USA & China) and a few at Rogue or other countries (e.g., Singapore being singled out). This is significantly more than in the complete TORD_v3 database (5.9%, *P*<0.05, Chi-square test). *Given that we could not retrieve this data for more than one-half of the ICOs of our dataset (53.6%), even after a manual screening of the whitepapers and ICO websites, we discard this variable from consideration in our models*.
8. The average team size (*TeamSize*) of an ICO was 13,41±7.8 people, and ranged from 1 person (the CEO…) to 66 people;
9. 60% of our ICOs are based in a country that is not considered to be a tax haven.
10. The average price of a token during an ICO in our sample was 17.37USD, but the median token cost less than 0.117USD (range: 0.000009USD-3000USD).

1. [*] (data retrieved the 3rd August 2022 for years 2016 and 2020) (https://www.catalyst.org/research/women-ceos-of-the-sp-5https://quantic.edu/blog/2021/12/06/how-many-fortune-500-ceos-are-women/)

11.	Control Variables	N		Mean	Median	Std. Deviation	Minimum	Maximum	Percentiles		
		Valid	Missing						25	50	75
CEO's specific	Number_companies	871	143 (14.2%)	4.30	3.00	3.607	0	31	2.00	3.00	6.00
ICO's specific	EtherPrice	1012	2	484.259	437.522	292.054	7.8750	1321.15	250.205	437.522	652.34
	Price_USD	1004	10 (1%)	17.364	.1177	149.806	.000009	3000	.042525	.1177	.6274
	HardCap_Value	877	137 (13.5%)	38.387	20	88.847	.05	1500	10	20	35
	TeamSize	1014	0	13.41	12.00	7.881	1	66	8.00	12.00	17.00
Country's specific	Institutions	990	24 (2.4%)	1.059	1.25	.7048	-1.18	1.81	.84	1.25	1.5950

Table 1: *Summary Statistics of numerical Control Variables. It is divided in three categories: "Ceo's specific variable", ICO's specific variables" and Country's specific variable". Definition of the variable are provided in section "D. Control Variables".*

		N						
	Control Variables	Valid	Missing	0	1	2	3	4
CEO's Specific	Male_Female (Male=0, Female = 1)	987	27 (2.6%)	941	46			
	Experience_Blockchain_industry (No=0, Yes=1)	870	144 (14.2%)	691	179			
	Experience_financial_institution (No=0, Yes=1)	869	145 (14.3%)	587	282			
	Diploma_Level (None=0, Bac=1, Master=2, MBA=3, Ph.D.=4)	834	180 (17.8%)	138	355	242	63	36
ICO's specific	Bonus (No=0, Yes=1)	1014	0	1004	10			
	Bounty (No=0, Yes=1)	1014	0	675	339			
	Code_Available (No=0, Yes=1)	1008	6 (0.5%)	313	695			
	KYC_YN (No=0, Yes=1)	1014	0	494	520			
	MultipleCryptos (One=0, Multiple=1)	945	69 (6.8%)	215	730			
	Presale_ICO_YN (No=0, Yes=1)	1014	0	448	566			
	SoftCap_YN (No=0, Yes=1)	1014	0	399	615			
	HardCap_YN (No=0, Yes=1)	1014	0	137	877			
	Ether_Fluctuation (Down=0, Stable=1, Up=2)	1012	2	551	363	98		
Country's specific	IMD_Tech (No=0, Yes=1)	1009	5	433	576			
	Regulations (Ban=0, Reg=1, Unreg=2)	1014	0	26	569	414		
	Country_Restrictions (None=0, Main=1, Rogue=2, Other=3)	470	544 (53.6%)	40	408	24	4	
	TaxHaven (No=0, Yes=1)	1009	5 (0.5%)	606	403			

Table 2: *Summary Statistics of categorical Control Variables. It is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables". Definition of the variable are provided in section "D. Control Variables".*

In terms of outcomes (**Tables 3 and 4**), ICOs in our dataset raised 3.993 million USD on average, with a median of 5 million USD, as compared to 8.361 and 3.068 million USD respectively for the entire TORD_V3d dataset (P<0.0001, Mann-Whitney U-test). The token of 453/1014 (44.67%) of these ventures became subsequently listed on the secondary market. This is a significantly higher success rate than in the general TORD_v3 database where only 1145/5978 (19.1%) ICO tokens became listed (P<0.0001, Chi-square test).

Dependent Variables	N			
	Valid	Missing	0	1
Listed_YN (No=0, Yes=1)	1014	0	561	453

Table 3: *Dependent (outcome) variable Listed_YN. Did the ICO's tokens haven been listed on a crypto exchange? Yes = "1", No = "0".*

Dependent Variables	N		Mean	Median	Std. Deviation	Minimum	Maximum	Percentiles		
	Valid	Missing						25	50	75
Log_Money_Raised	1014	0	6.6013	6.6990	.74979	2.88	9.23	6.1761	6.6990	7.1761

Table 4: *Dependent (outcome) variable Log_Money_Raised. Log10 of the money raised during the ICO period in USD.*

Altogether, these descriptive data reveal that relatively transparent ICOs (we selected notably our ICOs based on the fact that they had published a whitepaper) are associates with an above-average:

- the practice of KYC policies,
- publication of the smart contract codes,
- use of a bounty program (which rewards feedback and participation in the project by people outside of the entrepreneurs' team),

and a below-average use of bonus programs with respect to the complete set of ICOs that took place in our study period.

Our selective subset of ICOs is also characterized by a higher than usual success rate in terms of token listing, but not in terms of median value raised.

3. The Parallax hypothesis

Following this hypothesis, the goals, and incentives of the ICO's investors and entrepreneurs differ. As a result, the ICO parameters of ICOs that help predict these interests could vary according to their respective points of view.

3.1. Parallax Hypothesis: The Investors' Point of View

As noted earlier, investors tend to present a 'lottery ticket' buying behavior when investing in ICOs and sell a substantial fraction of their tokens shortly following the ICO (Fahlenbrach, R., & Frattaroli, M. (2019)). They seem to capitalize on the hopes of high first-day mean returns[*], or possibly fear the fact that more than 40% of all ICOs result in negative first-day returns that destroy investor value, or the risk of later delisting (4-46% pending on the sample selection) (Momtaz, P. P. (2020), Fahlenbrach, R., & Frattaroli, M. (2019)).

In short, the listing of the ICO token is the only exit strategy for the investor to recover his/her investment and to make any profit and thus his/her primary goal (unless he/she really intends to use the product of the company at a much later stage).

We have chosen the simple **categorical dependent (outcome) variable Var:** "*Listed_YN"* to define the principal investors' relevant outcome[*].

[*] first-day returns however in fact range from 6.8% to 8.2% (and with a median of around 3% only (Momtaz, P. P. (2020))

[*] NB: information on potential determinants of post ICO performance can also be relevant in determining some investors' choice. **We however choose not to address the post market performance** for the following reasons:

1. a listing of the token is a condition sine qua non for any post-market performance;
2. much research has already focused on secondary market performance, (Shrestha, P., et al. (2021), Howell, S. T., et al. (2019)) and shown that much of this performance could be explained by token volatility;
3. post-launch results, and especially the first day return, also suffer from extrinsic influences that cannot (or barely so) be grasped at the time of offering, i.e., at the time on the investor's decision making (Momtaz, P. P. (2020), Momtaz, P. P. (2019)):

3.1.1. Multivariable Model (analyses) for the dependent variable Listed_YN (model 1a):

We build here a multivariable binary logistic regression model to analyze the most important factors that can predict this categorical measure of ICO success:

$$Listed\_YN_i = \alpha + \beta \cdot CEO\ Characteristic_i + \rho \cdot Controls_i + \varepsilon, \quad (1)$$

where the dependent variable is Listed_YN, taking the value of "1" if the ICO_i is listed on a crypto exchange and "0" otherwise. The key explanatory variables are CEO Characteristics which are either *Male_Female, Experience_Blockchain_Industry, Experience_Financial_Institution, Number_companies & Diploma_Level.* The *Controls* include the variables that are ICO's Specific: *Bounty, Code_Availbale, KYC_YN, MultipleCryptos, Presale_ICO_YN, SoftCap_YN, EtherPrice, Ether_Fluctuation, Price_USD & TeamSize,* and the variables that are Country's specific: *IMD_Tech, Regulations, TaxHaven & Institutions.* The table reports the regression coefficient (B), the standard error, and the p-value of each variable. Where ε are robust standard errors.

As shown in **Table 3**, eight variables mainly determine the token listing outcome of individual ICOs. These variables represent ICO and environmental characteristics to which investors might wish to pay particular intention to, before investing in an ICO in order to optimize their chances for an exit strategy:

1. The educational level of the CEO of the venture (ordinal variable "*Diploma_Level"*), as defined by his/her highest university diploma (or lack thereof): in short, the higher the level of education, the better the chances of listing, as a matter of fact, the coefficient is positive. Fisch, C., & Momtaz, P. P. (2020) indeed observed that a higher educational background of ICO teams correlated with an increased likelihood of endorsement of the venture by institutional investors
2. The larger the entrepreneurial team is (*TeamSize*), the more chances the investors will find the token listed on a crypto exchange (99% confidence level). This is in line with Amsden, R., & Schweizer, D. (2018).
3. ICOs that propose a bounty program in which ICO investors receive rewards (free tokens, discounts) for promoting the ICO (bounty) or providing feedback to the ICO have significantly fewer chances of becoming listed;
4. Tokens of ICOs that have a Know Your Customer policy (*KYC_YN*) have likewise less chance of being listed;
5. ICOs that propose a presale (*Presale_ICO_YN*) to early investors before actually launching the ICO also appear to fail more often. Fisch, C., & Momtaz, P. P. (2020) found that institutional investors refrained from ICOs that offer a presale program, and Davydiuk, T. et al. (2018) likewise observed an inverse correlation between presale programs and ICO token listing;
6. ICOs that mention a Soft Cap (*SoftCap_YN*) in their whitepapers are less likely to succeed, at a 99% confidence level;
7. There is a positive correlation between the price of the Ether on the market (in USD, on the starting day of the given ICO -*EtherPrice*) and the chances of success of the ICO, at a 99% confidence level. Several factors could underlie this observation, such as the fact that

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a. Information asymmetry influence: token issuers have an incentive to set the opening price below the expected equilibrium price in order to generate market liquidity as a knock-on effect for platform growth (de Jong, A., et al. (2018), Hsieh, H. C., & Oppermann, J. (2021));
b. The 'hotness' of the market, or market sentiment when tokens start trading (Chitsazan, H., et al. (2022)). Research by Fahlenbrach and Frattaroli (2019) has further shown that this is also the case later in the life of the altcoin tokens, as returns 9 months after the ICO – which in their sample were positive on average- were driven mostly by an increase in the value of the Ethereum cryptocurrency.

We finally trust that, in order to fairly represent the investor's interests, one needs to assess the potential performance of all tentative ICO's, and not only to focus on those ICO's that have succeeded in being listed on an exchange platform.

the price of major cryptocurrencies could reflect the market sentiment (Shrestha, P. et al. (2021)) or that the increased (perceived) wealth of the investors when their Ether reserves gain value, simply could incite them to invest more in the ICOs available at that time.

8. In addition, the ICOs that accept payments in multiple cryptos appear to be more successful (at a 90% confidence level, but with a decent coefficient B=0.324 in our model).

