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**DISCLOSURE'S IMPLICATION IN INITIAL COIN OFFERINGS
(ICOs) FUNDRAISING: PUBLIC COMMUNICATION
RELATIONSHIP**

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Introduction

In those years, mostly after the Global Financial Crisis, an alternative source method started to grow up, supported by the lack of trust registered in this period. Crowdfunding, or more generally Crowdsourcing, represent today a significant financial sources method and it continues developing. That also helped firms classified as SMEs (Small and Medium Enterprises) in obtaining funds to start or develop their activity; this fundraising system is perfect for SMEs due to their scarce necessity of resources. Indeed, major fundraising processes such as IPOs, Venture Capitals do not match the necessities of this sector because of their huge needs of funds. In the scenario, another kind of crowdfunding, different from the three major types (Reward-Based, Donation-Based and Equity-Based), started to emerge. Compared to IPO, it is now commonly called Initial Coin Offering (ICO); indeed, it shares some similarities with the traditional financial source methods but it differentiates from the “old” one by two elements: Disintermediation and Token/Coin Sales. Equally to crowdfunding platforms such as Kickstarter or Crowdcube, ICO’s start raising funds on specific platforms.

This new fundraising system seems to be perfect because of all the benefits it carries less cost due to its disintermediate nature, no limits to the amount that can be requested and so on. But, obviously, like everything that seems to be perfect it has its own points of weakness; indeed, one of the most important problems when talking about ICO’s market is its opaqueness in terms of market uncertainty and information asymmetry

Because of that, many researchers tried to find some elements that could help investors when deciding if a specific project could be dangerous or not. Drawing on several theories, comparing to other fundraising mechanisms or even analyzing empirical evidence, experts tried to reduce this opaqueness that surrounds ICO’s Market.

In this thesis, my intent is to concentrate on one aspect in particular: the role of disclosure and its impact on the funds raised by the companies. To start this, I will describe a general overview of crowdfunding and, specifically, ICO’s market trying to make as clearly as possible. Then I will concentrate on modern literature concerning this concept trying to compare authors’ thoughts trying to give a logical asset to the problem and describing how experts answered to this question. Finally, I will analyze myself a specific group of ICO’s project in order to verify if all this hypothesis is still consistent today and that through a multivariate regression analysis constructed on various elements that will be defined in the last chapter.

Chapter 1:

ICOs funding process and relation with variables

1.1 Small and Medium Enterprises and funding

Fundraising is the process of seeking money amounts by private or public agents that voluntarily contribute to their investment. This helps firms in developing their project. When talking about funding methods, first processes that come to mind are Venture Capital (VC) and IPO;

1. VCs are financing methods in which contributors provide investments to firms which have credibly long-term growth potential.
2. IPOs are financing methods in which firms, through an intermediary (usually an Investment Bank), offer shares to the investors “going public”.

These two shares an important quality: both are useful when seeking a higher amount of funds. So, typically those fundraising processes are related to bigger firms that need high-quantity funds.

However, firms do not ever search for these enormous amounts and particularly small and medium firms require much smaller funds. For small and medium enterprises (SMEs) are intended those who respect the European Commission recommendation of 6 May 2003 in which they have to meet these requirements¹:

1. Less than 250 people employed
2. Annual turnover of up to EUR 50 million
3. Balance sheet total of no more than EUR 43 million

Other criteria recognize sub-categories of the SME sector:

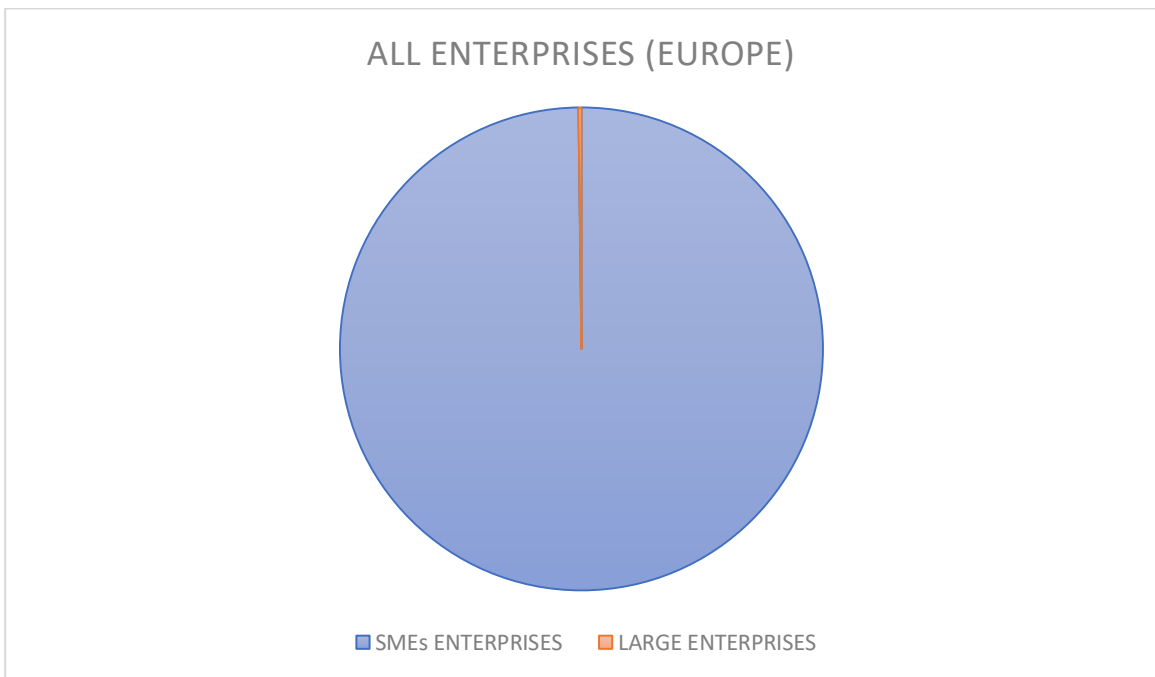
- Micro SMEs:
 - with less than 10 persons employed;
- Small SMEs:
 - with 10-49 persons employed;

¹ These data are retrieved from. <https://ec.europa.eu/eurostat/web/structural-business-statistics/structural-business-statistics/sme>

- Medium SMEs:
 - with 50-249 persons employed.

	Micro SMEs	Small SMEs	Medium-sized SMEs	All SMEs	Large enterprises	All enterprises
Enterprises						
Number	22,830,944	1,420,693	231,857	24,483,496	46,547	24,530,050
%	93.1%	5.8%	0.9%	99.8%	0.2%	100.0%

In the European Context, SMEs (intended as the union of all 3 sub-categories previously mentioned) represent the 99,8% of all enterprises against the only 0,2% overall of large enterprises (24,483,496 SMEs's enterprises against only 46,547 large ones).



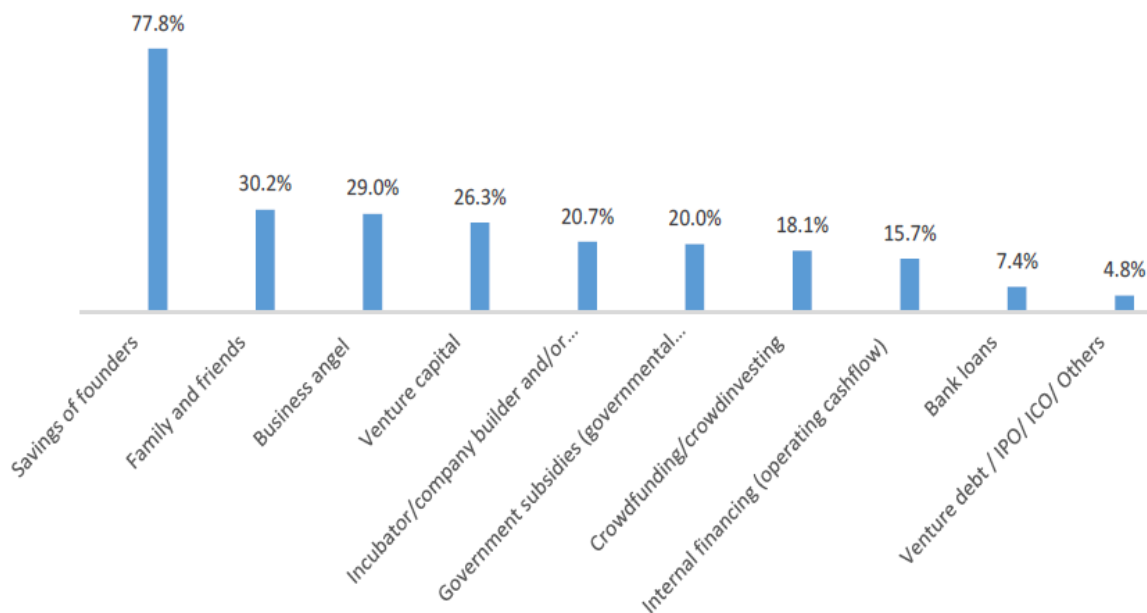
² These data are retrieved from the European Commission's annual report. Link to the pdf: <https://ec.europa.eu/docsroom/documents/32601/attachments/1/translations/en/renditions/native>

³ These data are retrieved from the European Commission's annual report. Link to the pdf: <https://ec.europa.eu/docsroom/documents/32601/attachments/1/translations/en/renditions/native>

Because of that percentage, SMEs represent a significant part of the enterprise sector. So, it is important to understand how these firms raise their funds, given that IPOs and VCs are not their main fundraising channels.

