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ABSTRACT

We explore the determinants of success of Initial Coin Offerings (ICO) defined as whether the ICO was successful in raising the funds. We look at financial and technical information disclosed by the ICO as well as the information disclosed by third parties about the ICO and the level of legal protection granted. We discover that even if both hard information (financial and technical) and soft information (social media and legal protection) matter, nevertheless a more relevant role is played by the technical information. Based on our analysis, we identify areas that need further investigation in the context of ICOs.

Keywords: Initial Coin Offerings, Blockchain, Start Up finance
JEL Codes: G40

I. Introduction

New ventures need capital to start and expand their businesses and this is one of the biggest challenges they face (Berger and Udell 2006). Traditionally, entrepreneurs can get money from their families, friends, angel investors or venture capitalists (Cassar 2004; Winborg and Landström 2000) since banks usually are not very prone to lend to start-ups because of the high risk of new projects and the information asymmetries that characterizes them (Ang, Wuh Lin, and Tyler 1995; Müller 2011; Ang 1992; Cressy 2006). In fact, two unrelated events are currently reshaping the way in which entrepreneurs can access finance. On the one hand, there is crowdfunding (Mollick 2014), the idea (not so new) to raise funds from a large amount of people. It enables a direct relationship between the entrepreneurs and people that in fact invest a very limited amount of money in the venture; on the other hand, there is the emergence of the distributed ledger technology (blockchain) that, allows a "disintermediated" way to store and handle information and to deal with financial transactions.

Interestingly enough, distributed ledger, that is the system on which blockchain technology is based, is just an innovative (and alternative) way to store information in order to be sure that data can be tracked and will not be lost. The traditional data storage approach relies on stocking our information in "the cloud", that is in large servers provided by the likes of Google, Apple, Amazon, etc. When it turns to transactions (such as payments or transactions linked to buying/selling assets) the information is stored in servers owed by the institutions that manage the transaction for us (e.g. the banks). This approach incurs two major issues: it exposes the user to the risk of data loss (if the server and its back-up brakes down the data can be lost; if the server is hacked the data can be stolen); it gives a lot of power to few organizations that store/manage the data since the recording of each

[1] The authors would like to thank our anonymous referee.

transactions and the related certification depends on them. All in all, the traditional system needs a high level of trust in those who store data in order for the system to work (Lewicki, J., and Bies 1998; Lewicki and Wiethoff 2000; Lewicki and Bunker 1996) trust that is compromised by events like Cambridge Analytica scandal. The alternative distributed ledger approach stores the data in a large network of computers so that no one holds all the information: if the data is lost in one computer, the user will not be adversely affected since the same data is stored on many other computers spread all around the world. In addition, since many different subjects are involved in storing data, the risk that few players can exploit a monopolistic situation is non-existent. This is why distribute ledger is considered a step in the democratization of the data management (Nakamoto 2008). However, such a system raises the problem of certifying the information stored. So far, the information stored in servers is certified by the very same "servers". For instance, the amount of money one has in the bank account is certified by the bank that handle the information about financial transactions and the very same financial institution monitors the amount spent in each transaction in order to avoid the possibility that one can use the same money twice (e.g. pay two different suppliers with the same amount of money). The distributed ledger does not allow automatically for such a certification. However, the blockchain technology sorts this issue out in the sense it provides an automatic system (based on proof of work or proof of stake) that "certifies" each transaction: once the information is generated it is certified and it cannot be changed (Narayanan et al. 2017) and any additional transaction that clashes with the original one will be rejected by the system. To sum up, the blockchain technology allows to store the information and to certify it without involving third organizations that act as certifiers. It is clear that such a technology has huge implication and applications in different context since it eliminates intermediaries and implicitly can simplify the transactions and cut the related costs (Narayanan et al. 2017; Nakamoto 2008).