This model, despite providing hints on the factors that influence the listing of tokens after an ICO, remains only an approximation of the truth: indeed, its 'goodness of fit', as measured by McFadden's R^2 metric, is 0.09, and when applied to our dataset, its overall predictive value is 67% (**Table 6**).

	Listed_YN	Coefficient		P-Value
		B	S.E.	Sig.
CEO's Specific	Male_Female	.371	.406	.361
	Experience_Blockchain_industry	.234	.204	.252
	Experience_financial_institution	-.089	.176	.614
	Number_companies	.013	.024	.576
	Diploma_Level	.173	.081	.033**
ICO's specific	Bounty	-.496	.182	.006***
	Code_Available	.224	.179	.212
	KYC_YN	-.375	.177	.034**
	MultipleCryptos	.324	.194	.095*
	Presale_ICO_YN	-.416	.167	.013**
	SoftCap_YN	-.679	.172	.000***
	EtherPrice	.001	.000	.002***
	Ether_Fluctuation	.083	.090	.352
	Price_USD	-.001	.000	.246
	TeamSize	.027	.010	.009***
Country's specific	IMD_Tech	-.008	.223	.971
	Regulations	-.098	.193	.612
	TaxHaven	.166	.174	.339
	Institutions	.215	.181	.234
	Constant	-1.233	.516	.017**

Table 5: *Multivariable Binary Logistic Regression Analysis for variable Listed_YN, model 1a. This table is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables" - all of these variables are included in the model. Definition of the variable are provided in section "D. Control Variables". McFadden R^2 = 0.09 (n=756; *, ** and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively)*

Classification Table	**Listed_YN**	Predicted		Percentage
		Not Listed	Listed	Correct
Observed	Not Listed	331	93	78.1%
	Listed	153	168	52.3%
	Overall Percentage			67.0%

Table 6: *Observed and predicted outcomes of model 1a*

3.2. Recursive Partitioning Analysis (RPA model 1)

We also elected to create a Recursive Partitioning Analysis model to provide the investors with an 'easy to use', more intuitive tool to assess the chances of individual ICOs before investing in them. The RPA model is built through SPSS and uses the CHAID (Chi-Square Automatic Interaction Detection), it is a technique intended to detect the interaction(s) between variables. This automated tree classification model (**Figure 2**) retains 5 of the previously described variables to this end:

1. the mention of a Soft Cap;
2. possibilities of buying the ICO's tokens with multiple cryptocurrencies
3. the existence of a Presale
4. the existence of a KYC;
5. the value of the Ether (in USD), split by the recursive partitioning analysis into three groups.

Although the evolution of the price of Ether since the end of our observation period possibly renders part of this tree somewhat obsolete, we trust that investors can still usefully apprehend the chances of success of an ICO based on it and provides a window on the fact that variables may interact between each other, with an overall predictive value on our dataset of 70.3% (**Table 7**). For instance, according to this model, otherwise equivalent ICOs without any soft cap definition have a 98.5% chance of failure when they accept only one crypto valuta as payment but have 77.8 % of success when they accept multiple cryptos and do not perform a presale.

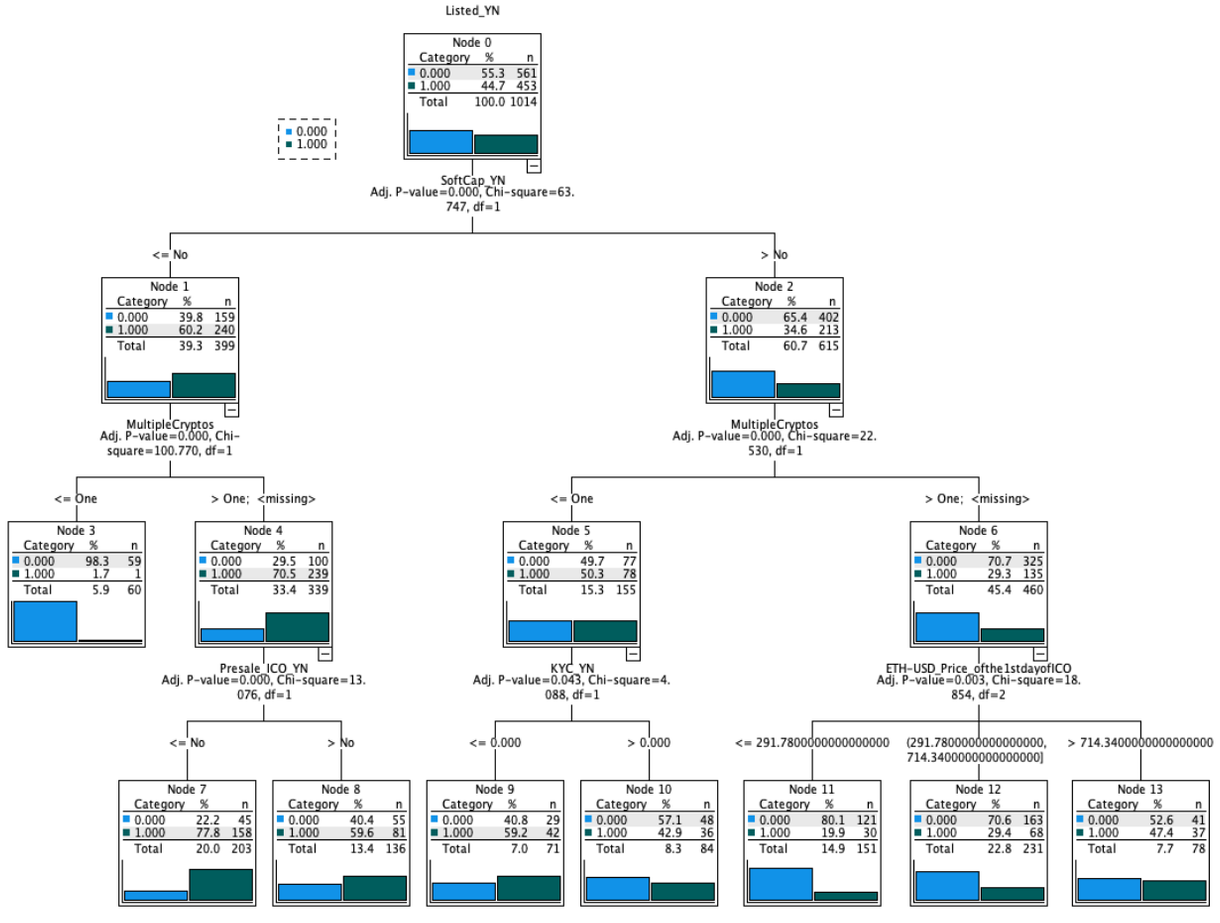

Figure 2: *RPA model 1a: prediction tree of the likelihood of token listing for individual ICOs.*

Disclaimer: *This tree applies to ICOs that provide a link to the LinkedIn page of the ICO and publish a whitepaper (cf. the selection criteria of our dataset) and, therefore, it is not a magic wand…*

Classification Table	Listed_YN	Predicted		Percentage
		Not Listed	Listed	Correct
Observed	Not Listed	432	129	77%
	Listed	172	281	62%
	Overall Percentage	59.6%	40.4%	70.3%

Table 7: *Observed and predicted outcomes of RPA model 1a*

3.3. The risk of scam

Initial Coin Offerings have been increasingly used as a source of funding for ventures between 2013 and 2018. However, the paucity of regulations, the use of anonymous cryptocurrency payment methods, the enthusiasm elicited by early – and highly publicized- ICO successes in the public, and the information asymmetry/moral hazard that prevails in the ICO market have also been fertile ground for scam schemes masquerading as ICOs.

We observed, incidentally, that even in our highly selected dataset of ICOs, many of the ventures that had reached their preset Soft Cap or even their Hard Cap value through fundraising, did not end up listing their tokens after the ICO. Even if ethically valid reasons could and would account for these discrepancies, in the eyes of the investors, such failures of listing are absolute breaches of contract that result in a total loss of their investments. In their eyes thus, these ICOs are fraudulent.

We have thus defined the categorical outcome variable (**Var: *Scam_YN***), that

- is positive (Yes) when the corresponding ICO has reached either its soft cap and/or its hard cap but its token has not been listed;
- is negative (No) when:
    - either the token has been listed,
    - or the soft cap has not been reached and the token has not been listed;
- is unknown (NA) in all other ICOs.

This allows us to study a subgroup of 876 ICOs, of which 234 (26.7%) are potential scams, *according to this definition*.

Table 8 summarizes the parameters of a binary logistic regression model fitted to the data of this subgroup of ICOs. As seen in the table, 4 explanatory variables mostly contribute to this model.

	Scam_YN	N		P-Value
		B	S.E.	Sig.
CEO's Specific	Male_Female	.440	.463	.341
	Experience_Blockchain_industry	-.224	.274	.415
	Experience_financial_institution	.379	.217	.081*
	Number_companies	.012	.029	.676
	Diploma_Level	-.158	.107	.141
ICO's specific	Bounty	.064	.214	.767
	Code_Available	-.010	.229	.965
	KYC_YN	.557	.231	.016**
	MultipleCryptos	-.949	.230	.000***
	Presale_ICO_YN	.267	.213	.211
	SoftCap_YN	2.305	.444	.000***
	EtherPrice	-.001	.000	.025**
	Ether_Fluctuation	-.141	.116	.226
	Price_USD	.001	.001	.370

	TeamSize	.000	.013	.971
Country's specific	IMD_Tech	-.212	.277	.444
	Regulations	.048	.257	.850
	TaxHaven	-.068	.213	.748
	Institutions	-.056	.229	.808
	Constant	-1.249	.775	.107

Table 8: *Multivariable Binary Logistic Regression Analysis for Scam_YN. This table is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables" - all of these variables are included in the model. Definition of the variable are provided in section "D. Control Variables". McFadden R^2 = 0.17 (n=645; *, ** and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

To help interpret this model, but also to grasp a hint of the interactions between the different variables, we built an RPA model (RPA model 2) for this outcome variable as well. This model is provided in **Figure 3** and shows some discriminatory power (for instance, ICOs that do not provide their soft cap) seems extremely unlikely to result in a scam (3.1%). The overall predictive value of this RPA model is 74.1% (**Table 9**).