Moreover, In this sector are present the Start-ups, the enterprise that majorly needs to raise funds for their project. According to the European Commission's annual reports, Start-ups's fundraising mechanism are:

1. Saving of founders (77,8%)
2. Family and friends (30,2%)
3. Business angel (29,0%)
4. Venture Capital (26,3%)
5. Incubator/company builder (20,7%)
6. Government subsidiaries (20,0%)
7. Crowdfunding/Crowdinvesting (18,1%)
8. Internal financing (operating cashflow) (15,7%)
9. Bank Loans (7,4%)
10. Venture Debt/IPO/ICO/Others (4,8%)



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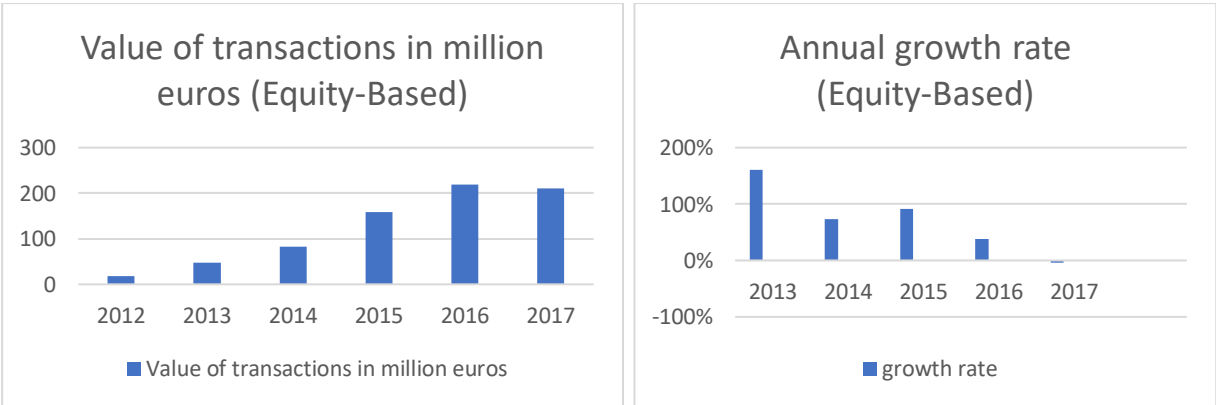
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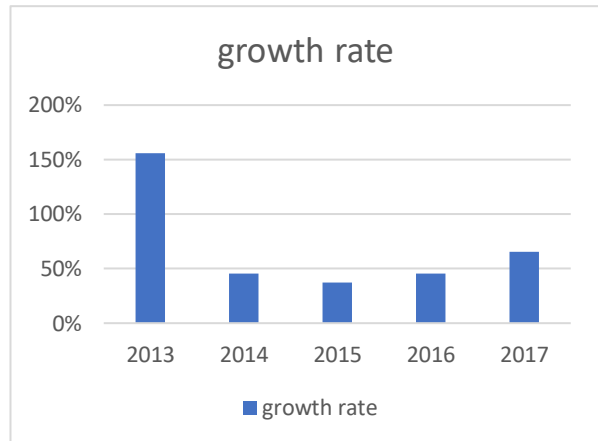
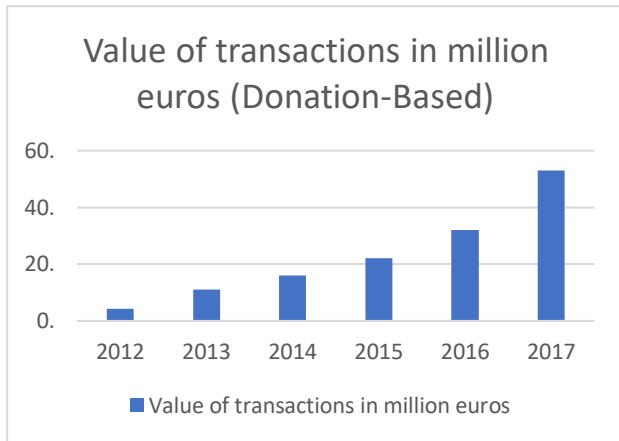
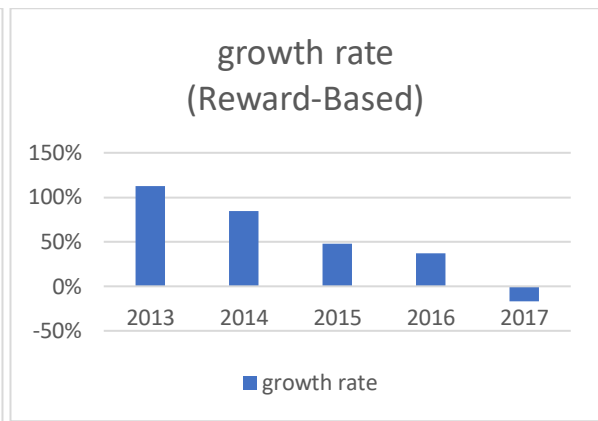
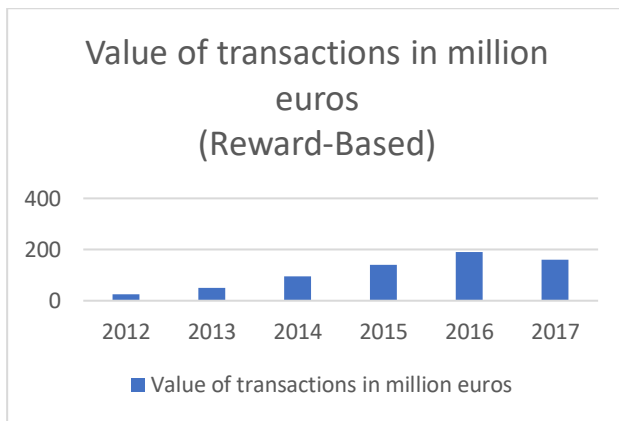
In Particular, Crowdfunding seems to be one of the fundraising mechanism that, after the Global Financial Crisis, grew up exponentially. This method can be divided into three sections depending on the object of the transaction:

- 1. Equity-Based
- 2. Reward-Based
- 3. Donation-Based

These three will be more properly discussed in the next sections.

In each category, even if the growth rate slowed down during the years, crowdfunding has seen an exponential development in term of value of the transaction; this was caused by a need of disintermediation; indeed, after Global Financial Crisis, investors lost their trust in banking and financial system. This condition can be easily explained by Gray and Zhang; they explain that contributors started to seek for alternative financing and fundraising methods and that's because: <<The mainstream banking system was profoundly implicated in the 2008 financial crisis as banks created sophisticated financial tools which functioned to encourage excessive speculation and risk on a global scale. The global banking crisis in 2007/08 was transformed into a sovereign debt crisis and the widespread adoption of austerity policies on both national and urban scales. This led many individuals to search for alternatives and, in particular, less financial intermediation between the saver and borrower, the investor and investee.>> (Gray et al., 2017)





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⁵ All data are retrieved from. <https://www.statista.com/>

1.2 ICO market

In 2014 (graph A), the very first ICOs were taking places. In this period, the total amount raised was \$16,032,802 and the total number of completed ICOs was only 2. In 2015 (graph B), other 3 companies undertook ICOs but the amount raised dramatically low down to \$6,084,000. However, in 2016 (graph C) this process began to grow up to \$90,250,273 and the number increased to 29. It was an embryonal step toward technological and financial innovation, also described today as the possible banking disruptor process. Indeed, in 2017 (graph D) the number of ICOs exploded to 875 raising a total amount of \$6,226,689,449. Finally, in 2018 (graph E) the number of ICOs increased to 1253 and the total amount to \$7,812,150,041⁶.

In 2019 the amount raised round about \$118 million⁷, according to the Wall Street Journal (WJS, 2019), and the number of ICOs is 328. However, this result is critical for the sector; in the same period last year, ICO's market raised nearly \$6.9 billion, over 58 times more than the current year. Though, these results are not consistent because this decline started from July 2018 and continued (slightly constant) over the Q3 and the Q4. Indeed, compared with this last period 2019 Q1 is not disrupting: the amount raised is somewhat equal considering only its \$0.5 billion drops. However, there is a peculiar condition that characterized the first 2019 quarter: the number of completed ICOs low down from 585 in 2018 Q4 (of which 207 successful and 378 not) to 328 in 2019 Q1 (of which 107 successful and 221 not). Furthermore, the success rate is approximately unvaried between these periods (35.39% in the last 2018 quarter and 32.62 in the first 2019 quarter). The ICObench report⁸ reads:

“Notably, in Q1 2019 there were twice less ICOs projects that have raised funds comparing with Q4 2018. However, the average ICObench rating has not been changed. The success rate of ICOs that raised a positive amount of funds in Q1 2019 is nearly the same as in Q4 2018 even though the amount of ICOs have declined. More than 60% of ICO projects still raise less than \$5million.”

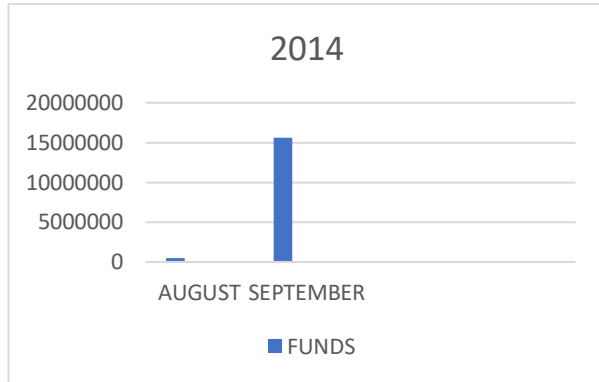
As a consequence, the ICO market got significant for the impact it has on the global economy and, due to a large number of new companies everyday undertaking an ICO, it is established as a new fundraising process competing with other traditional financial source methods such as venture capital (VC) and IPOs.