In the last ten years, innovators started to explore the possibility to use this technology in the financial realm. They were mainly focused on the development of alternative currencies (e.g. Bitcoin or Ether)[2] and alternative assets. Initial coin offerings (ICO), by exploiting the blockchain technology, is an innovative and relatively cheap way to raise funds particularly popular among a highly innovative and very technological project. It lies at the intersection of the quoted crowdfunding and the traditional initial public offering (IPO).

Through ICO a firm, has the possibility to raise finance by selling tokens (coins) to a very large group of investors with payments made very often in cryptocurrencies. In a world where cryptocurrencies are considered assets (Platanakis and Urquhart 2019; Corbet et al. 2019; Guesmi et al. 2019; Kajtazi and Moro 2019), tokens are "crypto-assets" in the sense that they represent the investment in the digital project pursued by the firm. The very same information about the investment made by the investors (e.g. the amount provided, the type of remuneration due, the time when the remuneration is due, etc.) is stored in the blockchain.

In fact, the remuneration that investors in tokens can received can have three different forms. The first form gives access to a stream of future cash flows based on the success of the project ("security tokens"). This dividend-type of remuneration is not linked to the stream of cash flow generated by the firm but it depends on the cash flow generated specifically by the project. Actually, in the largest majority of the current ICO firm and project overlap but there are few cases where the project financed via the ICO represent an additional area of business of an existing firm that has the capability to generate a different cash flow with respect that one of the project. Such a configuration of the tokens also implies that they typically do not give any additional right to the investors in the sense that tokens' owners are not invited to the annual shareholder meetings and are not allowed to appoint the members of the board. All in all, equity tokens are quite similar to shares with very limited rights and resemble the equity crowdfunding. The second type of tokens provide a remuneration in the form of interest (fixed or flexible). In other words, the firm issues bond-type tokens that differ

[2] Actually, the major reason for the development of new currencies is "political" in the sense that it cuts out the role of Central Banks (and Governments). However, this aspect is not relevant for our research.

from traditional bonds since the amount of each one is definitely smaller than the traditional bonds. In this case the ICO resembles the debt crowdfunding investment. The last type of tokens can give the owner the access to services offered by the issuer ("utility tokens"). In this case, tokens assume the form similar to pre-paid vouchers that can either give total access to the service or they can allow to access the prospective services at a discounted price. This form of remuneration is quite popular among projects that give access to software licenses, betting platforms or new videogames. All in all, this last form of remuneration resembles the rewards crowdfunding.

It is therefore apparent why ICOs are considered an hybrid of crowdfunding (Belleflammea, Lambert, and Schwienbacher 2014; Bradley and Luong 2014; Ahlers et al. 2015) and IPO (Chemmanur and Fulghieri 1999; Fjesme 2016) in a crypto-asset environment. In fact, ICOs are quite different from both. Firstly, ICOs are decentralized in the sense that investors buy tokens directly from the firm. There is no underwriter that collect all the issued tokens and then, takes the responsibility (and for this it charges a fee) to sell the token as in an IPO. Similarly, there is no need to use specialized platform to sell the tokens as in the case of Crowdfunding. Secondly, ICOs are accessible since they are open to anyone from any part of the world: the process implies just few clicks and a payment done either via a credit card or via cryptocurrency. Thirdly, as explained above ICOs grant mixed benefits in the sense that tokens may grant returns (fixed or variable) but also access to services (something that typically is not offered in IPOs that focus only on the sale of shares). Fourth, tokens can also be negotiated on online platforms (they mirror the secondary markets of traditional shares and bonds) so that they are relatively liquid crypto-assets (very different from Crowdfunding). In fact, in the last two years a set of successful secondary market platforms have been set up where issued tokens can be negotiated. Fifth, and possibly this is one of the most relevant characteristics of the tokens, they are characterized by high uncertainty about the future performance and high by information asymmetry: the projects financed via tokens are quite often at the very early stage (to the point that in some cases they are more business ideas than projects) and there is no clear idea about their final outcome. In addition, the information shared with the investors in the white paper (the document used by the issuer to explain the project) is very much reduced. More importantly, there is no regulation that imposes any due diligence on the project so that ICO issuers typically do not provide any independent valuation of the project (different from IPOs). This fact increases further the high information asymmetry faced by the investors. Finally, they are industry specific since most of the ICOs are related to blockchain technology or aim to exploit possibilities in the information technology realm.