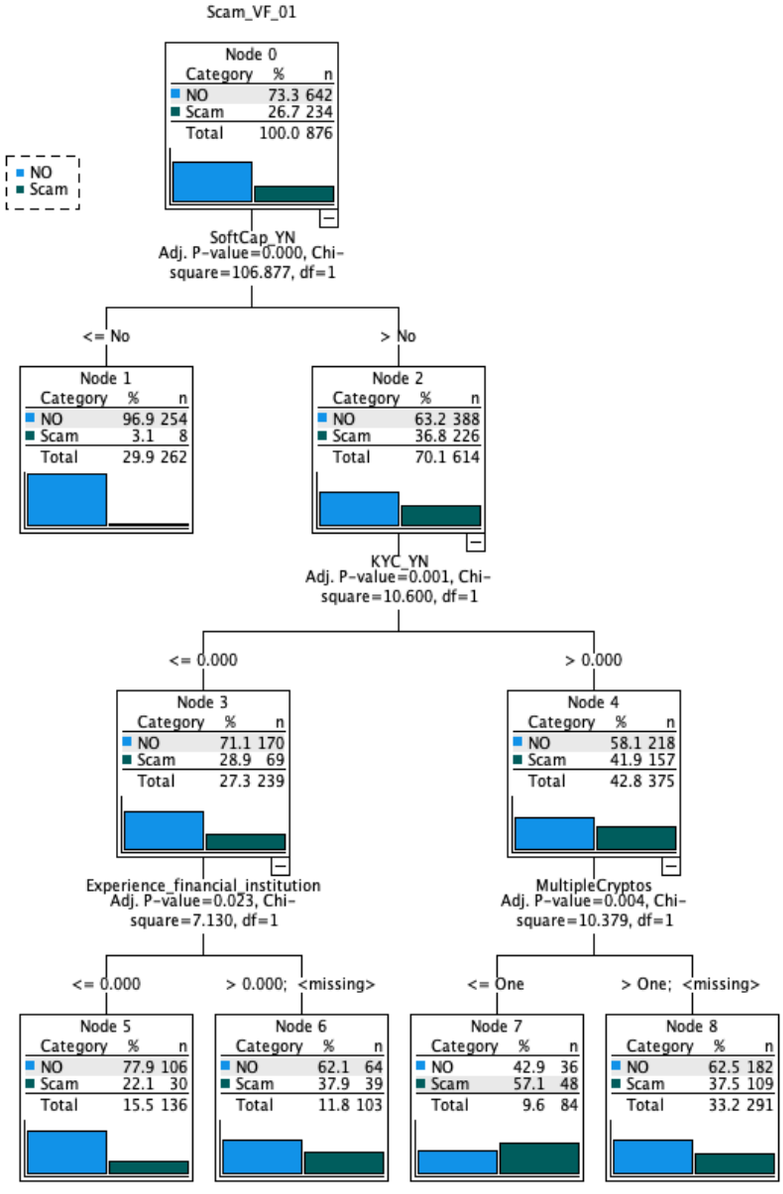

Figure 3: RPA model 2: prediction tree of the likelihood of scams for individual ICOs.

Classification Table	Listed_YN	Predicted		Percentage
		Not Listed	Listed	Correct
Observed	Not Listed	437	30	93.6%
	Listed	137	41	23.0%
	Overall Percentage			74.1%

Table 9: *Observed and predicted outcomes of RPA model 2*

Altogether, these two models clearly show that, perhaps contra-intuitively, more KYC policies, increased transparency on the soft cap and the residual of multiple cryptocurrencies do not safeguard against scams.

3.4. Parallax Hypothesis: The Entrepreneurs' Point of View

3.4.1. Money Raised as a determinant of ICO outcome: *Model 1b*

As mentioned above, entrepreneurs and investors differ in their absolute goals and potential incentives. Moreover, our findings of "scams" e.i. ICOs that have raised money to the level of their caps do not list their tokens confirms a degree of "uncoupling" between the outcomes *Listed_YN* and Log_Money_Raised.

Abundant research has analyzed ICO success in terms of the absolute amount of money they managed to raise (Momtaz, P. P. (2019), Thewissen, J. et al. (2022), Fahlenbrach, R., & Frattaroli, M. (2019), An, J. et al. (2019),…). In line with this literature, we develop a multivariable linear regression model that explores the influence of our CEO, environment, and ICO-related independent variables on this outcome. As done by some scholars before us (for e.g. An, J. et al. (2019)),we use a logarithmic transformation of the raised money (in USD) to represent this value: the dependent variable ***Log_Money_Raised*** thus recapitulates the Log10 transform of the actual amount (in USD) raised by the different ICOs in order to reduce the dispersion/range of this dependent variable (**Table 4**).

Model 1b stems from the multivariable linear analysis of the effect of our CEO-related and control independent variables on this outcome.

$$Log\ Money\ Raised_i = \alpha + \beta \cdot CEO\ Characteristic_i + \rho \cdot Controls_i + \varepsilon, \qquad (1)$$

where the dependent variable is Log_Money_Raised, measured as the common logarithm of the total amount of capital raised during the ICO_i. The key explanatory variables are CEO Characteristics which are either *Male_Female, Experience_Blockchain_Industry, Experience_Financial_Institution, Number_companies & Diploma_Level.* The *Controls* include the variables that are ICO's Specific: *Bounty, Code_Availbale, KYC_YN, MultipleCryptos, Presale_ICO_YN, SoftCap_YN, EtherPrice, Ether_Fluctuation, Price_USD & Teamsize,* and the variables that are Country's specific: *IMD_Tech, Regulations, TaxHaven & Institutions.* The table reports the regression coefficient (B), the standard error, and the p-value of each variable. Where ε are robust standard errors. **Table 10** recapitulates our findings.

	Log_Money_Raised	N		P-Value
		B	S.E.	Sig.
CEO's Specific	Male_Female	.115	.132	.386
	Experience_Blockchain_industry	.104	.066	.114
	Experience_financial_institution	.139	.056	.014**
	Number_companies	.004	.008	.619
	Diploma_Level	.050	.026	.055*
ICO's specific	Bounty	-.153	.058	.008***

	Code_Available	.044	.057	.435
	KYC_YN	.050	.057	.382
	MultipleCryptos	-.081	.062	.188
	Presale_ICO_YN	-.073	.054	.173
	SoftCap_YN	-.103	.056	.069*
	EtherPrice	.000	.000	.000***
	Ether_Fluctuation	.032	.029	.272
	Price_USD	.000	.000	.385
	TeamSize	.015	.003	.000***
Country's specific	IMD_Tech	.088	.071	.216
	Regulations	-.044	.062	.483
	TaxHaven	.051	.055	.354
	Institutions	.080	.057	.163
	Constant	6.223	.165	.000***

Table 10: *Model 1b: multivariable linear regression analysis of Log_Money_raised. This table is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables" - all of these variables are included in the model. Definition of the variable are provided in section "D. Control Variables". R^2 = .128 (n=756 *, ** and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

According to this Model 1b, 5 variables help explain/predict the amount of money that will be raised by individual ICOs. As a reminder, the median money raised in our sample is around $5M per ICO. Four of these variables are similar to those found to influence the Listing_YN outcome multivariable models and similarly alter the outcome for this dependent variable. These are namely:

- The detention and the nature of a university diploma by the CEO (the higher education, the better the outcome);
- The existence of a Bounty program (negative impact);
- The price of the Ether token on the first day of the ICO ;
- The team size of the ICO's venture (positive impact);

We also find that 1 variable helps explain the amount of money raised by an ICO but did not significantly help predict its token listing success:

- A prior experience of the CEO in the financial market, possibly via his/her increased knowledge of funding market mechanisms, but also possibly due to a certain amount of elicited trust in the investors.

On the other hand, and very interestingly, SoftCap_YN, PreSale_YN, and KYC_YN do not seem to influence the amount of money raised by ICOs, while they did help predict very significantly the listing of their tokens.

Altogether, however, the quality of this model remains low: R^2=0.128.

3.5. Parallax Hypothesis: The Effect of Ambition

Models 1a and 1b help predict the *overall* likelihood of token listing and the *absolute* amount of money likely to be raised by an ICO. However, the dataset on which they are based contains ICOs of very different financial *ambitions* and the resulting models may not always be relevant to the individual entrepreneur. This 'differential ambition flaw', can be reduced by correcting the model for the absolute value of the hard cap in the control variables list (Momtaz, P. P. (2019)).
This results in a further reduction of our dataset to a set of 662 ICOs for which all data are known.

Models 1c and 1d represent respectively the effects of this additional control variable on models 1a and 1b and are provided in **Tables 11 and 12**.

The introduction of this additional control variable slightly decreases the value of the diploma in this prediction (but the sample size is also smaller) and hints at some explanatory value for the availability of the code on Github as compared to Model 1a. Altogether, however, this **does not improve the fitting of our model** for *Token_Listed* (McFadden R^2 0.085, overall predictive value of 66.8%).
In addition, and to be complete, the branching of RPA model 1 is not affected at all by introducing this extra control variable.

When considering the money raised, however, rather than the chance of listing, the additional variable plays a very significant role (P<0.001) in predicting the outcome variable Log_Money_Raised. An additional CEO determinant plays a relevant role in this new model: besides the diploma level and a previous experience in financial institutions, an experience in the blockchain industry now also tends to explain the outcome as well (P<0.1). The acceptance of multiple cryptos (P<0.05) and Ether fluctuations (P<0.1) now appear, while the definition of a soft cap does not affect the outcome significantly anymore. Altogether, **the fitting of this model is improved**, albeit it remains low (R^2=0.239).

	Listed_YN	N		P-Value
		B	S.E.	Sig.
CEO's Specific	Male_Female	.389	.416	.350
	Experience_Blockchain_industry	.318	.216	.142
	Experience_financial_institution	-.080	.190	.673
	Number_companies	.018	.025	.481
	Diploma_Level	.170	.090	.058*
ICO's specific	Bounty	-.451	.190	.017**
	Code_Available	.387	.197	.050**
	KYC_YN	-.291	.189	.124
	MultipleCryptos	.059	.202	.770
	Presale_ICO_YN	-.435	.179	.015**
	SoftCap_YN	-.611	.189	.001***
	EtherPrice	.001	.000	.002***
	Ether_Fluctuation	.169	.095	.076*
	Price_USD	-.001	.000	.278
	TeamSize	.025	.011	.022**
Country's specific	IMD_Tech	.101	.238	.673
	Regulations	-.044	.210	.834
	TaxHaven	.202	.185	.273
	Institutions	.089	.192	.643
	Log_HardCap	-.069	.162	.672
	Constant	-.983	.577	.089*

Table 11: *Model 1c: Multivariable Binary Logistic Regression Analysis for Listed_YN. This table is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables" - all of these variables are included in the model. Definition of the variable are provided in section "D. Control Variables". Taking "Log_HardCap" as a new control variable. McFadden R^2 = 0.085 (n=662; *, ** and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

	Log_Money_Raised	B	S.E.	P-Value Sig.
CEO's Specific	Male_Female	.043	.127	.737
	Experience_Blockchain_industry	.128	.066	.053*
	Experience_financial_institution	.105	.057	.065*
	Number_companies	2.329E-5	.008	.998
	Diploma_Level	.057	.027	.036**
ICO's specific	Bounty	-.144	.056	.010***
	Code_Available	.071	.058	.225
	KYC_YN	.077	.057	.177
	MultipleCryptos	-.130	.061	.034**
	Presale_ICO_YN	-.071	.054	.185
	SoftCap_YN	-.081	.058	.163
	EtherPrice	.000	.000	.008***
	Ether_Fluctuation	.048	.029	.092*
	Price_USD	.000	.000	.427
	TeamSize	.014	.003	.000***
Country's specific	IMD_Tech	.094	.071	.184
	Regulations	-.073	.063	.249
	TaxHaven	.055	.055	.322
	Institutions	.066	.057	.247
	Log_HardCap	.437	.048	.000***
	Constant	5.844	.174	.000***

Table 12: *Model 1d: multivariable linear regression analysis of Log_Money_Raised. This table is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables" - all of these variables are included in the model. Definition of the variable are provided in section "D. Control Variables". Taking "Log_HardCap" as a new control variable.* $R^2 = 0.239$ *(n=662 *, ** and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

3.6. Parallax Hypothesis: conclusion

Investors' and entrepreneurs' incentives both want to perceive a return on their investment. In the eyes of the investors, this depends on the condition *sine qua non*, albeit not sufficient that the tokens they invested in become listed on the secondary market (an outcome represented by the variable Listed_YN), while entrepreneurs wish to raise enough money through their ICOs (as measured in the outcome variable Log_Money_Raised) to at least cover their initial expenses and, ideally, to develop their business. **Our results tend to confirm our Parallax Hypothesis** that different sets of variables best help explain these two outcome variables, and **confirm our General Hypothesis**, that CEO characteristics help explain the success of ICOs, as well. The most salient relevant ICO characteristics, inferred from the most relevant model for each dependent variable, Models 1a, and 1d are summarized in **Table 13**.