⁶ All data and graphs are retrieved from. <https://www.icodata.io/stats>

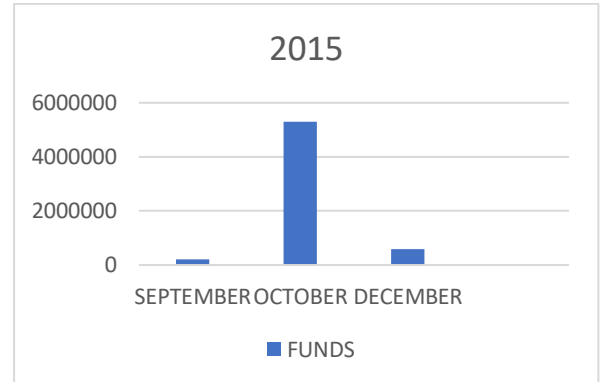
⁷ Period considered: 01/01/2019-03/31/2019

⁸ Retrieved from. <https://cointelegraph.com/news/report-fewer-icos-raised-funds-in-q1-2019-than-in-q4-2018>

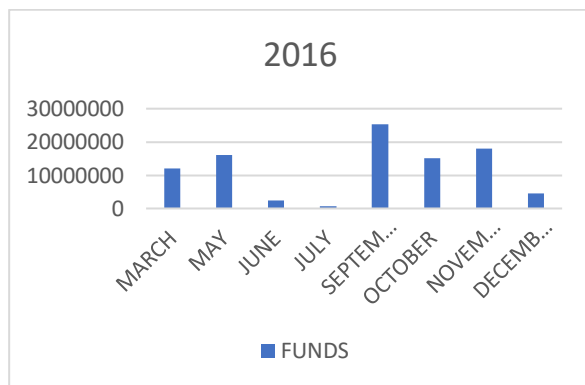
A)



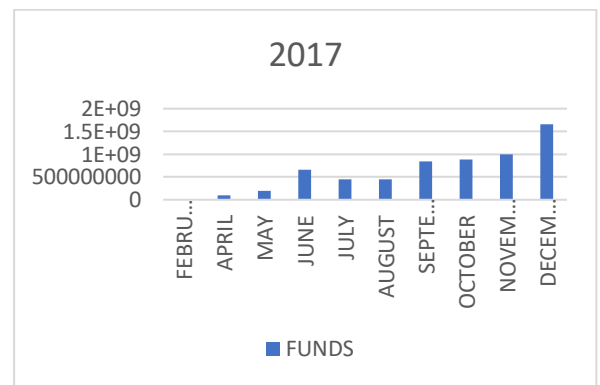
B)



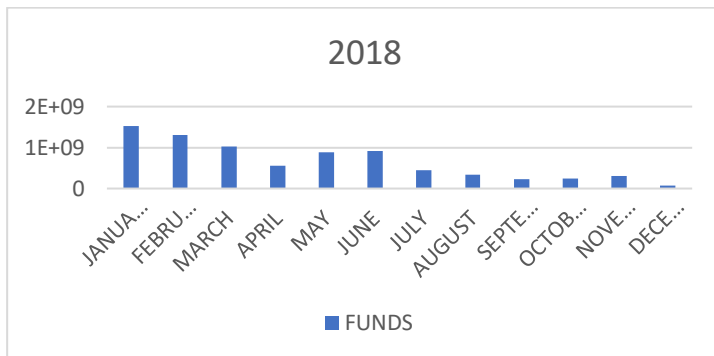
C)



D)



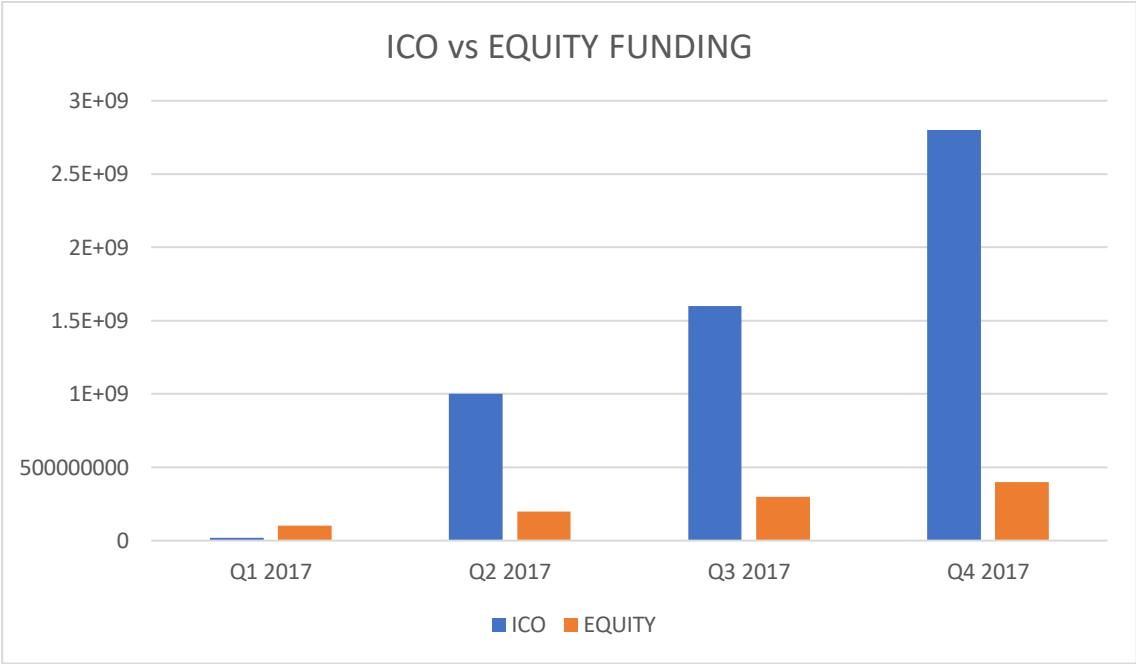
E)



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Moreover, talking about start-up's amount raised, ICOs in 2017 took off and also took over the traditional equity funding methods starting from the first quarter, in which the “new one” represented only the 3.74% over the annual funds (210 million over 5,61 billion dollars), till the last quarter, in which it jumped to 7 times the traditional source methods' funds (2.8 billion raised with ICOs against 4 million with others). In total, the proportion between the two processes is around 17.83% (ICO/EQUITY METHODS)

⁹ All data represent the monthly amount and are measured in USD.



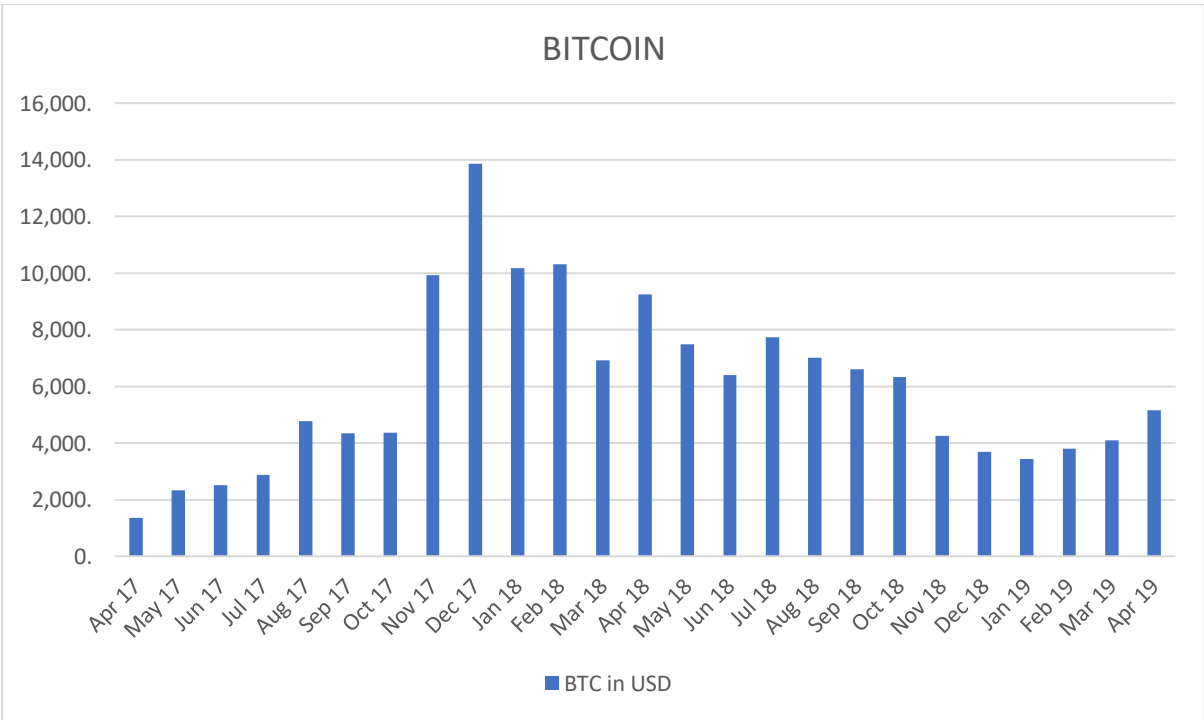
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¹⁰ All data are approximated and retrieved from. <https://app.cbinsights.com/research/blockchain-vc-ico-funding/>