In terms of volumes, so far ICOs have been anything but marginal in their very short life. Token sales have generated around 3.8 billion US dollars in 2017 and 4.8 billion US dollars from January to March in 2018 (Coinschedule.com). In contrast, the crowdfunding platform Kickstarter helped start-ups raise totally USD 3.5 billion since it started its business in 2009. This aspect suggests a further difference between Crowdfunding and ICOs: the different scale of the amount raised. Actually, ICOs typically aim at raising ten or hundred millions dollars while crowdfunding typically aims at raising ten or hundred thousands of dollars.

The increasing numbers of ICOs raises several questions about them in particular about the determinant of their success. To the best of our knowledge there are very few works that explore this aspect. Yadav (2017) explores the topic qualitatively and finds that investors are interested in token liquidity, distribution of token holdings, digital community sentiments, quality of information in white papers, promotion bounties, local government sentiments towards blockchain technology and the duration of existence of the startup. Adhami, Giudici, and Martinazzi (2018) find that the probability of an ICO success is linked to code source availability, token presale, and when tokens allow contributors to access a specific service (or to share profits). Very recently, Fisch (2018) looked at the technical characteristics of an ICO and finds that they play a role in ICO success.

Our work explores the role of hard information vis a vis soft information in ICO success in raising funds. Among the hard data we include the information about project technical characteristics,

and the financial aspects. As far as project soft characteristics are concerned, we include the intensity of social media activity during the ICO and the level of protection available for the investor.

Our evidence suggests that both hard and soft aspects are relevant even if a stronger role seems to be played by the technical information of the project.

II. Methodology and Data

Our research is based on 273 ICOs. Data is collected from the website Coindesk.com between Sep. 2017 and May. 2018. Coindesk.com is the world leading digital information service website for the cryptocurrencies and blockchain community. We estimate the following set of logit regressions

$$S_i = \alpha + \beta_1(F_i) + \varepsilon \quad (1)$$

$$S_i = \alpha + \beta_2(T_i) + \omega \quad (2)$$

$$S_i = \alpha + \beta_3(M_i) + \varphi \quad (3)$$

$$S_i = \alpha + \beta_4(P_i) + \vartheta \quad (4)$$

$$S_i = \alpha + \lambda_1(F_i) + \lambda_2(T_i) + \lambda_3(M_i) + \lambda_4(P_i) + \varrho \quad (5)$$

where S_i represents the success in raising funds. It is a dummy defined as whether the total fund raised is larger than minimum target.

As far as the independent variable is concerned, we include the vector F_i that contains finance related variables of firm *i*. Specifically we include FUND_ALLOCATION, a dummy variable that register whether the whitepaper explains the use of funds. In fact, some projects simply make a call for funds without explaining how they will be used while other projects provide detailed explanation about how funds will be used in terms of development of the product/service, promotion, marketing, administration costs, etc. Our expectation is that projects that provide more detailed information should be more likely to raise the targeted funds. On the one hand, FUND_ALLOCATION allows the investor to have a clearer idea about what the firm wants to do; on the other it signals entrepreneurial team desire to reduce the information asymmetry faced by the investor. PRE_SALE i.e. is a dummy variable that register whether there is a presale of the token. Since presale is typically limited to professional investors (e.g. business angels) and to those involved in the project (e.g. management and employees), a presale should signal quality of the project (if professional investors are invited to invest in the project and decide to put money into it, the project should have some merit). Thus, PRE_SALE should be associated to success in raising funds. BONUSES, i.e. if there are bonuses for investors, is a dummy variable that is expected to be positively related to success of the ICO since it increases the benefit that the investor can enjoy by investing in the ICO. It implicitly should increase ICO's attractiveness.