	Investors: Model 1a- Listed_YN	Entrepreneurs- Model 1d- Log_Money_Raised
Experience in de Blockchain		*
Experience in Finance		*
Diploma Level of the CEO	**	**
Bounty	***	***
KYC	**	
Multiple Cryptos	*	***
Presale	**	
SoftCap	***	
Ether Price	***	***
Ether Fluctuations		*
Team Size	***	***
Value of the Hard Cap		***

Table 13: *Comparison Table: Models 1a, with the dependent variable "Listed_YN" and 1d, with the dependent variable "Log_Money_Raised" (*, ** and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

4. The Remodeling hypothesis, or the influence of time on ICOs determinants

The global health of the economy and investment opportunities evolve as time passes by. Factors such as the fear of scams increased regulations, and enforcement thereof in certain legislations, have also occurred repeatedly since the launch of the first ICO in 2013, and impacted the crypto sphere. As a result, time (as measured from the time elapsed from the first ICO ever or the first of the considered cohort) has been suggested to influence by itself the outcomes of individual ICOs (Thewissen, J. et al. (2022)).

4.1. The case of the Ethereum price

We found that the price of the Ether was associated significantly in our cohort with the token listing success. It is also a fact that the Ether price has fluctuated significantly in the period during which our sample of ICOs took place, as confirmed in **Figure 4**:

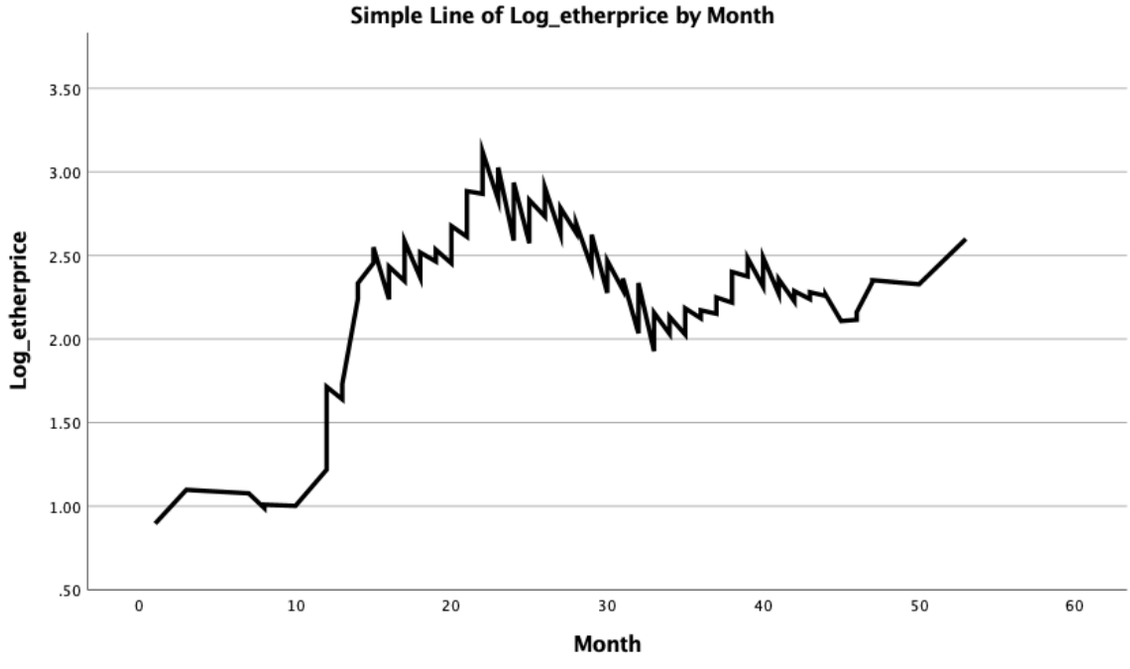

Figure 4: *Evolution of Ethereum Price (Log) in USD during the period of our dataset (from April 2016 to August 2020).*

We have thus wondered how these two variables interact with each other, and if the perceived effect of each of them was independent or could be explained (at least in part) by the influence of the other on the measured outcome (dependent variable).

The following three variables will be introduced in our best models (1a and 1d) to provide an insight into the influence of these independent variables on each other with respect to their action on the dependent variable *Listed_YN* and Log_Money_Raised:

5. The independent variable ***Month*** (time, in months, starting from the first ICO of our cohort);
6. The independent variable **Z_*EtherPrice***, i.e., the Z-score centered transform of the variable *EtherPrice* (in USD), will replace *EtherPrice* in both models in order to allow the study of a multiplicative interaction term;
7. The multiplicative interaction term ***MonthxZ_Etherprice***.

4.2. Time effect on the Token listed variable – Model 1e

We would like to examine how time affects the relationship between Z_EtherPrice (Z-Score) and the dependent variable *Listed_YN.* We test the following model by introducing an interaction term in Equation (1) between Z_EtherPrice and the variable of interest *Month:*

$$ListedYN_i = \alpha + \gamma \cdot Month_i \cdot Z\ EtherPrice_i + \mu \cdot Month_I + \beta \cdot Z\ EtherPrice_i + \rho \cdot Controls_i + \varepsilon, \quad (2)$$

Where ε are robust standard errors and where the dependent variable is Listed_YN, taking the value of "1" if the ICO_i is listed on a crypto exchange and "0" otherwise. The key explanatory variables are CEO Characteristics which are either *Male_Female, Experience_Blockchain_Industry, Experience_Financial_Institution, Number_companies & Diploma_Level.* The *Controls* include the variables that are ICO's Specific: *Bounty, Code_Availbale, KYC_YN, MultipleCryptos, Presale_ICO_YN, SoftCap_YN, EtherPrice, Ether_Fluctuation, Price_USD & Teamsize,* and the variables that are Country's specific: *IMD_Tech, Regulations, TaxHaven & Institutions.* The table reports the regression coefficient (B), the standard error, and the p-value of each variable. *Month* takes a value between 1 and 53, the first month was April 2016 and the last month was August 2020.

Introducing these variables (*Month & Z_EtherPrice*) in Model 1a yields Model 1e (**Table 14**). In this new model, both the introduced time variable *Month* and the interaction factor *MonthxZ_EtherPrice* appear to contribute significantly to the model, while all other previously significant independent variables of Model 1a maintain their significance, **with the notable exception of *KYC_YN***. No additional determinant appears between models 1a and 1e.
The McFadden R2 of Model 1e is 0.119, still poor but slightly better than that of Model 1a, and with a predictive value in our dataset is 67% of correct classifications, similar to that of Model 1a.
Model 1e is thus globally better per se than Model 1a to predict the outcome Listed_YN and shows that time is a determinant of this outcome and influences (likely among others) the effect of the Ether price on this outcome.

	Listed_YN	B	S.E.	P-Value Sig.
CEO's Specific	Male_Female	.366	.410	.372
	Experience_Blockchain_industry	.212	.205	.301
	Experience_financial_institution	-.108	.177	.542
	Number_companies	.012	.024	.608
	Diploma_Level	.180	.082	.028**

ICO's specific	Bounty	-.429	.186	.021**
	Code_Available	.205	.181	.259
	KYC_YN	-.192	.192	.319
	MultipleCryptos	.376	.196	.054*
	Presale_ICO_YN	-.380	.169	.025**
	SoftCap_YN	-.622	.175	.000***
	Ether_Fluctuation	.001	.098	.993
	Price_USD	-.001	.000	.206
	TeamSize	.028	.010	.008***
Country's specific	IMD_Tech	-.013	.224	.952
	Regulations	.008	.200	.970
	TaxHaven	.181	.175	.301
	Institutions	.181	.182	.320
	Month	1.687	.739	.022**
	Z_EtherPrice	-.099	.037	.007***
	MonthxZ_EtherPrice	-.066	.032	.040**
	Constant	1.193	.912	.191

Table 14: *Model 1e- Multivariable Binary Logistic Regression Analysis for Listed_YN, taking time into account. This table is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables" - all of these variables are included in the model. Definition of the variable are provided in section "D. Control Variables". McFadden R^2= .118 (n=745; *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

4.3. Time effect on the Log_Money_Raised – Model 1f

The variables Month, *Z_EtherPrice,* and *MonthxZ_EtherPrice* were similarly introduced in model 1d, which is the model that best fits our dataset to predict the outcome variable *Log_Money_Raised*.

We examine how time affects the relationship between Z_EtherPrice (Z-Score) and the dependent variable *Log_Raised_Money*. We test the following model by introducing an interaction term in Equation (1) between Z_EtherPrice and the variable of interest *month:*

$$Log\ Money\ Raised_i = \alpha + \gamma \cdot Month_i \cdot Z\ EtherPrice_i + \mu \cdot Month_I + \beta \cdot Z\ EtherPrice_i + \rho \cdot Controls_i + \varepsilon, \quad (2)$$

Where ε are robust standard errors and where the dependent variable is Listed_YN, taking the value of "1" if the ICO_i is listed on a crypto exchange and "0" otherwise. The key explanatory variables are CEO Characteristics which are either *Male_Female, Experience_Blockchain_Industry, Experience_Financial_Institution, Number_companies & Diploma_Level.* The *Controls* include the variables that are ICO's Specific: *Bounty, Code_Availbale, KYC_YN, MultipleCryptos, Presale_ICO_YN, SoftCap_YN, EtherPrice, Ether_Fluctuation, Price_USD, Teamsize & Log_HardCap,* and the variables that are Country's specific: *IMD_Tech, Regulations, TaxHaven & Institutions.* The table reports the regression coefficient (B), the standard error, and the p-value of each variable. *Month* takes a value between 1 and 53, the first month was April 2016 and the last month was August 2020.
The results of the multivariable linear regression of this model are provided in **Table 15**.