1.3 ICO disambiguation

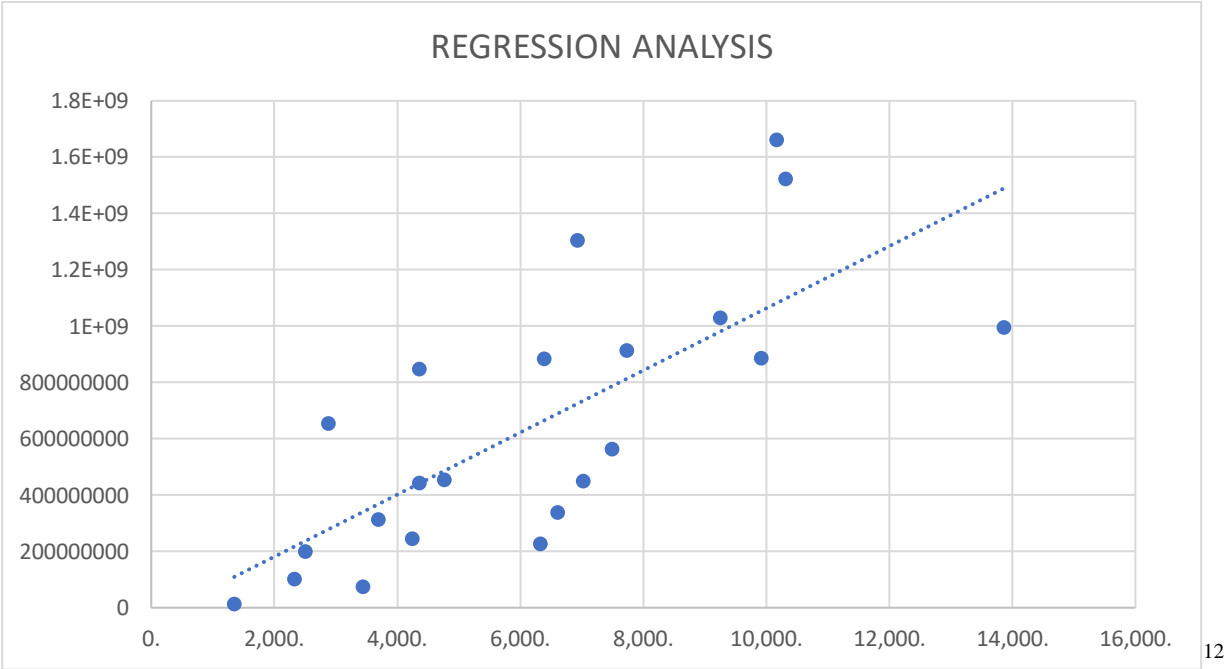
ICOs are for the majority mind-related to those which are non-properly and generically called Cryptocurrencies, even though they represent such a small part of the concepts concerning ICO's process. More precisely, ordinary investors always mentally associate tokens exchanged on the secondary market (and supported by an exchange platform) to Cryptocurrencies or, more commonly, to Bitcoin, market cap leader currency. Moreover, Bitcoin detains more than 50% of the whole market capitalization, so, for this reason, it can be considered as representative for the entire market.

This wrong association could have led to ICO projects anomalous growth in 2017 in parallel with the Bitcoin and cryptocurrencies' trend (graph D and Bitcoin graph). Indeed, it is particularly the correlation between the incremental growth registered in both cases. Between December 2017 and January 2018, the "Bitcoin bubble" exploded. That condition caused a contraction of the currency demand taking BTC price from \$13,860.14 to \$6,926.02 in barely 3 months. Underneath it is presented the Bitcoin's trend in the considered period.



¹¹ Data retrieved from. <https://www.statista.com/statistics/326707/bitcoin-price-index/>

So, this analysis considers two variables: BTC in USD and ICO funds raised between April 2017 and January 2018. I chose this period due to its particular financial condition previously described; indeed, during this time, the “Bitcoin Bubble” has grown, starting from November 2017, and then “exploded” in January 2018. Moreover, at the same time, the ICO market boomed and then slowed down as the cryptocurrency’s trend dropped. Thus, I sought a relationship between the two variables in order to verify if there could be a direct relationship that led the investor to trust the ICO market more than before. The logic behind this concept is simple: the more risk supported by market operators in trusting and investing in Token-backed projects is balanced by the high profits that the market register during this period of activity.



In the end, the analysis has underlined a good correlation between these two variables, BTC in USD growth and ICO funds raised between April 2017 and January 2018; indeed, the R squared its equal to 0,55229645 describing a direct relationship between the two and indicating a highly significant ($p < 0.01$) and positive relationship between the two variables. Thus, the ICO market is influenced by the Cryptocurrencies’ trend and in particular by the Bitcoin’s trend, even though there are not the same thing.

¹² All Data and Linear Regression analysis are exposed in [table 1](#)

1.4 Summary description of ICOs process

Crowdfunding is <<an open call, essentially through the internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes>> (Kleemann et al., 2008). There are six key words to keep in mind when talking about crowdfunding: *Crowd*, *Funding*, *Alternative finance*, *Models*, *Purpose* and *Online*.

- 1) The *Crowd* represents the main characteristic of this method because itself it's based on wide public participation.
- 2) The *Funding*, in this case, is composed of small contributions in the form of financial resources.
- 3) It also characterizes the start-up's finance-seeking process as an *alternative* one due to its disintermediation nature.
- 4) The *model* differentiates itself from others because of the exchange methods that can guarantee products or tokens instead of shares of rights.
- 5) The *Purpose* that leads the fundraising itself has to be specified, be it non-profit or for-profit.
- 6) Funds are raised on an *online* platform; however, they could be raised also offline but the transactional and counterpart's research costs would be too high (Alegre et al. 2016).

Crowdfunding can be recognized depending on the type; particularly, there are three types of crowdfunding:

- 1) Donation-Based
- 2) Rewards-Based
- 3) Equity-Based
- 4) Debt-Based

Talking about the first one, it's correct to think of any campaign in which there is no financial returns to investors or contributors and common purposes for this kind are disaster reliefs, charities, non-profit and medical bills. The second one involves individuals contributing to a business in exchange for a "reward", typically a form of the product or service offered by the firm; however, it's still considered as a subcategory of the Donation-Based type because of its no financial or equity returns. The third one it's different from others because it allows contributors to become part-owners of the company by trading capital for equity shares; so, investors gain

financial returns in the form of a dividend or distribution. The last one is similar to a bond in which contributors lend money to the firm and, in turns, they expect interest on the amount hired.

In these years, has been taking off a new fundraising process defined Initial Coin Offering (ICO) that share similarities with traditional sources methods such as IPO and Venture Capital. In an Initial Public Offering (IPO), the firm selects an intermediary, usually an Investment bank, which advises the company and underwrite the capital that has to be raised. The IPO need the permission of the Securities and Exchange Commission (SEC). After its approval, the effective date is decided. The issuing company and the underwriting bank decide about the amount and the price of each share to be sold. Then the Company “*goes public*”. For Venture Capital, it is intended a private or institutional investment made into early-stage/start-up companies. People who invest are called “Venture Capitalists”; they buy shares of a firm and become a financial partner in the business. In particular, this investment is referred to a risk capital because investors participate in both profits and losses.

Talking about Initial coin Offering, there is not one official or widely accepted definition, but many of them are related to entrepreneurial finance. Christian Fisch describes the process << as a mechanism used by new ventures to raise capital by selling tokens to a crowd of investors>> (C. Fisch, 2019). This categorization considerate ICO’s process with a crowdfunding approach and so it must be compared to other traditional sources of entrepreneurial finance to find out what are the main similarities and differences between them.

The process itself starts with a funds’ crowdsourcing that it’s completely disintermediated, differently from bank intermediation in IPOs. Moreover, the firm doesn’t issue a share of equity in exchange of money but “Tokens” that represent quotes of participation that could be rewarded financially or with firm’s products depending on what kind of token the company decides to issue. Moreover, the main points of difference are that ICOs use *Distributed Ledger Technology* (DLT) a new approach that record and share the exact same data across multiple storages, called ledgers. Particularly, the whole process is based on Blockchain technology that is a type of DLT in which data are stored by “blocks” and guarantee the anonymity of clients thanks to cryptographic and algorithmic methods. This technology is crucial when talking about ICO because it represents the base of the whole process. In 2017, 875 companies undertook an ICO blockchain-based and in 2018 the number grows up till the quote of 1253¹³ (related to graph D and graph E).

The ICO’s process is based on tokens’ sale, which also represents the second main characteristic that differentiates this from other traditional sources methods. At that point, the project team

¹³ Data retrieved from <https://www.icodata.io/stats>

publishes documentation called White paper in which it describes the project itself, token sale's terms, token's types and other indication about it.

There's a technical distinction between what it's called "coin" and what it's called "token". The first is native on its own blockchain, meanwhile the other is an application on other existing blockchains. From now on, both terms will be used interchangeably as synonyms. Tokens correspond to several assets and, usually, are distinguished in "Utility tokens", "Cryptocurrencies" and "Security Tokens". The first ones <<equip the token-holder with the right to redeem the token for the products or services of the issuing firm>> (P. Momtaz, 2019). Usually, Cryptocurrencies are referred to a subcategory of utility tokens due to its currency's function in the venture's own ecosystem. "Security Tokens" are the ones which could be considered as an equity side funding vehicle, so these can guarantee control and ownership over society and entitle the holder to receive dividends or other financial benefits. Because of that, Security Tokens are regulated by the Securities and Exchange Commission (SEC) and due to their "nature" are compared to the same equity shares' regulation. Any of these tokens has also a second speculative function because they can be traded for other tokens or even traditional currencies on a secondary market after the conclusion of the ICO.

Every information about the ICO is contained in the White paper. This is a document published by the firm in which are providing data that the firm deems as necessary to the public. <<While White papers do not follow standard guidelines, one important and common component is the technical description of the venture's project and its application>> (C. Fisch, 2019). Most of ICO's white papers share structural and contextual similarities: brief introduction and definition of the project named Business Idea, Technical overview of the project, ICO's structural description, and the Roadmap.

- 1) The Business idea describes the tangible part of the project, or rather, the product that the company wants to merchandise or the service that it wants to dispense; in this section could be present some information about the mission or even the purpose of the company.
- 2) The technical overview defines the DLT-based model in use, its application and future implementations.
- 3) Token types, smart contracts and other information related to the token sales itself are contained in a specific sector of the white paper in which the company describes the structure of the ICO's issuance.
- 4) The Roadmap is a section in which the project team presents the path it would be following in order to accomplish several steps to finally complete the whole project itself; in it are

represented the approximate dates of every implementation of the process from its beginning to the starting future plan.

The majority of ICOs also refer to the public through social media such as *Reddit*, *Telegram*, *YouTube* and others. Particularly, almost every company that undertakes an ICO communicate through *Twitter*, considering the disclosure potential of this network. The data that the team publishes about the project inform investors about the expected capacities of it, the path that it is following and also the process' updates but, of course, it is also a way for reaching and attracting new investors.