T_i is a vector of technical variables of firm *i*. We include the dummy variable CODE_AVAILABILITY i.e. whether the code of the project is provided. We expect a positive relationship between this variable and the success in raising funds. By sharing technical information such as the code, the firm allows investors to have a clearer idea about the quality of the project. Actually, even if the investor does not have the technical capabilities to evaluate the code, nevertheless the fact that the firm shares it, signals that it does not have anything to hide. ERC-20 is a dummy

variable that reports whether the Ethereum standard for smart contract is used. We expect this dummy positively associated to the success of the ICO since Ethereum is a quite high standard (even if not the highest in the market) that allows for the easy implementation of smart contracts. Thus, the use of this standard suggests quality and can facilitate prospectively the interaction between the investor and the firm.

M_i is a vector of that provides information about the social media activity of firm *i*. Actually, in the crypto asset world, information about the ICO can be accessed via different internet tools. The first variable we include is RATING collected from Icobench.com. This is a rating that takes into consideration basic information about the team, the quality and quantity of information that the ICO discloses, the product presentation, the marketing strategy, the social media activity about the ICO, as well as experts' and legal review of the ICO. Every project is given a score from the worst 0 to the best 5. We include the score that each ICO considered in our sample obtained. We expect that the highest the rank the easier for the firm to be successful in its ICO. GOOGLE_TRENDS is a database that records the search volume of each search word and calculate a number ranging from 0 to 100. We include the score gained by each ICO. Our expectation is that the higher the score in Google trends the higher the probability of success. In fact, high score in Google trend is a good signal of the popularity of the ICO: the greater the popularity the higher the probability that the ICO is a success.

P_i is a vector representing the protection for the investor for firm *i*. We include KYC - know your client policy. Actually, KYC is a procedure that may be implemented by the firm that raises funds in order to monitor the funds provided by the investors so that it can be sure that the investment is not linked to money laundering. Firms that implement a KYC approach signals quality in the sense that they tell the investor that they want to have "good" money and are not so desperate to finance their project that they are happy to receive funds from any source. Thus, we expect a positive relation between the dummy KYC and the success in the ICO. Finally, we consider JURISDICTION. Here we discriminate firms that are registered in countries with low legal protection where can be difficult for investors to act against the firm if it behaves improperly from countries that grant a proper level of protection to the investors.

We also re-estimate the models by using interaction variables where we interact variables that belong to the same vector. In addition, since our sample is relatively small, we re-estimate our models by using bootstrap estimation of the standard errors (5,000 replications). Finally, we look at the marginal effects in order to explore the economic impact of soft vs. hard variables.

III. Data Description

The projects in our samples collected a total funding of $6.6 billion. The mean value is $24.17 million, and the median is $15 million. These values are in line with the amount typically raised by ICOs and also show how different ICOs are from Crowdfunding.

The largest ICO included in the sample is the project of Telegram ($850 million). Detailed descriptive statistics of the ICOs are reported in table 1. The success of the ICO is positively correlated to presale (.505) and to the fact that the ICO provides the code (.525). At the same time, it is quite surprising the fact that Rating has a lowest correlation to success (.135). However, all the correlations are significant.