	Log_Money_Raised	B	S.E.	P-Value Sig.
CEO's Specific	Male_Female	.039	.125	.756
	Experience_Blockchain_industry	.108	.065	.100*
	Experience_financial_institution	.096	.056	.088*
	Number_companies	.000	.008	.959
	Diploma_Level	.059	.027	.028**
ICO's specific	Bounty	-.105	.056	.062*
	Code_Available	.055	.058	.338
	KYC_YN	.157	.059	.008***
	MultipleCryptos	-.089	.061	.144
	Presale_ICO_YN	-.044	.053	.412
	SoftCap_YN	-.042	.058	.471
	Ether_Fluctuation	.016	.031	.596
	Price_USD	8.161E-5	.000	.566
	TeamSize	.015	.003	.000***
Country's specific	IMD_Tech	.088	.070	.209
	Regulations	-.023	.064	.720
	TaxHaven	.065	.054	.232
	Institutions	.052	.056	.361
	Month	-.045	.011	.000***
	Z_EtherPrice	.590	.234	.012**
	MonthxZ_EtherPrice	-.025	.010	.014**
	Log_HardCap	.415	.048	.000***
	Constant	6.883	.282	.000***

Table 15: *Model 1f- Multivariable Linear Regression Analysis for Log_Money_Raised, taking time and the value of the hard cap into account. This table is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables" - all of these variables are included in the model. Definition of the variable are provided in section "D. Control Variables". R^2 = .262 (n=662; *, ** and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

As in Model 1e, the time variable significantly influences the dependent variable in this model, and so does the interaction factor MonthxZ_EtherPrice and the Z_EtherPrice.
As compared to model 1d, several variables are no longer significant when correcting for time in Model 1f:

1. The acceptance of multiple cryptos for payment;
2. The bounty program.

On the other hand, *KYC_YN* becomes significant in model 1f as compared with model 1D.

Of note, similar results on the disappearance of the value of *KYC_YN* were obtained when the time correction factors were added to Model 1b instead of 1d, with a larger sample thus (n=745, but no correction for Ambition) (see appendix 3).

4.4. The case of KYC

Know Your Client (KYC) policies decrease the anonymousness of the investments. This can both encourage investors' trust, or actually, refrain some investors that fear that this lack of transparency might increase the risk of scams. The resulting effect of these opposite trends is unknown, as KYC rules

have been linked both to the success of ICOs (Lyandres et al. (2018)) and to their failures (Lee et al. (2021)). In Model 1a of the outcome *Listed_YN*, **KYC_YN is also associated negatively with the listing outcome (negative B coefficient)**, pleading for a negative effect of KYC rules on the fundraising. Interestingly, this effect disappeared when a correction for time was introduced in the model (Model 1e). On the other hand, the implementation of **KYC rules correlated directly (with a positive B coefficient, P>0.1) with fundraising in model 1d, an effect that became significant (P<0.01) when the model was corrected for time in Model 1f**. In short, KYC rules appear:

- To influence token listing and fundraising in opposite directions;
- To vary in importance as time elapses.

The first observation could stem from the fact, as described above, that many ICOs reach their soft or even hard cap but fail to be listed, which we saw as a form of breach of contract or scam. As shown in **Table 8**, this type of event is significantly and positively related to the implementation of KYC rules in the ICO, i.e., the more KYC rules, the higher the chance that fundraising occurs but at the same time the higher the likelihood that this fundraising does not translate in a listing;

The second observation is possibly due to changes in the importance that investors (and possibly, entrepreneurs) have given to KYC rules following major crypto events. A stream of scams became public in early 2018 (see appendix 2), and a major depreciation of the Bitcoin and most cryptocurrencies took place in January-February 2018 as well. This was followed by a streak of regulatory steps in several countries in order to increase, notably, money laundering fraud prevention. In addition, both 'events' could have motivated many investors to become more cautious and become willing to trade their wish for anonymity for a feeling of more security. In addition, in an opposite move, but for the same reasons, entrepreneurs may have advertised and enforced KYC rules more often than previously, thus associating them as well to ICOs of different intrinsic value than before and thereby potentially altering the predictive power of KYC rules. As a result, changes (or even a reversal) of the effect of the variable could have developed in time, and this could explain why both the literature and our own cohort provide diverging results when considering different cohorts of ICOs, different outcomes or the influence of time. (Lee et al. (2021); Lyandres et al. (2018)). In support of this explanation, we observe in our dataset that:

- The proportion of ICOs implementing KYC rules increased massively after March 2018 (73.7% vs. 20.6%, *P*<0.001, Chi-square test);
- The proportion of ICOs that reached their caps (soft or hard) but were not listed afterward ("scams") significantly increased as well after March 2018 (35.5% vs. 15.9% before this date, *P*<0.001, Chi-square test);
- When splitting the cohort with respect to March 2018 and analyzing the influence of KYC on *Log_Money_Raised* before and after this date independently, the variable indeed evolved from being almost insignificant to becoming very significantly and positively correlated with the money raised by ICOs (**Table 16**):

Log_Raised_Money	B	S.E.	P-Value
KYC_YN (Previous March 2018)	.054	.063	.393
KYC_YN (Post March 2018)	.231	.081	.005

Table 16: Univariable Linear Regression Analysis on the dependent variable *Log_Money_raised* and *KYC_YN* before and after March 2018.

4.5. Remodeling Hypothesis: conclusion

Models 1e and 1f show that time *per se* can influence the predictive models of the outcome of ICOs, both when looking from the investor and the entrepreneurs' points of view, notably via its effect on the Ether price. It also alters the significance of some determinants of the outcomes and can do so in

opposite directions pending on the outcome, with a salient example in the case of Know Your Clients (KYC) policies.

The findings of this section thus **confirm our second hypothesis (the Remodeling Hypothesis**) and provide **additional support for our first hypothesis (the Parallax Hypothesis)**, since our corrections of the models for time have let appear that KYC rules act in opposite directions pending on the outcome considered.

5. Robustness checks: the added value of CEO characteristics to ICO ratings

As mentioned earlier, experts share opinions on the qualities of the management teams and their business models. They compute 'ratings' that are displayed across several ICO marketing platforms and ICO repositories. These opinions are supposedly based on the quality of the management team, the project's vision, and its ICO profile (Momtaz, P. P. (2020)), but display little interrater correlation (Momtaz, P. P. (2019)) and can become 'updated' on the repositories after the launch of the ICO (Momtaz, P. P. (2019)). This renders their study difficult and their relevance, dubious, although such ratings have been shown to associate with ICO outcomes in the literature.
Such ratings can show a high degree of overlap with the CEO characteristics that we have analyzed in our models, also rely on other components (the vision and overall quality of the planned business venture) and could provide additional information.
A robustness analysis is thus important to assess whether our CEO characteristics provide additional information with respect to such 'readily available' ratings, or not.
For our analyses, we choose, like Momtaz and Shrestha, P. et al. (2021) the composite "Rating" score presented on the ICOBench repository. The scale of this score ranges from zero to five points.
Through the selection criteria of our dataset, this rating is available for all our 1014 ICO records (**VAR: "*Rating*"**, continuous). The minimum value of *Rating* is 1.3 and the maximum value of 4.7. The mean value is 3.459 and the Median is 3.5. Finally, the percentile of .25 is 3 and the percentile of .75 is 3.9.
In **Table 17**, we add the control variable *Rating* to our Model 1e (outcome variable: *Listed_YN*). This does not result in any loss or gain of significant existing explanatory factors in the model, with the notable exception that "*Rating"* also significantly and directly correlates with a positive *Listing_YN* outcome. The predictive value of this model on our dataset is now 67.7% of correct classifications, versus 67% in model 1e, McFadden R^2 =.103. This strengthens our previous models and proves that the CEO characteristics are a good and independent determinant of ICO listing success (i.e., our main hypothesis).

	Listed_YN	B	S.E.	P-Value Sig.
CEO's Specific	Male_Female	.341	.415	.411
	Experience_Blockchain_industry	.219	.206	.288
	Experience_financial_institution	-.133	.178	.456
	Number_companies	.014	.024	.555
	Diploma_Level	.176	.082	.032**
ICO's specific	Bounty	-.456	.187	.015**
	Code_Available	.073	.191	.702
	KYC_YN	-.245	.195	.208
	MultipleCryptos	.378	.196	.054*
	Presale_ICO_YN	-.432	.171	.012**
	SoftCap_YN	-.654	.176	.000***
	Ether_Fluctuation	.010	.099	.922

	Price_USD	-.001	.000	.204
	TeamSize	.022	.011	.041**
Country's specific	IMD_Tech	.036	.225	.873
	Regulations	-.018	.201	.930
	TaxHaven	.169	.175	.334
	Institutions	.177	.183	.334
	Month	-.103	.037	.006***
	Z_EtherPrice	1.753	.748	.019**
	MonthxZ_EtherPrice	-.068	.032	.035**
	Rating	.400	.176	.023**
	Constant	.175	1.021	.864

Table 17: *Model 1g- Multivariable Binary Logistic Regression Analysis for Listed_YN, taking time into account and rating as a control variable. This table is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables" - all of these variables are included in the model. McFadden R^2 = 0.103 (n=745; *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

Of note, adding *Rating* to the RPA Model 1 (RPA that helps predict if an ICO will be listed on a crypto exchange or not) does not alter this model at all as *Rating* does not become selected as a relevant node determinant and is thus not 'better' in this respect than our CEO characteristics.

In **Table 18**, we run model 1f (outcome variable: *Log_Money_Raised*) with the new variable *Rating* and find likewise out that nothing changes except that the new variable "*rating"* is positively significant with the fact that the ICO will be listed. This strengthens our previous models as well and proves that CEO characteristics (essentially, the CEO diploma level) have a significant influence on the money raised by ICOs as well. The R-Squared value of this new Model 1g is 0.278, still low but a bit higher than the model 1f (0.262).

	Log_Money_Raised	N		P-Value
		B	S.E.	Sig.
CEO's Specific	Male_Female	.026	.124	.832
	Experience_Blockchain_industry	.112	.065	.085*
	Experience_financial_institution	.084	.055	.130
	Number_companies	.001	.007	.842
	Diploma_Level	.055	.026	.037**
ICO's specific	Bounty	-.112	.056	.045**
	Code_Available	-.021	.060	.733
	KYC_YN	.128	.059	.030**
	MultipleCryptos	-.090	.060	.138
	Presale_ICO_YN	-.062	.053	.243
	SoftCap_YN	-.053	.057	.355
	Ether_Fluctuation	.020	.030	.501
	Price_USD	8.122E-5	.000	.564
	TeamSize	.012	.003	.000***
Country's specific	IMD_Tech	.110	.070	.116
	Regulations	-.034	.063	.593
	TaxHaven	.060	.054	.269
	Institutions	.051	.056	.358

	Month	-.046	.011	.000***
	Z_EtherPrice	.577	.232	.013**
	MonthxZ_EtherPrice	-.024	.010	.016**
	Log_HardCap	.402	.048	.000***
	Rating	.201	.054	.000***
	Constant	6.351	.313	.000***

Table 18: *Model 1h- Multivariable Linear Regression Analysis for Log_Money_Raised, taking time, the value of the hard cap, and the rating into account. This table is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables" - all of these variables are included in the model. R^2 = .278 (n=662; *, **, and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

6. Results - Conclusion

Investors' and entrepreneurs' incentives both want to perceive a return on their investment. In the eyes of the investors, this depends on the condition *sine qua non*, albeit not sufficient that the tokens they invested in become listed on the secondary market (an outcome represented by the variable Listed_YN), while entrepreneurs wish to raise enough money through their ICOs (as measured in the outcome variable Log_Money_Raised) to at least cover their initial expenses and, ideally, to develop their business. **Our results confirm our Parallax Hypothesis** that different sets of variables best help explain these two outcome variables, confirm the Remodeling Hypothesis that environmental and adaptive components, and **confirm our General Hypothesis**, that CEO characteristics help explain the success of ICOs, as well. The most salient relevant ICO characteristics, inferred from the most relevant model for each dependent variable, models 1g and 1h are summarized in **Table 19**.