The ICOs' market is characterized by uncertainty. Indeed, most part of the process has not been regulated by any institution and the dynamics of this new funding mechanism are not clear. Drawing on signaling theory, it is possible for the firms to reduce this uncertainty by disclosing information about the higher quality of the firm. <<Signaling theory argues that high-quality ventures can attract higher amounts of funding by sending signals to potential investors.>> (C. Fisch, 2019). Companies inform investors about the higher quality of its project and, in turn, they receive an enhanced amount of funds because public contributors would be able to differentiate it from others.

In this document will be discussed the impact that these two variables has on the amount raised, seeking a relationship between them:

- 1) white paper
- 2) social media.

Due to their public communication intent, those two elements represent the most important elements for the firms in order to disclose their high-quality characteristics. Given that, these variables will be analyzed in several points measuring the impact that each of them has on the fundraising mechanism.

1.5 IPO and ICO Comparison

Comparing these two, ICOs and IPOs, I want to know if there are some points of pairing and some points of differences that could be considered unique for the ICOs or common to both. To start this comparison, it's necessary to understand the legal distinction between "utility" and "security" token. Utility tokens represent the majority of whole tokens sold and enable the investor the exchange of utility; in this section, it's possible to recognize some subcategory commonly referred to rewards or firm's products as an exchange medium. Security tokens give rights of ownership or even control over the company to the investor; for this reason, they could be classified as equity assets. This classification has been drawn on the Howey test. This assessment is made by the Securities and Exchange Commission (SEC) and evaluates the requirements that the token must show in order to be considered as security:

- 1) there must be money's risk-related investment;
- 2) investors must legitimately expect for profit;
- 3) the firm considered must be a public company or a "going public" company;
- 4) that profit is not related to the investor but is referred to third parts' efforts;

Here I am presenting the main differences and similarities that will be discussed after in this document in order to reduce ICO process uncertainty compare to the empirical and theoretical correlation between those to fundraising methods.

The first point of difference between these two methods is the *regulatory aspect*. Meanwhile, IPOs' prospectuses are characterized by a large disclosing regulation about quite every aspect, the only document that a company should publish is the white paper when undertaking an ICO. This document recovers an important role in fundraising because it's the only vehicle that informs the investor about the whole ICO's process, from the project's introduction to token sale till the roadmap. However, even considering its importance, the white paper has not binding legal effects differently from IPO's regulation that is mandatory. Morals and Reputation are the only guarantees that drive investment coherence with this document. These problems are the ones that intermediaries typically solve because of their delegated screening and monitoring functions that reduce this crucial uncertainty and provide trustworthy guarantees to investors.

The second aspect is represented by the *investors themselves*. ICO's contributors are typically *speculators* and that is the reason why about every ICO at the beginning register an anomalous growth and then a token's price breakdown. Even considering this, <<an important determinant of the amount raised, and obviously of the future ICO's success, is the certification by large, institutional, or venture capital investors, who buy tokens in "presale", before to the offering of

tokens to the general public>> (Lyandres et al., 2019). In this context, informing potential investors after presale about high-quality venture capital investor are participating could help the company in raising the higher amount of funds according to the signaling theory. In particular, these results are consistent with IPOs' success variables; indeed, is established both, theoretically and empirically, that there is a positive effect caused by the information given to the public contributors.

The third element is the social media activity that surrounds ICOs. According to Signaling theory, this medium of communication could have an impact in ICOs fundraising due to their capacity of reducing information asymmetry. Moreover, Lyandres, Palazzo and Rabetti seem to find a relationship between ICO's success and social media activity; they say: <<In the absence of a mandatory disclosure of information– such as that present in equity markets–voluntary disclosure and associated discussions on various social media platforms play an important role of mitigating the information asymmetry inherent in ICO-backed projects>> (Lyandres et al., 2019). Moreover, after the conclusion of the ICO, the growth in cumulative social media activity drops to 10%. This situation is different for companies that were successful in raising funds because their social media activity drop is smaller than unsuccessful firms. This indicates that investors are interested in the project's ongoing success.

The fourth element is the tokens' liquidity. Tokens are considerably less liquid than equity but, still talking about social media, this variable seems to be positively related to this kind of activity because it increases investors participation in token market: <<The number of cryptographic wallets holding a token (a measure of investor participation) has a very strong association with token liquidity, while partially driving out the explanatory power of social media activity>> (Lyandres et al., 2019). This relationship between investors and liquidity is observable also in equities.

There are several points of differences and similarities that need to be presented to understand better ICOs mechanism. Those will not be discussed in this document.

The amount raised is negatively related to the total amount of the token offer; the quantity of token sold is inversely proportional to the likelihood of raising more funds is and the probability of listing on an exchange platform. These results are consistent with IPOs' literature evidence.

Almost every project team revise code on an online platform named GitHub. This code-revision process decreases after the ICOs conclusion. This drop seems to be considerably significant for unsuccessful firms, meanwhile, in the same way of social media activity, successful companies do

not drop drastically their code-revision effort. That is consistent with IPOs' decline in operating performances following their conclusion.

ICO's investors seem to overreact to information revealed between the end an ICO and its first trading day. While IPOs underprice is corrected during the first trading day, ICOs one seems to adjust itself in several days. This is due to the time that elapses between the end of the ICO and the listing of it on an exchange platform. Moreover, both, IPOs and ICOs, on average are underpriced and both register a significant relationship between the dimension and underpricing: smaller ICOs are more underpriced, like IPOs.

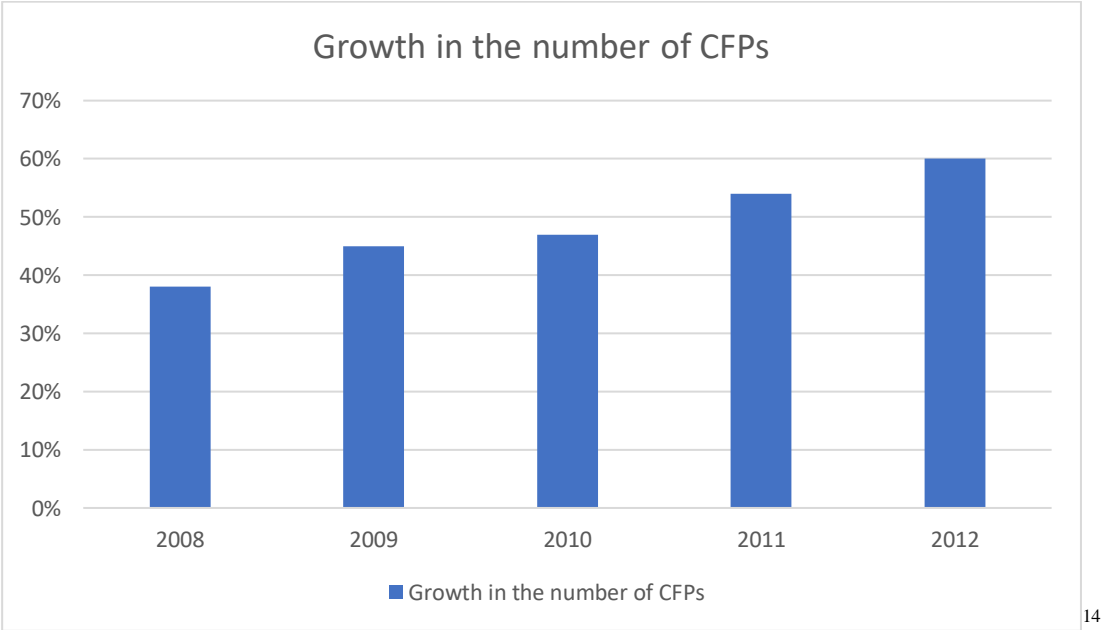
Chapter 2:

modern literature about information disclosure

2.1 SMEs funding methods

As said before, the Global Financial Crisis (GFC) is the first and more significant variable that influenced the rise of the alternative fundraising systems. Before this event, banking system created many sophisticated financial products that carried more risks on the globalized market. This caused the crisis of the banking system that influenced the sovereign debt crisis; so, all these situations linked together were the causes which led to a major austerity’s policy.

People started losing trust in the banking system and, as Gray and Zhang say, this lost <<led many individuals to search for alternatives and, in particular, less financial intermediation between the saver and borrower, the investor and investee>> (Gray et al.,2017). So, Crowdfunding, like many other disintermediated funding processes, grew up considerably during the “after-crisis” period; indeed, the growth rate in this period started from 38% and it raised till 60% in 2012.



¹⁴ All data are retrieved from. <https://www.statista.com/statistics/251567/growth-r-of-crowdfunding-platforms-worldwide/>

Before giving a general definition, it should be explained the difference between crowdfunding and “crowdsourcing”. Kleemann, Voß and Rieder define it saying that: <<Crowdsourcing takes place when a profit-oriented firm outsources specific tasks essential for the making or sale of its product to the general public (the crowd) in the form of an open call over the Internet, with the intention of animating individuals to make a [voluntary] contribution to the firm's production process for free or for significantly less than that contribution is worth to the firm>> (Kleemann et al.,2008). Moreover, various authors consider web 2.0 platform as a prerequisite for crowdsourcing development. Broadly, web 2.0 can be described as a web form which includes machine learning other than deep learning, so it provides an automatic data process.

Finally, Lee, Sang-Heui, David DeWester and So Ra Park say that this platform has three characteristics¹⁵:

1. Collaboration permits to combine each other’s knowledge and resources;
2. Openness allows people to contribute freely to different projects;
3. Participation is increased thanks to the ease of access and use of computers and the Internet.

<<Their research is based on these three characteristics to find that Web 2.0 especially broadens the capabilities of small firms by allowing user content to inflow and create value for the company>> (Schwienbacher et al., 2010). In all this context, crowdfunding represents the part of the crowdsourcing that provides financial help to the firm.