Table 1 – Descriptive Statistics

Variable	Num	Mean	SD	Min.	Max.
Success	273	0.9121	0.2837	0	1
code_availability	273	0.7619	0.4267	0	1
Jurisdiction	273	0.5971	0.4914	0	1
fund_allocation	273	0.6081	0.4891	0	1
KYC	273	0.6667	0.4723	0	1
pre-sale	273	0.8095	0.3934	0	1
Bonuses	273	0.8168	0.4221	0	1
Rating	273	3.3513	0.6825	0	4.7
Google_Trends	273	7.4345	3.1175	0	15.3
ERC20	273	0.8791	0.3266	0	1

Table 2 – Correlation Matrix

	success	code avail.	Juris.	fund alloc.	KYC	pre-sale	Bonus	rating	Google Trends
success	1								
code_availability	0.525	1							
jurisdiction	0.220	0.190	1						
fund_allocation	0.307	0.185	0.105	1					
KYC	0.247	0.170	0.053	0.117	1				
pre-sale	0.508	0.386	0.115	0.203	0.251	1			
bonuses	0.421	0.247	0.171	0.144	0.127	0.373	1		
rating	0.135	0.167	0.068	0.045	0.180	0.182	0.076	1	
Google_Trends	0.353	0.204	-0.007	0.006	0.172	0.208	0.231	0.062	1
ERC20	0.123	0.136	0.039	0.071	0.072	0.106	0.115	0.244	-0.110

IV. Regression Results

The logit regression models are presented in the Table 3. None of the regressions presents collinearity issues and all the models have the area below the ROC curve above the .60 threshold. As far as the finance related variables (model 1) both FUND_ALLOCATION and PRE_SALE are positively related to the success of an ICO while ICOs are not affected by BONUS distributed to investors. This specification explains .429 of the variance, suggesting an important role played by these covariates. The results are in line with what expected. In the case of the technical characteristics (model 2), CODE_AVAILABILITY has a positive and significant impact on the success of an ICO since it reduces information asymmetry about technical aspects as expected. Surprisingly, ERC20 is not significant possibly because most of the company use ERC20 smart contract to launch their ICOs and thus, there is no competitive advantage in using it. Interestingly, also this specification explains a good amount of variance – namely .406 – suggesting an important role played by these covariates. Turning attention to the "soft variables", Model 3 shows that investors decision is affected by both the protection granted by KYC procedure and by JURISDICTION as originally expected. In this case the model explains 17.2% of the variance.

Table 3 – Regressions

Dependent Variable: Dummy for Success

Independent Variables: Whether there is information on the Allocation of funds; whether there was a presale; whether there are bonuses for the investors; whether the code is disclosed; whether the ICO uses Ethereum platform for Smart Contracts; whether there is a legal protection for the investor; whether the ICO follows know your customers approach; the rating provided by ICObench; the google trend score.

	(1)	(2)	(3)	(4)	(5)
VARIABLES	**Model Finance**	**Model Technical**	**Model Legal Protection**	**Model Social Media**	**Model All covariates**
funds Allocation	2.353***				2.867**
	(0.689)				(1.169)
Presale	3.365***				4.684**
	(0.631)				(1.986)
Bonuses	-0.0415				-2.355
	(0.586)				(1.543)
Code		4.685***			5.668***
		(1.037)			(1.772)
ERC20 token		0.508			1.123
		(0.615)			(1.224)
Jurisdiction			1.636***		4.809**
			(0.502)		(1.922)
KYC			1.751***		0.491
			(0.482)		(1.039)
Rating				0.455	-0.219
				(0.299)	(0.658)
Goolgle Trends				0.460***	1.116***
				(0.0916)	(0.382)
Constant	-0.259	0.201	0.760**	-1.788*	-10.20***
	(0.445)	(0.547)	(0.322)	(1.033)	(3.766)
Observations	273	273	273	273	273
chi2	69.65	66.06	27.88	38.58	130.3
P	.0000	.0000	.0000	.0000	.0000
r2_p	.429	.406	.172	.237	.802

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Finally, looking at the role of social media, GOOGLE_TRENDS is significantly and positively associated to the success suggesting that the popularity of the project is a determinant in its success. At the same time, RATING is not significant: this finding is in line with the very low correlation that RATING has with the probability to obtain credit as shown by the correlation table (TABLE 2). The variance explained is 23.7%.