	Investors: Model 1g- Listed_YN	**Entrepreneurs- Model 1h- Log_Money_Raised**
Experience in de Blockchain		*
Diploma Level of the CEO	**	**
Bounty	**	**
KYC		**
Multiple Cryptos	*	
Presale	**	
SoftCap	***	
Z_Ether Price	**	**
Team Size	***	***
Value of the Hard Cap		***
Month	***	***
MonthxZ_EtherPrice	**	**
Rating	**	***

Table 19: *Comparison Table: Models 1g and 1h (*, ** and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

G. Discussion and Conclusion

1. Hypothesis

First, our results confirm our main hypothesis as they demonstrate that the intrinsic characteristics of the CEO influence the outcome of ICOs. We show that the level of education of the CEO significantly contributes to both the likelihood of listing the ICO's tokens and the amount of money that it can raise: the higher the education, the more successful the ICO. This finding corroborates the observation of Kolbe, M. et al. (2021), who performed on a sample of the Tord_v3 database but differs from that of (An, J. et al., 2019), who performed their analyses on an older sample of ICOs from 2014 to May 2018. Our finding is robust, as it adds to the other variables known to influence ICO success, including the 'rating' of ICOs by website specialists (which supposedly takes the background of the CEO into account but has been shown to carry little interrater homogeneity). It is also resilient to the effects of time, as shown by our time-corrected models.
Second, we noted that the incentives and goals of the investors are different than the ones of the entrepreneurs and that different outcome variables represent these different points of view. Based upon this constatation, we hypothesized that different sets of variables could best explain these outcomes. We confirm this 'parallax hypothesis': an experience in the blockchain industry tends to influence the money raised by an ICO but not the listing success, while the definition of a soft cap or the performance of a presale readily alters the chances of success but do not influence the amount of money raised. Moreover, and maybe more notable, we show that the enforcement of KYC rules can alter these two outcomes in opposite ways.
We also confirm our third, 'remodeling' hypothesis as our models show the influence of time on both the outcome of the ICOs and some determinants of these outcomes, like KYC.
Moreover, we have built an RPA model to help investors identify projects that might be worth investing in it while having a 70.7% chance of finding the token listed after the ICO.

2. Contribution of this study

This study contributes to the literature on the importance of the CEO's characteristics in an Initial Coin Offering (e.g., ((Colombo, M. G. et al. (2020), An, J. et al. (2019), Momtaz, P. P. (2019)) and

1. shows that the background of the CEO, and in particular his/her level of education, are important determinants of ICO success, in addition to the available 'ratings' of ICOs available on platforms like ICOBench;
2. reveals that the relevant determinants of success *and the direction of their influence (KYC)* depend: based on investors' or of entrepreneurs' point of view;
3. uncovers a phenomenon of uncoupling between these outcomes: due to potential fraud, a successful ICO in terms of money collection does often not result in the listing of its token on the secondary market. As a matter of fact, 234/876 ICOs (26.71%) in our dataset have the characteristic of scam. According to our RPA model, investors should pay attention to ICO that accept multiple cryptos for funding, have a KYC Policy and mention their Soft Cap. According to our regression model, they should pay attention if the CEO has a financial institution experience, a KYC policy, accepting multiple cryptocurrencies for funding, the mention of the Soft Cap and the current price of the ETH;
4. demonstrates that the influence of explanatory variables varies as time passes by, likely due both to a changing environment and to the differentiated response of investors and entrepreneurs to these changes;
5. show the importance of the predefined hard cap threshold in the analysis of the amount of money raised by ICOs, but not in that of their likelihood of listing on the secondary token market.

To the best of our knowledge, our work is the first to propose an RPA model of predictors of ICO listing success. This model allows us to take into account the interactions between variables at every node and actually results in a better 'predictive' value (70.3%) on our dataset than our best multivariable binary regression models (67.7%). In practice, such a model can easily be used by investors to help them triage between ICOs that are more or less promising – albeit obviously, with all due caution!

3. Limitations

Data in ICO research largely relies on ICO repositories and is subject to little cross-checking and audit. As such- and this is a component of the intrinsic moral hazard of ICOs- some data can be 'pimped' by ICO entrepreneurs or 'ratings' can be influenced by the personal biases of the raters. In order to reduce this problem, we relied on the largely cross-checked TORD_v3 database and further verified several data categories by screening the corresponding available whitepapers and LinkedIn information. Regarding the CEO characteristics, however, anyone could fake their personal LinkedIn pages to appear more attractive, especially when knowing that CEOs matter from the investors' point of view (Colombo, M. G. et al. (2020)). The risk that such an embellishment be discovered on such a social network is however extreme (especially given the fact that CEOs need to tap into their own social network and friends to attract funding) and the resulting price to pay for such fraud is extremely high, as the consequences will extend for the entire professional life of the fraudster. In agreement with the signaling and moral hazard theory, we thus believe that such events remain very limited.

In addition, to carry out our verifications and to be able to retrieve relevant information on the ICOs, we selected a set of 1014 ICOs out of the more than 6500 available on the TORD_v3 database of Momtaz P. P. One of our selection criteria was the availability of a link (unfortunately, sometimes discontinued) to the whitepapers of the ICOs and the LinkedIn pages of the ICO, meaning that we selected a lot of little transparent ICOs. This selection bias however still reinforces the relevance of our findings on potential scams, as the risk of uncoupling between reaching the hard cap and listing the corresponding tokens is arguably even larger in ICOs that do not even provide their business plan…

Our models also show the influence of time on the determinants of ICO success. While our 'time' variable is easy to compute (in months from April 2016 to August 2020), its relevance can also change in the future as 'time' here actually accounts for the *events* that arise in time, rather than its intrinsic 'physics' qualities. The use of our regression models for new ICOs can thus lead to a worse predictive power than on our dataset. However, our best predictor of token listing, the RPA model was insensitive to time and can be of real interest to potential investors.

The predictive power of our models and their quality remains low (respectively, at best 70%, R2 of .278 and McFadden R2 of .119). This however compared favorably with the reported R2 of the literature (for e.g.: An, J. et al. (2019): 0.232 at best for R^2, Momtaz, P. P. (2019): 0.232 at best for adjusted R^2, or Colombo, M. G. et al. (2020): 0.3035 at best for R^2) and is expected for models that try to explain, with limited factual data, complex investment phenomenon that massively depends on both behavioral, emotional and psychological factors and external events.

4. Avenue for further research

Our results bring to light the 'uncoupling' or 'fraud' phenomenon between ICO money raising and token listing, but the underlying causes of this uncoupling remain unknown. Finding them will require investigations and confirmation in additional datasets and is beyond the scope of the present work.

We also showed that RPA models present the potential to help predict the outcomes of ICOs. Further exploring their value and fine-tuning their parameters likewise deserves in our opinion further attention.
Finally, behavioral studies could be designed to assess the differential response of investors and entrepreneurs to external events, but also, as their differential consideration of the importance and goal of ICO characteristics. A good point to start, given our findings, would be their relative interest in KYC rules.

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Appendix

1. Appendix 1: Lexicon

Altcoins[i]	Altcoins are all the cryptocurrencies that are not Bitcoin. Nevertheless, since Bitcoin (BTC) and Ethereum (ETH) account for approx. 60% of all the cryptocurrency market cap and because most cryptocurrencies are forked from one or two, some people consider altcoins as all cryptocurrencies that are not BTC & ETH. In a more restricted definition, Altcoins also refer to the utility tokens that allow to pay for specific services in blockchain-based businesses.
Bear Market[ii]	The term 'bear market' characterizes a market (stocks, real estate, crypto…) that is dropping significantly and for a prolonged period of time. A bear market is considered when the market declined by 20% over a period (often 2 months) amid pessimism and negative investor sentiment (crypto fear & greed index).
Bitcoin[iii]	Bitcoin is a decentralized digital currency designed to act as money and a form of payment outside the control of any person, group, or entity and that can be transferred on the peer-to-peer bitcoin network. The bitcoin transactions rely on a digital ledger technology where transactions need to be validated by solving complex mathematical problems by a network of computers. Such verifications are performed by "miners" on the Bitcoin Blockchain, and these miners are rewarded for the work done. Bitcoin can also be purchased on several (crypto) exchanges with either Fiat Currency or with other cryptocurrencies. Satoshi Nakamoto, an anonymous developer, or group of developers (nobody knows) introduced Bitcoin in 2009 to the public: "A purely peer-to-peer version of electronic cash would allow online payments to be sent directly from one party to another without going through a financial institution. Digital signatures provide part of the solution, but the main benefits are lost if a trusted third party is still required to prevent double-spending. We propose a solution to the double-spending problem using a peer-to-peer network. The network timestamps transactions by hashing them into an ongoing chain of hash-based proof-of-work, forming a record that cannot be changed without redoing the proof-of-work. The longest chain not only serves as proof of the sequence of events witnessed, but proof that it came from the largest pool of CPU power. As long as a majority of CPU power is controlled by nodes that are not cooperating to attack the network, they'll generate the longest chain and outpace attackers. The network itself requires minimal structure. Messages are broadcast on a best effort basis, and nodes can leave and rejoin the network at will, accepting the longest proof-of-work chain as proof of what happened while they were gone." (https://bitcoin.org/bitcoin.pdf) Since then, it has become the most well-known cryptocurrency in the world with the highest market cap (40% of the global Crypto Market cap). Numerous additional cryptocurrencies have been developed since, based on a similar model.
Blockchain[iv]	Blockchain is a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network. An asset can be tangible (a house, a car, cash, land, …) or intangible (intellectual property, patents, copy- rights, branding, …). What a blockchain does is to allow the data held in a database to be spread out among several network nodes at various locations. This not only creates redundancy but also maintains the fidelity of the data stored therein—if somebody tries to alter a record at one instance of the database, the other nodes would not be altered and thus would prevent a bad actor from doing so. If one user tampers with the record of transactions, all other nodes would cross-reference each other and easily pinpoint the node with the incorrect information. This system helps to establish an exact and transparent order of events. This way, no single node within the network can alter information held within it. Because of this, the information and history of each record are irreversible. Such a record could be a list of transactions (such as with a cryptocurrency), but it also is possible for a blockchain to hold a variety of other information like legal contracts, state identifications, or a company's product inventory. To validate new entries or records to a block, a majority of the decentralized network's computing power need to agree to it. To prevent bad actors from validating bad transactions or double spends, blockchains are secured by a consensus mechanism such as proof of work (PoW- a decentralized consensus mechanism that requires members of a network to expend effort solving an arbitrary mathematical puzzle to prevent anybody from gaming the system) or proof of stake (PoS- In proof-of-stake ,blocks are verified using the machines of coin owners.