Given the importance that this instrument has acquired during recent years, various expert tried to give a definition of it. So that, Schwienbacher and Larralde define it as: << the financing of a project or a venture by a group of individuals instead of professional parties>> (Schwienbacher et al., 2010); moreover, Schwienbacher and Lambert, extending Kleemann, Voß and Rieder definition describe the process as: << an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes>> (Lambert et al., 2010). Another definition is given by Gerrit K.C. Ahlers, Douglas Cumming, Christina Günther, and Denis Schweizer: <<Crowdfunding is an umbrella term used to describe an increasingly widespread form of fundraising whereby groups of people pool money, typically (very) small individual contributions, to support a particular goal>> (Ahlers et al., 2012)

¹⁵ Information retrieved from. Sang-Heui Lee, David DeWester and So Ra Park. “Web 2.0 and opportunities for small businesses”. Journal Article. (2008). Retrieved from. <https://link.springer.com/article/10.1007/s11628-008-0043-5>

So, the first and most important element when talking about Crowdfunding is the crowd itself and how to range as more people as possible. Indeed, the first objective of this method is to maximize funds' amount raised, be it reward-based, donation-based or even equity-based. In order to take full advantage of fundraising, crowdfunding bases on the internet, more precisely on specific crowdfunding-purposed platforms such as “Kickstarter” or “Crowdcube”, and communicate through the internet via Facebook, Instagram, Telegram, other social networks or even blogs.

Talking about communication signals and disclosure recovers a crucial role in the crowdfunding context and even in the more general crowdsourcing one. This medium influence investors decisions when choosing between firms and in this opaque context it can reduce information asymmetry helping to make investors more conscious and attracting others. Moreover, through this process, firms are more likely to refer to small investors. In order to understand what information are valuable for these contributors, Malmendier and Shanthikumar define small investors basing on the corporate finance literature describing small investors as those who invest relatively small amounts of money, and receive a relatively small stake of a company in return (Malmendier et al., 2007)

2.2 Disclosure evidence

ICOs are more likely considered as an alternative form of equity crowdfunding. A general definition of this subcategory is given by Gerrit K.C. Ahlers, Douglas Cumming, Christina Günther, and Denis Schweizer: <<Equity crowdfunding is a method of financing whereby an entrepreneur sells equity or equity-like shares in a company to a group of (small) investors through an open call for funding on Internet-based platforms>> (Ahlers et al., 2012)

Today, when talking about ICOs, one of the most debated points concerns “disclosure”. As said in the previous chapter, every fundraising process has to present a prospect to the investors in which are contained firm’s business plan and intentions; this document also has to be specific for two reasons:

- 1) Regulatory aspect: that involves every section of the prospect itself
- 2) Firms reputation: intended as how much investors trust the company

The first point is set by legal authorities such as the Securities and Exchange Commission (SEC) in the USA and, so that, investor’s trust is tacitly implied. However, it must be said that just because it is legally protected, it doesn’t mean that is completely trustworthy; it simply means that, due to its legal coercive aspect, it has a higher reputational grade.

The second (and most important) point concerns the firm’s reputation. Factors that develop reputation are company’s trustworthiness, coherence, efficiency and other factors, subjective or not, that make contributors confident about the strategy, the team, the returns or long-term aspects such as sustainability, ethics, and social impact.

Talking about crowdfunding, disclosure has a very high impact on the funds raised because of the quantity but more importantly the quality of the information. Due to the fact that contributors do not have a direct relation with the company, the only way they can differentiate and, so, chose a project is only by its disclosed documentation. Indeed, the firm’s image is strongly dependent on what it decides to disclose to the public.

ICOs represent a specific case because of their non-regulated policy. Indeed, apart from a little section concerning “security token” the must undergo through the Howey test, no parts of the whole process are regulated by any commission, national or even international authority. Because of that, the only way ICOs have to obtain the investors’ trust depends on two factors:

- 1) Communication through disclosure: quantity and quality of the information that they decide to disclose, considering that they are not constrained in publishing anything

- 2) Evidence: coherence between what the company promise, what the company actually pursue and the results that it obtains

Here is the point: firms that undertake an ICO process are not forced by any regulation, but they decide themselves what they want to disclose in order to get the best public image possible.

Starting from that point, the most important means of communication owned by companies are White Papers and Social Networks. White Papers represent the first documentation published by the firm and, so that, they represent the first approach to contributors. This file can be compared to the prospectus issued by traditional financial source methods even though there is a big difference between them: White Papers are not regulated. This document is free from any constriction and, because of that, firms have the free will on deciding what they want to communicate to the crowd.

Social Networks represent a secondary mean of communication for companies; it informs the public about developments during the whole process and about results and upcoming events after its conclusion. So, it makes communication continuous through time. Moreover, if White Papers represent the first approach to the public and, so that, initial fundraising growth, this vehicle helps its development throughout the process and constantly makes investors conscious about the trustworthiness of the process. Indeed, due to its characteristic, ICOs most of the times are undertaken by fraudulent subjects; so, keeping contributors' faith is not granted as it seems.

So, given the significance and relevance of disclosure in ICOs, there is such a great part of modern literature concerning entrepreneurial finance that talks about this argument. Starting from its definition there are some points of similarity that are common to each and, hence, some concepts based on tangible evidence on which experts are unanimous:

- 1) ICOs concerns the entrepreneurial finance environment
- 2) ICOs can be related to fundraising processes and, more specifically, to crowdfunding
- 3) In every ICOs, the mean of exchange is represented by token or cryptocurrencies
- 4) ICOs are based on DLT-Based Blockchain-type platform

The most common definition of ICO is given by Christian Fisch that define the whole process saying that: << In an initial coin offering (ICO), new ventures raise capital by selling tokens to a crowd of investors. Often, this token is a cryptocurrency, a digital medium of value exchange based on the distributed ledger technology.>> (C. Fisch, 2019). Similarly to Fisch, Lyandres, Palazzo, and Rabetti define the process saying that: <<An ICO enables an entrepreneurial venture (“project” henceforth) to raise funds in exchange for cryptographically secured tokens that are

intended to be the sole form of payment for the project's future products or services.>> (Lyandres et al., 2019). Finally, to reinforce this thesis even further, Paul P. Momtaz describes this process saying that: << Token sales or Initial Coin Offerings (ICOs) are smart contracts on a blockchain designed to raise external finance by issuing tokens or coins>> (P. Momtaz, 2019). This last one introduces also a new concept called "smart contract"; briefly, <<this are systems which automatically move digital according to arbitrary pre-specified rules>> (V. Buterin, 2016).

One of the most important theories on which ICO bases is the signaling theory. This model reduces information asymmetry in ICO's opaque market and reinforces disclosure significance because it considers the direct impact that high-quality information has on the funds raised by the company. Indeed, signaling theory says that venture should publish as more information as possible in order to make more and more investors conscious about the higher quality of the firm; in turn, Investors, aware of the high-quality of the project, would be capable of differentiating between various companies and, so, the firm would raise more funds than others which did not disclose high-quality information. In order to be an effective mean of asymmetry reduction it has to satisfy two criteria identified by Fisch:<< First, the signal must be observable. If the receiver does not notice the signal, it will not reduce information asymmetry. Second, the signal must be costly to realize and imitate. These costs do not have to be monetary and can also refer to time, effort, reputation, or foregone earnings. If no cost is involved in producing and sending the signal, it will be easy to imitate and thus will not serve as an effective signal of the signaler's underlying quality>> (C. Fisch, 2019). So, based on what it was said until this point, White Papers and Social Networks recover a crucial role because they are the most important means of communication through which companies can disclose high-quality information about their projects.

2.3 White Papers Standardization

The uncertainty in the ICO's market depends principally on two factors: scarce acknowledgment about dynamics that lead ICO's funding mechanism and the non-regulation of the most part of the process itself. Investors point of view on the problem is that << the opaque nature results in the fundamental problem of information asymmetries and is especially challenging for investors when ascertaining the true quality and value of the underlying potential of the investment>> (D. Blaseg, 2018). According to signaling theory, to reduce this uncertainty, firms should disclose information about the higher quality of its ventures; in this way, they could raise a higher amount of funds because investors would be able to differentiate the company from others.

While traditional source methods are regulated by many institutions such as the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) in USA or National Commission for Societies and Stock Exchange (CONSOB) in Italy, ICO process is completely unregulated and that generate even more uncertainty. However, there are several significant factors that should be considered when disclosing information about a project because they could remarkably impact on the amount raised by the company.

The two principal means of communication are white papers and social media. White papers are the only documentation disclosed by the firm and for this reason, they represent the << the main channel to inform potential investors>> (Florysiak et al., 2019). White papers get the first approach to the public so for this reason they must be as significant as possible; signaling theory's point of view on the situation is irreproachable, information disclosed by the firm grants to it as more results as possible in terms of funds raised by the company in a determined period of time. Social media will be discussed in the next paragraph.

White Papers must be significant in order to attract a crowd of investors. Due to their unregulated nature, ICO's White Papers do not withstand to any rule or regulation and, so that, they are not standardized in the form, neither in the content. This means that not only the structure of the White Paper itself can be different from any other document disclosed before, but also the content can share no similarities in terms of what the firm decide to publish when undertaking an ICO or it could even be incoherent or not related to the project at all (that is the case of fraudulent companies). However, modern literature evidenced how some part of this document can be commonly retrieved in such every White Paper; in fact, it can be also described as a (more or less) technical presentation of the project and, so that, it shares some point of similarities between each one. These elements are mutual section of the whole documentation and are highlighted by D.

Florysiak and A. Schandlbauer when they say that <<A white paper is voluntary disclosure of information that typically consists of a business idea description, a road-map including key milestones, the intended use of proceeds, the team, and a time schedule for the token sale>> (Florysiak et al.,2019).