By looking at these regressions we can conclude that even if the largest majority of the variables are significant, nevertheless, covariates that cover hard aspects of the project (finance and technical aspects) explain a greater amount of variance than those that cover soft aspects of the pitch.

In model 5 we enter all the variables at one time. The model does not suffer from collinearity and no major differences emerge except for KYC that used to be significant and now it is not. In

addition, the significance level of JURISDICTION reduces to .05. Model 5 is also the model that maximizes Pseudo R2 (we attempted alternative models but we ended up with lower R2).

We also estimate marginal effects: the presence of CODE increases the probability to be successful by .5% while JURISDICTION by .1% and PRESALE by .3%. These results suggest that even if there is an economic impact, nevertheless it is quite marginal.

Table 4 – Regressions with Interaction Variables

Dependent Variable: Dummy for Success

Independent Variables: Tech is the interaction between whether the code is disclosed; whether the ICO uses Ethereum platform for Smart Contracts; Fin is the interaction between: Whether there is information on the Allocation of funds, whether there was a presale, and whether there are bonuses for the investors; Info is the interaction between the rating provided by ICObench and the google trend score; Prot is the interaction between whether there is a legal protection for the investor and whether the ICO follows know your customers approach.

	(6)
VARIABLES	**Interactions**
Tech	4.277***
	(1.092)
Fin	2.373***
	(0.840)
Info	0.110***
	(0.0322)
Prot	2.879***
	(1.114)
Constant	-2.146***
	(0.712)
Observations	273
chi2	93.82
p	.0000
r2_p	.577

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

We implement some further analysis in order to explore the robustness of our results. Firstly, since the number of observations in quite reduced (even if our sample represents around 20% of the overall ICOs in the period considered), we cannot rule out the fact that the results are influenced by a small number of highly clustered observations. Thus, we re-estimate the regressions by using bootstrap technique (Efron 1979; Efron and Tibshirani 1998). The results, (not reported here for reason of space) are qualitatively identical suggesting that our results are robust

Secondly, we estimate a model where instead of entering the original variables for each vector, we enter their interaction. This approach allows us to explore the joint (amplifying) effect that different variables that belong to the same vector can have. Results are reported in table 4

As expected, all the four groups are significant and positively related to ICO success. Technical aspects maintain a lead role in the success of the ICO as suggested by the marginal effect analysis: the probability that an ICO is successful increases by 5% when it discloses code and it uses ERC20 technology for smart contracts at the same time. The presence of a good protection increases the probability of success by 1% while financial aspects increases it by around .7%.

V. Discussion

Our results suggest that, at marginal effects level, technical information plays a greater role than soft information. In particular, even if GOOGLE_TRENDS is significant, it does not have a major economic impact. This evidence is quite important. One criticism towards Crowdfunding (and ICOs) is related to the fact that investors may not properly evaluate the project and their decision may be mainly driven by the popularity of the project. This can happen for a set of reasons: firstly, ICO investors are not professional investors, in the sense that institutional investors (investment banks, insurance companies, etc.) so far seem to be not interested in investing in tokens. This implies that those who invest in ICO typically lack the skills and the capabilities as well as the resources that professional investors have to assess the quality of the investment. More importantly, they are not provided with any official due diligence nor are they able to access the results of the due diligence that professional investors do for themselves and then disseminate among all the potential investors. The lack of adequate information about the project implies that current ICO investors are forced to take decision by relying more on the popularity of the ICO than by looking at its intrinsic quality. Such a lack of adequate information is quite often used as a justification of the fact that the amount typically invested by the single investor is very much reduced: the investors are able to control any negative outcome because of the very much reduced impact it has on their portfolio of investments. Interestingly enough, the reaction to the lack of information generates a self-reinforcing loop: the difficulty in accessing information implies a very much reduced amount of money invested in the project that in turns reduces the interest of the investor in looking for further and more detailed information about the project, since they do not consider worthwhile put too much effort to evaluate the project. All in all, the lack of professional investors and their implicit role as quality evaluators and information disseminators impacts on private investors' approach so that the latter may consider buying a token more a bet than an investment.