	The owners offer their coins as collateral for the chance to validate blocks. Coin owners with staked coins become "validators", who are then selected randomly to "mine," or validate the block. This system randomizes who gets to "mine" rather than using a competition-based mechanism like proof-of-work. To become a validator, a coin owner must "stake" a specific amount of coins. For instance, Ethereum will require 32 ETH to be staked before a user can become a validator. Blocks are validated by more than one validator, and when a specific number of the validators verify that the block is accurate, it is finalized and closed). These mechanisms allow for agreement even when no single node is in charge. The way the data is organized in a blockchain differs significantly from how it is typically organized. In a blockchain, data is gathered in groups called blocks that each includes sets of data. Blocks have specific storage capabilities, and when filled, they are sealed and connected to the block that came before them to create the data chain known as the blockchain. Every additional piece of information that comes after that newly added block is combined into a brand-new block, which is then added to the chain once it is full. The blocks are strung together, in a decentralized way, and this creates an irreversible chronology of data by design. When a block is completed, it is irrevocably sealed and added to the timeline. When a block is added to the chain, it receives a precise timestamp.
Bonus[v]	A bonus issue is an offer of free additional tokens to existing crypto holders. There are several types of bonus and projects can combine several formulas depending on the sales phase: - Fixed bonus : a non variable percentage set for any amount bought at a specific stage, usually the pre-sale period; - Tiers Bonus : bonuses relative to the total number of tokens sold. The team splits all its tokens on tiers and sets a decreasing bonus for each one; - Quantity Bonus : discounts relative to the amount an investors buys. Such bonuses increase in par with the number of tokens purchased; - Time Bonus : bonuses allocated based on the timing the purchase was executed. The sooner the investment is made, the higher is the bonus percentage;
Bounty[vi]	A cryptocurrency bounty is a reward users, developpers or marketers receive for performing tasks assigned by a given blockchain or project., pre and/or post ICO: - pre-ICO, the offering is marketed to prospective investors and people willing to do tasks to make the ICO more profitable. Computer programmers, social media influencers, blog writers, marketers, and other interested parties work to create awareness about the project and the upcoming ICO - Post- ICO, bounty programs incentivize developers to find bugs in the code, give feedback on other design elements, or even participate to language translation tasks.
Bull Market[vii]	A bull market is when a market (stocks, real estate, crypto…) is rising significantly and the rise persists through time (during months/years).
Cryptocurrency[viii]	A cryptocurrency is a type of digital or virtual currency that uses encryption to protect it from counterfeiting or duplicate spending. Cryptocurrencies are decentralized networks based on blockchain technology—a distributed ledger enforced by a disparate network of computers. The fact that cryptocurrencies are often not issued by any central authority makes them potentially impervious to intervention from or manipulation by governments.
Crypto Exchange[ix]	A crypto exchange is a platform on which one can buy and sell cryptocurrency against fiat (e.g., USD, Euros, …), or trade one crypto for another — converting Bitcoin to Litecoin, for example . Exchanges reflect the current market prices of the cryptocurrencies they offer.
DAO[x]	A decentralized autonomous organization (DAO) is an emerging form of legal structure. With no central governing body, every member within a DAO typically shares a common goal and attempt to act in the best interest of the entity. Popularized through cryptocurrency enthusiasts and blockchain technology, DAOs are used to make decisions in a bottoms-up management approach.
DDOS[xi]	A distributed denial-of-service (DDoS) attack is a malicious attempt to disrupt the normal traffic of a targeted server, service or network by overwhelming the target or its surrounding infrastructure with a flood of Internet traffic. DDoS attacks achieve effectiveness by utilizing multiple compromised computer systems as sources of attack traffic. Exploited machines can include computers and other networked resources such as IoT devices. From a high level, a DDoS attack is like an unexpected traffic jam clogging up the highway, preventing regular traffic from arriving at its destination.
ERC-20[xii]	The technical specification for fungible tokens produced on the Ethereum network is called ERC-20. A token that can be exchanged with another token is fungible.

	ERC-20 allows different smart-contract enabled tokens to be exchanged with each other.
Ethereum (ETH)[xiii]	Ethereum is a blockchain-based decentralized global software platform. Ether, often known as ETH, is the native cryptocurrency of this platform. Anyone can use Ethereum to develop secure digital technologies. Scalable, programmable, secure, and decentralized are all features of Ethereum. It natively supports smart contracts, the essential tool behind decentralized applications, and is the blockchain of choice for businesses and developers who are building technology on top of it.
Fiat currency[xiv]	A government-produced currency known as "fiat money" is not backed by a tangible good like gold or silver, but rather by the government that created it. Instead of being backed by the value of a commodity, fiat money derives its value from the relation between supply and demand as well as the stability of the government that issues it. The majority of contemporary paper currencies, including the U.S. dollar, the euro, and other significant world currencies, are fiat currencies.
Halving (Bitcoin)[xv]	The method wherein Bitcoin mining incentives are halved by 50% every four years to increase scarcity and regulate the overall supply (since no more than 21 million Bitcoins can ever be mined).
Hard Cap[xvi]	The highest sum of money a cryptocurrency firm can raise through its initial coin/exchange offering (ICO/IEO) is known as a hard cap.
Hard Fork (Blockchain)[xvii]	A hard fork (or hardfork), as it relates to blockchain technology, is a radical change to a network's protocol that makes previously invalid blocks and transactions valid, or vice-versa. A hard fork requires all nodes or users to upgrade to the latest version of the protocol software. Forks may be initiated by developers or members of a crypto community who grow dissatisfied with functionalities offered by existing blockchain implementations. They may also emerge as a way to crowdsource funding for new technology projects or cryptocurrency offerings.
Howey Test[xviii]	The Howey Test refers to a test designed by the U.S. Supreme Court for determining whether a transaction qualifies as an "investment contract," and therefore would be considered a security and subject to disclosure and registration requirements under the Securities Act of 1933 and the Securities Exchange Act of 1934. Under the Howey Test, an investment contract exists if there is an "investment of money in a common enterprise with a reasonable expectation of profits to be derived from the efforts of others." The test applies to any contract, scheme, or transaction. The Howey Test is important for situating blockchain and digital currency projects with investors and project backers. Certain cryptocurrencies and initial coin offerings (ICOs) may be found to meet the definition of an "investment contract" under the test.
ICO[xix]	An initial coin offering (ICO) is the cryptocurrency industry's equivalent of an initial public offering (IPO). An ICO can be launched by a business to raise money for the development of a new coin, app, or service. In exchange for their 'payment, investors receive a new altcoin token that the business has issued and that can be used access the service the business is providing once this latter has been fully developed.
IEO[xx]	IEOs are more secure than ICOs and have fewer restrictions than STOs. In this style of crowdsourcing, businesses looking for capital are chosen via an online cryptocurrency exchange and trading platform that is governed by authorities. IEO-based businesses are exempt from the asset requirement of STOs. As a result, IEOs provide ventures with greater protection than ICOs and less limitation and difficulty than STOs (Chitsazan et al, 2022)
KYC[xxi]	The investment industry has a requirement known as "Know Your Client" that demands investment advisors to have a thorough understanding of their clients' risk tolerance, investment knowledge, and financial situation. Risk management, customer acceptance policies, and transaction monitoring are a few examples of requirements and regulations that are often included in KYC compliance.
Roadmap[xxii]	A roadmap is the plans that have been well defined and are highlighted through careful project planning. An altcoin's engineers and developers reveal what they are working on and when it will be released.
Security Token[xxiii]	As an investment asset, a security token is a digital asset that represents ownership or other rights and transfers value from an asset or bundle of assets to a token. In plain language, security tokens are the digital form of traditional investments like stocks, bonds, or other securitized assets.
Soft Cap[xxiv]	The minimum amount that an initial coin offering (ICO) must raise is referred to as a "soft cap" to successfully carry out the venture. The ICO may be discontinued, and the money gathered returned to participants if it is unable to raise that amount.

STO[xxv]	A security token offering, or STO, is a digital token that uses blockchain technology to represent a stake in an asset. STOs make it possible to fund digital projects while still adhering to legal requirements. Security tokens are not traded on standard token exchanges because they are subject to strict rules. They are fungible tokens, though, which means that they have monetary worth, making them comparable to ICOs (initial coin offerings).
Token[xxvi]	A crypto token is a virtual currency token or altcoin. It represents a tradable asset or utility that resides on its blockchain and allows the holder to use specific services or to use it for investment or economic purposes.
Utility Token[xxvii]	A digital cryptocurrency token that is released to raise money for its development can later be used to buy or use a product or service from the cryptocurrency's creator.
Whitepaper[xxviii]	An explanation of the technology and goal of the project that developers are working on is provided in a whitepaper. It outlines the objective of the cryptocurrency and explains how it was created for potential investors. Statistics, graphs, and algorithms are just a few of the types of data that can be found in a crypto whitepaper. The purpose of this information is to persuade potential investors to buy that coin.
Whitelist[xxix]	Whitelists are either associated with Initial Coin Offering (ICO) events or with withdrawal addresses in the blockchain and cryptocurrency environments. For investors who are ready to take part in the public sale of their tokens, cryptocurrency projects may offer a whitelisting phase in the first scenario. Therefore, to be added to the whitelist, any investor who wants to take part in the ICO must first supply their personal information (this is usually done through a KYC procedure).
51% Attack on the Blockchain[xxx]	A gang of miners who control more than 50% of the network's mining hash rate is said to be conducting a 51% attack when they target a cryptocurrency blockchain. The controlling parties have the ability to change the blockchain because they control 51% of the network's nodes. By preventing fresh transactions from receiving confirmations, the attackers would be able to stop payments between some or all users. Additionally, they would be able to undo activities that were taken while they were in charge of the network. Reversing transactions would enable them to double-spend coins, which is one of the problems that proof-of-work consensus systems were designed to avoid.

[i] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/a/altcoin.asp
[ii] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/b/bearmarket.asp
[iii] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/b/bitcoin.asp
[iv] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/b/blockchain.asp
[v] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/b/bonusissue.asp
[vi] Retrieved the 27th of July 2022 on https://coinmarketcap.com/alexandria/glossary/bounty
[vii] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/b/bullmarket.asp
[viii] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/c/cryptocurrency.asp
[ix] Retrieved the 27th of July 2022 on https://time.com/nextadvisor/investing/cryptocurrency/what-are-cryptocurrency-exchanges/
[x] Retrieved the 11th of August 2022 on https://www.investopedia.com/tech/what-dao/
[xi] Retrieved the 11th of August 2022 on https://www.cloudflare.com/en-gb/learning/ddos/what-is-a-ddos-attack/
[xii] Retrieved the 27th of July 2022 on https://www.investopedia.com/news/what-erc20-and-what-does-it-mean-ethereum/
[xiii] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/e/ethereum.asp
[xiv] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/f/fiatmoney.asp
[xv] Retrieved the 27th of July 2022 on https://fintechmagazine.com/financial-services-finserv/140-blockchain-and-crypto-words-ultimate-z-glossary
[xvi] Retrieved the 27th of July 2022 on https://paybis.com/blog/what-is-a-hardcap/#:~:text=A%20hardcap%20is%20the%20maximum,offering%20(ICO%2FIEO).
[xvii] Retrieved the 11th of August 2022 on https://www.investopedia.com/terms/h/hard-fork.asp
[xviii] Retrieved the 11th of August 2022 on https://www.investopedia.com/terms/h/howey-test.asp#:~:text=The%20Howey%20Test%20refers%20to,Securities%20Exchange%20Act%20of%201934.
[xix] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/i/initial-coin-offering-ico.asp
[xx] Retrieved the 27th of July 2022 on https://learn.bybit.com/crypto/what-are-initial-exchange-offerings-ieos/
[xxi] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/k/knowyourclient.asp
[xxii] Retrieved the 27th of July 2022 on https://coincompare.eu/crypto-guide/roadmap-future-plans/#:~:text=Defined%20future%20plans%20that%20are,and%20when%20what%20is%20launched.
[xxiii] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/s/security-token.asp
[xxiv] Retrieved the 27th of July 2022 on https://www.babypips.com/forexpedia/soft-cap#:~:text=Soft%20Cap%20refers%20to%20the,collected%20funds%20returned%20to%20participants.
[xxv] Retrieved the 27th of July 2022 on https://www.tokenex.com/blog/ab-what-is-a-security-token-offering-sto
[xxvi] Retrieved the 27th of July 2022 on https://www.investopedia.com/terms/c/crypto-token.asp#:~:text=A%20crypto%20token%20is%20a,for%20investment%20or%20economic%20purposes.
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[xxx] Retrieved the 10th of August 2022 on https://www.investopedia.com/terms/1/51-attack.asp
[xxx] Retrieved the 10th of August 2022 on https://www.investopedia.com/terms/b/bounty-programs-ico.asp
[xxxi] Retrieved the 10th of August 2022 on https://medium.com/etherflair/most-popular-bonus-discount-types-in-icos-1250ad7ef2f1
[xxxii] Retrieved the 10th of August 2022 on https://www.investopedia.com/terms/b/blockchain.asp
[xxxiii] Retrieved the 10th of August 2022 on https://www.ibm.com/downloads/cas/36KBMBOG