White Papers have two significant points of differentiation: the length of the document and the technical grade of the text itself. For C. Fisch <<Given the highly technological setting that ICO conducting ventures are engaged in>>, he <<argue that high quality, in the ICO context, is reflected by higher technological capabilities>> (C. Fisch, 2019). However, Those two variables can be positive or not: not just because a document is longer it means that it is also more complete and not just because a document is more complex (in term of the technical level of the text) it means that the project itself is better than the other. The variable considered is the level of disclosure significance in quantity of information and quality of information, but they are not directly related to the tangible project. However, this thesis is inconsistent with both Fisch and Lyandres, Palazzo and Rabetti researches. The first argues that experts do agree when saying that <<the description of a venture's technology in a white paper is crucial with regard to attracting investors. Specifically, they acknowledged that a white paper is one of the premier outlets for showcasing technological expertise>> (C. Fisch, 2019), the other three say that <<we obtain additional information by examining their contents with the goal of measuring white paper informativeness, which is likely to be inversely related to project opaqueness and to the degree of information asymmetry between ICO issuers and potential investors>> (Lyandres et al., 2019).

2.4 Social Media impact in a modern environment

In the absence of mandatory disclosure, every mean of communication should be considered in order to reduce information asymmetry and so market's uncertainty.

hence, the second medium of communication that has to be analyzed is the social media network and its impact in fundraising mechanism. In crowdfunding's context, in which companies seeking for funds they expect to raise refer to a crowd, social media play an important role in promoting projects. That's crucial not only because social media "keep in contact" investors and firms, but also because this connection has a significant impact when talking about trust; Lu, Xie, Kong e Yu says that ventures and contributors can <<keep track of a crowdfunding campaign on social media, and obtain useful insights in real-time>> (Lu et al.,2014).

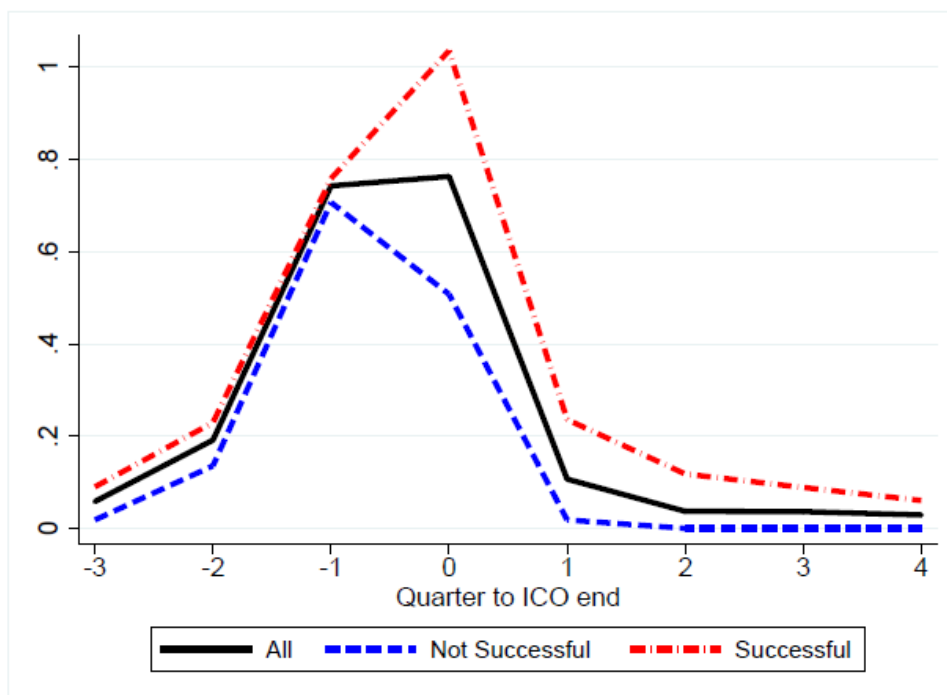
Moreover, this link between investors and firms is reinforced by the quantity and the quality of the information disclosed by the seconds. In a signaling logic, a continuous stream of high-quality information would be a key element in making the crowd confident about the quality of the firm and in attracting more investors during the process's time. As Lyandres, Palazzo and Rabetti say: << disclosure and associated discussions on various social media platforms play an important role of mitigating the information asymmetry inherent in ICO-backed projects>> (Lyandres et al., 2019).

So, given that Social Medias are the only method the firm could use in order to link the project team with the crowd and so keep continuity over the whole process; Almost every ICO is present on many social media but the main social networks, common to every ICO, are Twitter, YouTube and GitHub. Between these three, the most important platform is Twitter and Facebook due to their disclosure's significance level and range, then Telegram know for being itself a decentralized messaging application, then YouTube in which companies share video description of the project or even animated version of their white papers in order to refer to as many people as possible and, finally, GitHub where the firm register and modify constantly the codes that support the Blockchain algorithm. Indeed, Florysiak and Schandlbauer found that <<the most common usage is Twitter and Facebook, 96% and 89%, respectively. While 85% of the ICOs have a telegram account, 73% use Youtube. the least popular social media outlets are Github and Reddit (56% and 61%)>> (Florysiak et al., 2019).

However, Lyandres, Palazzo and Rabetti found a peculiar correlation between ICO's process and Social Media Activity saying that: << Project-related social media activity peaks just before an

ICO and tends to drop dramatically following an ICO end>> (Lyandres et al., 2019). Indeed, this activity tends to be significantly higher during the last quarter before the conclusion of an ICO and, on the contrary, considerably drops down in the first quarter after the end. However, in successful firms, this drop tends to be smaller than the others and that represents another meaningful concept in order to reduce market uncertainty.

ICO growth in cumulative social media activity between quarters



16

- ¹⁶ Retrieved from. E. Lyandres, B. Palazzo, D. Rabetti. (2019). Do Tokens Behave Like Securities? An Anatomy of Initial Coin Offerings.

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3287583

Chapter 3:

Empirical analysis

3.1 Data

In the crowdfunding context, companies have to relate to a crowd of investors making them conscious about the project itself and trying to reach as more contributors as possible in order to raise the expected amount. Hence, the main means of public communication for the company are White Papers and Social Media. For these reasons, the analysis is divided into two part: White Paper analysis and Social media analysis.

In this document, considering a sample of thirty white papers, I will analyze the impact that the two-principal means of communication have on the amount raised by the company and, through a multivariate regression analysis, I will quantify the impact of these variables. I start from the assumptions retrieved in signaling theory in which high-quality information published by the company are intended to reduce market uncertainty and, information asymmetry; as a consequence of this mechanism, companies raise more funds because investors would be able to differentiate the higher quality of the firm from others ICO's projects.

In this context, White papers represent the first means of communication for the team project to promote a higher quality of its venture and so reduce market uncertainty around its ICO. In this analysis I am seeking for a relationship between with papers and the amount raised by the company; so, starting from that, I will discuss two variables in particular: the length of the White Papers and the technical level of these sections.

Secondly, I will analyze twitter's activity before ICO's conclusion. Not only the firm's personal tweets are considered but also retweets, replies and likes; given that, from now on, I will refer to the term "tweet" as a synonymous of all others. Companies' efforts on this social media during the whole period would be considered as a frequency indicator that must be compared to each firm's activity in order to establish if there are behavioral commonalities between them. The importance or the significance of tweets are not considered because these factors are not considered as considerably involved in ICO's fundraising mechanism but more likely in ICO's fraudulence (Florysiak et al., 2019).

3.2 Dependent and Independent Variables

As said previously, the variables considered are 4:

1. The amount raised by the company
2. The length of the white paper disclosed by the company
3. The technical level of the white paper
4. The number of tweets before the end of the whole process

So, the amount raised by the company considered is the number of funds that the firm was able to raise during the process and not the amount that it wanted to raise up. This other variable is named “Total Amount” and I will refer to it only to verify the percentage of the fund raised over the total amount needed. So, the variable “Amount Raised” represent the Dependent Variable which will be compared with all the other three.

Then, the length of the documentation has been taken as an Independent Variable which provides an information’s completeness indicator, or rather, an index that represents the quantity of the information given. The hypothesis is that those two elements, number of pages and, so, information’s quantity, are directly proportional to the amount raised; thus, the higher the number of the pages is, the more complete the information about ICO is. That guarantee a higher amount of funds raised by the company.

Third, the complexity of points of similarities is based on the technical quality of this and this is considered as the second Independent Variable. the technical quality is an indicator constructed drawing on a dictionary of the 262 most frequent technical words (extracted from words frequency in ICO white papers and based on several blockchains and computer science glossaries extracted from various websites and tech forums) provided to me by E. Lyandres. The hypothesis is that length and concepts’ complexity is directly proportional to the amount raised by the company; thus, the more complex each section is, the more fund the company is able to raise.

Finally, the number of tweets posted by the company represents the last Independent Variable of the multivariate regression analysis. The only social media considered is Twitter because of the disclosing influence of this mean of communication as discussed in previous chapters. I will analyze social media activity before ICOs’ conclusion. For this reason, the whole period considered is the one that starts from the first tweet posted by the company and ends with the last tweet posted on the last day of ICO’s process.

Thus, the results that come from the Independent Variables’ data analysis will be related to the amount raised by project’s teams, unique Dependent Variable, in order to find out if there is a

relationship between public communication and amount raised. The expected and actual amount raised and all other data and variables considered are listed in Table 3

The first, the fourth and the fifth column provide relatively ICO's project name, availability of ICO's white papers and ICO's conclusion date. All elements contained in the voice "White Paper" obviously, have to be available in order to be studied during the process's analysis.

The second, the third and the last column provide relatively ICO's actual amount raised, ICO's expected amount raised and percentage of the actual amount raised on the expected amount raised; hence, the second columns provide the data which will be included in the multivariate regression analysis as Dependent Variable. Moreover, to make data comparable between these several projects, all funds are supplied in terms of the natural logarithm. The sixth column provides the percentage of the amount raised over the expected amount raised.