If this holds true, one would expect an important role of GOOGLE_TRENDS as a driver for the investor to decide whether to put money in the ICO (and, consequently, the capability of the ICO to be successful in raising funds). Our evidence suggests that, in fact, investors in the ICO look more at the financial and technical information. However, it is important to point out that our marginal effect analysis suggests that their economic impact is not dramatically relevant. Thus, even if at first sight the evidence seems to point in the direction of a more professional approach in investors decision about ICOs, in fact we cannot rule completely out an emotional component in the investment decision process.

Interestingly enough our results are relevant also for the entrepreneurs since our evidence informs them about what information should be effectively disclosed in order to increase the probability to have a successful ICO. In general terms, entrepreneurs are advised that disclosing information and reducing the information asymmetry that investor face pays. In fact, the role of accessing technical and financial information suggest the areas that are relevant for regulators to regulate. If financial and technical information is relevant in investors' decision, rules should be set up in order to minimize the risk of distortion and maximize the disclosing of information in these areas.

VI. Call for Future Research and Conclusion

Our research provides just initial evidence of the important role of different types of information on the determinant of the success of an ICO. As a first attempt, it has limitations linked to the dataset and variable explored, that open the door to further research.

First, we rely on 273 ICOs a relatively small sample that may limit the generalizability of this

research. It is important to point out that the limited number of observations represents, nevertheless, a good proportion of the overall ICOs in the period considered (around 20%) since this is a very new phenomenon that is just gaining momentum. Future research should try to use larger and possibly more heterogeneous datasets in terms of industries involved, countries, legal systems, etc. In particular, the legal context and the protection granted to the investor can be a very important area since different countries are moving at different pace in terms of regulation and protection in the realm of the crypto assets.

Second, present research focuses on the success of the ICO in terms of whether the ICO obtained the requested amount of funds. In fact, there are alternative ways to define success. For instance, from the funding campaign point of you, it could be interesting to explore the determinants of the amount raised by the venture or the percentage raised with respect the original target so to consider whether the firm is able to raise more funds than originally planned; from the firm's point of view, it could be interesting to explore whether the funds raised via an ICO allow the firm to develop faster and be successful in implementing its plans. From the medium- to long-term investor point of view, it will be interesting to explore whether the ICOs will be able to deliver a decent return to the original investors and whether the product/service offered (in case of reward tokens) will have the value that it was originally anticipated.

Third, a very large amounts of tokens are negotiated on platforms making them tradable assets, at first sight very close to shares. However, only a fraction of tokens represents something similar to shares. As explained in the introduction, quite often, tokens represent rights linked to access to future services/product sold by the venture in a way similar to what happen on crowdfunding platforms like Kickstarter (Frydrych et al. 2014; Colombo, Franzoni, and Rossi-Lamastra 2015). Moreover, some tokens allow for access to a stable stream of cash flow in a way similar to the interest on bonds. However, there are also tokens that grant access to a share of the future profit of the venture in a way similar to traditional shares. As discussed, the latter class of ICO do not grant any voting right to the holder (that is, the owner of the token does not have any right to attend annual meetings or have a say in appointing the top management of the venture). All in all, traded tokens share some traits with traditional shares or bonds but they are also quite different. Thus, it is interesting to explore the tokens' post ICO performance by examining their behavior on the trading platforms: is their volatility similar to that of shares? Do the type of token affect performance and volatility? Is token's post ICO short term performance linked to the performance of the venture? Similarly, it can be interesting to explore whether the success of the ICO affects the post ICO token's performance in ways that are similar to what happens to shares in the case of IPO. This line of investigation might allow to have a clearer idea about how close tokens are to traditional shares and traditional bonds. This type of analysis can be very interesting in the area of portfolio management: if tokens behave in a way that is very different with respect shares and bonds, they can be a very interesting additional class of assets for portfolio managers to consider when it turns to portfolio diversification strategies in a way similar to cryptocurrencies (Kajtazi and Moro 2019; Corbet et al. 2019; Platanakis and Urquhart 2019).