2. Appendix 2: Events in the Crypto World

Table: Events in the Crypto World (from April 2016 to August 2020)

	Hacks	**Regulations**	**Hard Fork events**	**Known 51% attacks**	**Positive News**
2016					
June	DAO Hack- cf Ref 2				Ripple receives New York's first BitLicense for an institutional use case of digital assets
Aug	Bitifinex Hack- cf Ref 2				
2017					
Feb					1. JP Morgan, Santander said to join New Ethereum Blockchain Group 2. Big Corporates (JP Morgan, Microsoft, BP and Wipro, etc.) unite for launch of Enterprise Ethereum Alliance
Mar					47 banks complete DLT cloud pilot with Ripple Tech
April	Yspizon, Korea, 3800 BTC				Japan declares Bitcoin as legal tender
May					Deloitte joins Blockchain Consortiums Ethereum Alliance and Hyperledger
June	Bithump, Korea, 7MUSD				Vladimir Putin and Vitalik Buterin discuss Ethereum 'opportunities'
Aug			Bitcoin-Bitcoin Cash (cf. Ref 12: seen ass negative)		Bitcoin- Bitcoin Cash - seen as positive event by Ref 15
Sep		China's Ban on ICO			
Oct			Bitcoin-Bitcoin Gold (cf. Ref 12)		
Nov	Parity Wallet Hack- 300 MUSD				American Express opens first Blockchain corridor with Ripple Tech
Dec	Youbit (= new name of Yapizon!)- Bankrupcy- total loss for customers NiceHash: 4736 BTC	South Korea Ban on ICO			
2018					
Jan	Coincheck, Japan- 534 M USD! IOTA Wallet theft, 4M USD (cf. Ref12)	Facebook's New Ads Policy prohibiting the promotion of ICO on the Platform	Bitcoin Cash-Bitcoin Candy (cf. Ref 12)		
Feb	Bitgrail, Italy- 195 M USD	J.P. Morgan Chase, Bank of America and Citigroup announce decision not to allow customers to buy cryptocurrencies with the companies' credit card (cf. Ref15)	Litecoin-Litecoin Cash (cf. Ref 12)		
April	Coinsecure, India- 3.3MUSD			Verge	
May	Taylor, 2578 ETH BitCoin Gold, 18 MUSD- the hackers gained control of more than 50% of Bitcoin Gold's network systems. This attack sent waves of shock in the world of crypto, as never had a company been compromised to this extent.	Warren Buffet says bitcoin is 'probably rat poison squared'		Bitcoin Gold Verge	
June	Bithump, Korea, 31MUSD				

	Coinrail, South Korea, 4MUSD				
Sep	Zaif, Japan, 60MUSD				
Oct	MapleChange, Canada, 5.7MUSD- Hack or Exit Scam?				
Nov			Bitcoin Cash-Bitcoin SV (cf. Ref 12)	Vercoin	
Dec	QuadrigaCX, Canada, Possible (Exit) Scam, 26350 BTC- 190 M USD				
2019					
Jan	Cryptopia, >21000 ETH, put for liquidation (15.5MUSD)			Ethereum Classic	
Feb	Coinmania: 450,000 Emails and Passwords! Coinbin (new name of Youbit!): bankruptcy-insider job for the CEO!- 26 M USD				
Mar	Bithump, Korea, 3M EOS & 20MXRP CoinBene, 105 MUSD DragonEx, Singapore, 7MUSD				
May	BINANCE: 7000 BTC, or 40MUSD				Xi Jinping announced that the world's most populous country and second largest economy would focus its efforts on blockchain technology in late October- BTC-USD jumped from $7,500 to above $10,000 to gain almost 40 percent in a single day In May, two Bitcoin Improvement Protocols (BIPs) were put forward to address what is perhaps Bitcoin's biggest area for improvement, privacy. Written by Bitcoin Core developer Pieter Wuille, the two-part proposal is entitled Taproot/Tapscript and complements Wiulle's July 2018 proposal for Schnorr signatures. With Schnorr signature aggregation, multi-signature transactions look like payments signed with a single key, saving space, and improving fungibility. Taproot, together with Schnorr, is likely to be implemented into Bitcoin in 2020/2021 as a soft fork upgrade, with an aim to achieve improved scalability and fungibility.
June	GateHub, 9.5MUSD in XRP Bitrue, 5MUSD PlusToken Scam Bursts Bitcoin's Bubble Ponzi scheme stole over 200,000 BTC, blamed for bitcoin's downturn.				Facebook's entry into the cryptocurrency scene with Libra swiftly beaten down by US regulators. One of the main catalysts for bitcoin's push above $10,000 to highs near $14,000.
July	BITPoint, Japan, 32MUSD	President Trump's Twitter Rant Against Bitcoin Trump launched a trademark Twitter rant against bitcoin in July after the Libra hype.			

		Trump's comments led to fears that the US president could introduce an Executive Order to ban bitcoin			
Oct		SEC: Telegram's GRAM Offering Illegal One of the largest ICOs to date halted, but Telegram fights back. The Securities and Exchange Commission (SEC) secured an emergency restraining order against Telegram's TON subsidiary on October 11 and deemed its GRAM initial coin offering illegal. The Telegram Open Network's original launch date of October 31 was delayed due to the SEC's actions. Telegram raised $1.7 billion in the First Quarter of 2018 and its Telegram Open Network took a different approach to Facebook's Libra with more emphasis on decentralisation			
Nov	VinDax, Vietnam, 0.5MUSD Upbit, South Korea, 50 M USD				
2020					
Jan				Bitcoin Gold	
Feb	Altsbit, 70,000 USD IOTA Trinity Wallet, 1.6M USD (cf. Ref 12)				
May	BlockFi, control of email accounts of employees, not of cryptos	Telegram Group abandons TON project as it cannot overcome SEC resistance			both excitement and dismissal amongst cryptocurrency pundits regarding Bitcoin's block reward halving in May 2020. The event will reinforce Bitcoin's limited supply and could spark a new wave of demand. Others argue that the event is priced in already with major players already aware of its impact
June	BuyUcoin, India, 325K users' data send to the darkweb				

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3. Appendix 3: Additional Analytical Model of *Log_Money_Raised*

	Log_Money_Raised	N		P-Value
		B	S.E.	Sig.
CEO's Specific	Male_Female	.098	.130	.449
	Experience_Blockchain_industry	.089	.065	.171
	Experience_financial_institution	.131	.055	.018**
	Number_companies	.002	.007	.807
	Diploma_Level	.049	.026	.056*
ICO's specific	Bounty	-.101	.057	.079
	Code_Available	.039	.056	.487
	KYC_YN	.157	.059	.008***
	MultipleCryptos	-.049	.061	.422
	Presale_ICO_YN	-.047	.053	.377
	SoftCap_YN	-.063	.056	.259
	Ether_Fluctuation	.005	.030	.865
	Price_USD	9.570E-5	.000	.522
	TeamSize	.015	.003	.000***
Country's specific	IMD_Tech	.081	.070	.247
	Regulations	.030	.063	.634
	TaxHaven	.057	.054	.294
	Institutions	.055	.057	.331
	Month	-.047	.011	.000***
	Z_EtherPrice	.532	.223	.017**
	MonthxZ_EtherPrice	-.021	.010	.026**
	Constant	7.320	.276	.000***

***Table 20**: Model 1i- Multivariable Linear Regression Analysis for Log_Money_Raised, taking time cap into account. This table is divided in three categories: "Ceo's specific variables", ICO's specific variables" and Country's specific variables". - all of these variables are included in the model. Definition of the variable are provided in section "D. Control Variables". R^2 = .162 (n=662; *, ** and *** denote statistical significance at the 10 percent, 5 percent, and 1 percent levels, respectively).*

Comparison with our model 1b, while taking time into account in the model 1i, the variable "*Bounty*" is not significant anymore, nevertheless, the variable "*KYC_YN*" becomes positively significant with the dependent variable "*Log_Raised_Money*".

Nb: we chose model the model 1d (with var: *Log_*HardCap) over the model 1b (without var: *Log_HardCap*) in our analysis because the R-squared of model 1b is .128 and R-squared of model 1d is .239 which means that we have a better goodness-of-fit for our Multivariable Linear Regression Model 1d.

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Samenvatting

Dit werk toont de waarde aan van de achtergrond van de CEO bij het bepalen van het succes van ICO's. De definitie van ICO succes kan verschillen tussen ondernemers en investeerders en komt overeen met het maximale opgehaalde geld voor de eerste en de 'listing' van de ICO-tokens voor de laatste. Deze uitkomsten worden van elkaar losgekoppeld door contractbreuk (fraude), i.e., het feit dat ICO's die hun hard cap hebben bereikt, in 35% van de gevallen hun tokens niet op de tweede markt gaan 'listen'. Als gevolg hiervan worden beide uitkomsten beïnvloed door verschillende sets van ICO-kenmerken en kunnen sommige kenmerken beide uitkomsten in tegengestelde richting beïnvloeden (KYC).
We bieden modellen die helpen bij het bepalen van beide uitkomsten op basis van feitelijke, gemakkelijk te verzamelen informatie, inclusief een gebruikersvriendelijk RPA-based voorspellingsmodel voor de waarschijnlijkheid van token-listing.

Executive Summary

This work demonstrates the value of the CEO's background in determining the success of ICOs. The definition of success can differ between entrepreneurs and investors and corresponds to the maximum amount of money raised for the former, and the listing of the ICO's tokens for the latter. These outcomes are uncoupled from each other through breaches of contract (frauds), i.e., the fact that ICOs that have reached their hard caps do not list their tokens in up to 26.71% of the cases. As a result, both outcomes are influenced by different sets of ICOs' characteristics, and some characteristics can influence both outcomes in opposite directions (KYC).
We provide models that help determine both outcomes based on factual, easy-to-gather information, including an easy-to-use RPA predictive model for the likelihood of token listing.

Word Count = 23,790

Keywords: CEO characteristic, Initial Coin Offering (ICO), Token offering, Token listing, Fundraising, Finance, Blockchain, University degree, Investors, Entrepreneurs, Cryptocurrencies, Moral hazard, Country restriction, Scam