Fourth, it is very important to explore in detail the role of social media in ICO issuing and post ICO trading values. As discussed above, the major risk is that non-professional investors can decide to invest in tokens because positive word of mouth and positive information that circulate on social media: if a lot of people on Facebook, Twitter, etc. discuss (positively) about a token, the non-professional investor can be induced to think that this is a good and low risk investment. This approach can be further reinforced by the limited amount of money that investors are requested to invest. In fact, evidence (e.g. Cambridge Analytica case) suggests that social media can provide distorted information and affect the way in which people take decisions (Pennycook et al. 2015). In a context where there is no protection for the investors (currently there is no regulation about ICOs), the damage incurred by the non-professional investors in buying tokens that end up being scams can be huge. In our research we make a first attempt in exploring the role of social media in investment decision by looking at Google Trend and we found a relatively reassuring results (the fact that the

investor decision seems to be affected more by the technical characteristics of the venture than by the social media). However, our work is only a first attempt to scratch the surface. For instance, we do not explore the role of alternative media (e.g. Facebook, Twitter, Snapchat, etc.) and how they can affect investment decision during the ICO campaign and later when the token is traded. It is very important that future research looks at these variables and other communication tools that can affect ICO success.

Fifth, and partially linked to the previous point, research should also further explore the information disseminated about the project. Entrepreneurs that pursue an ICO typically disseminate basic information about the project via the white paper. The exploration of the information contained in the white paper and the way it is presented is a very relevant and interesting topic. As far as the information included is concerned, it is important to explore whether technical information vis-a-vis financial information play a role in ICO success and in post ICO token's values. As far as the way in which information is presented is concerned, it is very important to explore whether different ways of presenting the project, that is the choreography around the project, affects the ICO success. This latter aspect is at least partially linked to the point that we raised above about the fact that non-professional investors can be misled in their investment decisions because the way in which the information is delivered to them. Along this line, it can be also interesting to explore aspects such as the language used, whether it is clear or convoluted, white paper layout, whether there is the large use of buzzwords (Pennycook et al. 2015), etc., since different communication strategy might be pursued in order to influence investor decision.

Sixth, further investigation about the financials of the ICOs is very much needed. Actually, ICOs are linked to highly innovative and uncertain projects. Thus, it is quite difficult for the entrepreneurs involved in the project to produce detailed business plans and reliable financial forecasts. Moreover, entrepreneurs are also very much concerned about the risks they incur when they disseminate too much information outside the organization (e.g. Rheinbaben and Ruckes 2004; Lowry et al. 2014). Nevertheless, quite detailed information is needed in order to take a proper rational decision about whether to invest in a venture or not. It can be interesting to explore whether a more detailed and precise financial information affects the ICO success since if this is the case, entrepreneurs should try to find effective way to disclose information without compromising the future success of the firm. Similarly, it can be interesting to explore the role of the team characteristics in terms of specific expertise they take in the project, their past experience and past success, their general background (i.e. technical vs financial vs entrepreneurial). The role of the team dimension and its composition in terms of different nationalities and different cultures can also be very important. Past research stresses clearly the role of the team in entrepreneurial success (Lawson et al. 2009; Sapsed et al. 2002; Brinkmann, Salomo, and Gemuenden 2011) and this should apply to ICOs as well. All in all, this line of investigation might allow to have a clearer idea whether investors in tokens act as proper investors looking at the financial and strategic information about the project or are closer to someone who simply place a bet.

All in all, the research on ICOs is just at the beginning and there are a lot of questions needed to be answered.

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