The last three columns represent the three Independent Variables included in the multivariate regression analysis. These are reciprocal: The Number of White Paper's pages, the Percentage of Technical Level and the Number of Tweets posted by the company: The first one counts the white paper's pages including the index and references; the second one count not the frequency but the presence of the word itself and compare it to the whole quantity of the 262 terms. The Number of tweets is a variable that counts all tweets posted by the company from its start until the conclusion of the ICO. All these variables are personally retrieved from ICO's white papers and Twitter pages.

3.3 Analysis

As said before, the multivariate regression analysis considers four variables:

1. Amount Raised (Dependent Variable)
2. Number of White Paper's Pages (Independent Variable)
3. Percentage of Technical Level (Independent Variable)
4. Number of tweets (Independent Variable)

This analysis has been done using "R" a statistic platform which is a software specifically used for these purposes.

Generally, it seems to be a slight relation between these variables and that's can be seen from the adjusted R squared parameter; in this case, it is more than zero and that represents a positive relationship between the variables considered.

[Number of Pages] Talking about the first variable "number of white paper's pages" its medium relation with the amount raised is negative (mean =-0,0078797; st.dev. =0,0171974) and this means that the number of pages does not help the firm in raising more funds indeed, on the contrary, the more pages the white paper is composed of, the fewer funds the firm will be able to raise.

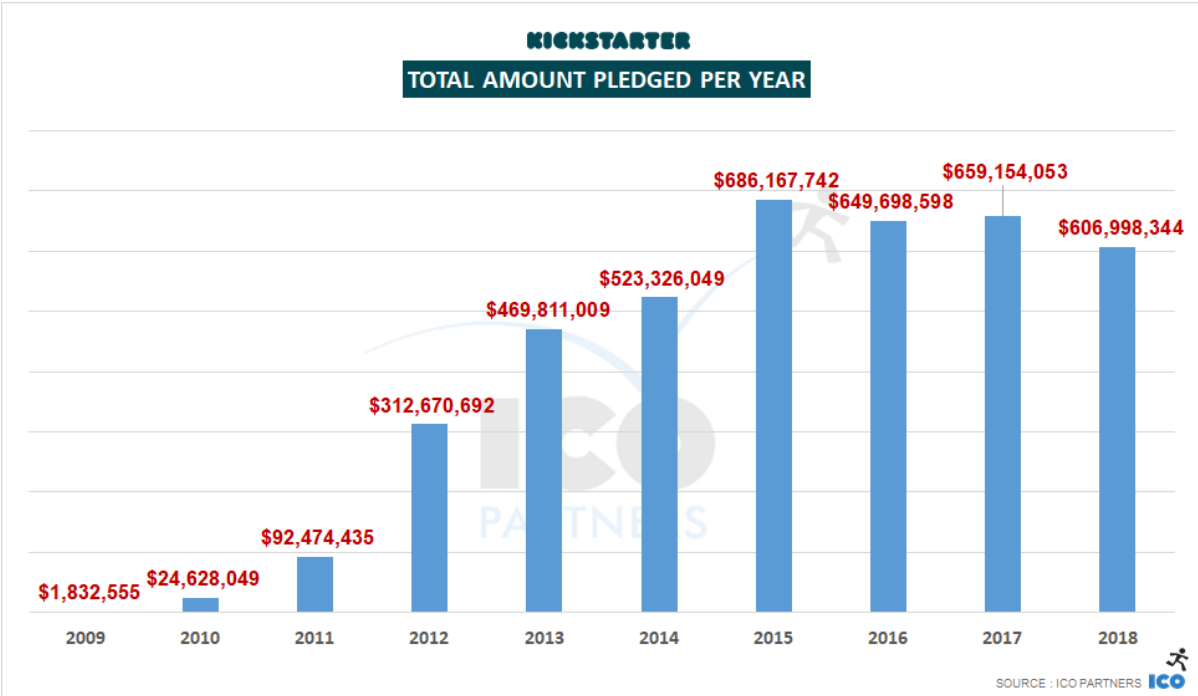
[Percentage of Technical Level] the second variable concerns the number of technical words over a dictionary of 262 words frequently retrieved in white papers. This result seems to be inconsistent compared to Lyandres, Palazzo and Rabetti's one (Lyandres et al., 2019). Seems like the trend in 2019 inverted its course. Indeed, the results of the regression analysis are negative related to the dependent variable (mean=-0,0331415; st.dev. =0,0428421). hence, even if only a little, the technical level of the white paper seems to be a bad impact on the fundraising process.

[Number of Tweets] the last variables concern social media and in particular the number of tweets posted by the firm during the whole ICO's process. The idea was verifying if there could be a relationship between social networks (particularly twitter) and fundraising processes. The results are not only slightly consistent with this concept, but also with the Fisch results (C. Fisch, 2019). Indeed, the outcomes are weakly positive (mean =0,0011388; st.dev. =0,0004867) indicating a positive relationship between these variables.

In conclusion, in 2019 the ICO market trend seems to be inverted compared to the analysis made by other authors in previous years. This might be a consequence of market widening. Indeed, more and more investors are contributing to the fundraising process and many of them are not much informed about the process or the coin market itself. This kind of investors is skeptical or even

ignorant about almost everything surrounding ICO's market. Many of them are attracted by the idea of the profit that currently the market is registering and do not care either know what many of these technical terms mean.

From this point of view, the length of the document is another point of disadvantage. Indeed, during the roadmap, the project is presented to many people that don't know much about this argument and that's why the presentation provides also a brief description of the ICO summary process (for example visit [Coinshare](#)). Also, for this reason, YouTube has become another media in which investors can inform herself thanks to many videos regarding not only ICO's projects in the specific but also many interviews about the development of the process. From this point of view, this assumption is also consistent with the crowdfunding market growth rate that registered a slow down during the last years



¹⁷ Retrieved from. <http://icopartners.com/2019/01/games-and-crowdfunding-in-2018/>

Conclusion

So, in this document I have analyzed firstly the crowdfunding process and its relation with the SMEs sector in order to understand why this sector registered such a great growth in after-crisis years; then I talked about the ICO's market in the specific, concerning market growth and the relationship between Cryptocurrencies and ICOs in order to see the correlation between these two separate markets. Then, I described the whole process from its start to its end to understand the mechanism that supports this fundraising method. at the end of the first chapter, I made a comparison between ICOs and IPOs in order to understand the points of similarities and differences that characterize these two methods; this comparison was useful trying to reduce market uncertainty that surrounds this whole new process.

In chapter two, I sought some modern literature articles, and in particular some research articles, that provided evidence about disclosure impact on fundraising. Starting from the crowdfunding sector and its relation with SMEs in literature, I continued arguing about the disclosing power through essentially two principal instruments: White Papers and Social Media. Twitter was the only social media considered due to its disclosing power. These two represent the fulcrum of the whole thesis because are the main channel that the firms can use to refer to the crowd.

The third chapter regards the whole technical analysis that concerns for variables in particular: the amount raised by the company, the number of white paper's pages, the percentage of technical level and the number of tweets posted by the company. In the end, it seems that this analysis evidence a negative correlation between variables; indeed, the complexity and the length of these documents, as well as Twitter activity, seems to have a slightly negative impact on the funds raised by the company.

In conclusion, after all this literature and researches, ICO's market still seems to be opaque and uncertain even if it is more clear than before thanks to the contribution of experts over this argument. Much more has to be discussed and find out in order to completely understand this phenomenon that is still non-regulated and, so that, it does not give any kind of guarantee to its investors, founding the whole process on the trust of the contributors to the project.

Tables of contents

TABLE 1: here is presented a linear regression analysis in order to describe the correlation that exists between ICO funds raised and Bitcoin Growth between Q2 2017 and Q1 2018¹⁸

BCT IN USD VS ICO FUNDS (APRIL 2017 – JANUARY 2019)		
MONTH	BTC IN USD	ICO FUNDS
Apr 17	1.349,19	14002898
May 17	2.328,91	102628197
Jun 17	2.504,28	199422800
Jul 17	2.873,83	654924929
Aug 17	4.764,87	454638470
Sep 17	4.349,29	442932628
Oct 17	4.353,05	847866625
Nov 17	9.916,54	885087634
Dec 17	13.860,14	995435682
Jan 18	10.166,51	1661801246
Feb 18	10.309,64	1522113752
Mar 18	6.926,02	1303274690
Apr 18	9.244,32	1029014113
May 18	7.487,19	562588201
Jun 18	6.387,31	883628657
Jul 18	7.726,89	912970929
Aug 18	7.013,97	448771395
Sep 18	6.604,97	337953462
Oct 18	6.320,45	225927995
Nov 18	4.241,74	243966901
Dec 18	3.689,56	312088071
Jan 19	3.441,03	74529303,7

¹⁸ BTC IN USD data are retrieved from. <https://www.statista.com/statistics/326707/bitcoin-price-index/>.

ICO FUNDS are retrieved from. <https://www.icodata.io/stats>

Table 2: Here is presented the variance analysis between BTC IN USD and ICO FUNDS with a 99% significance level. This result is very significant ($p < 0.01$) with the hypothesis of a correlation between variables.¹⁹

<i>regression statistic</i>	
R multiple	0,743166502
R squared	0,55229645
Adjusted R Squared	0,529911273
Standard error	2166,300334
Samples	22

VARIANCE ANALYSIS					
	<i>degrees of freedom</i>	<i>SQ</i>	<i>MQ</i>	<i>F</i>	<i>F significance</i>
Regression	1	115784131,7	115784131,7	24,67241773	7,41268E-05
leftovers	20	93857142,76	4692857,138		
total	21	209641274,4			

	<i>Coefficient</i>	<i>standard error</i>	<i>t stat</i>	<i>power of significance</i>	<i>under 85%</i>	<i>over 95%</i>	<i>under 99%</i>	<i>over 99%</i>
intercept	2961,475542	794,9720	3,72525	0,001336241	1303,19	4619,75	699,509	5223,44
t		519	7429		29	8184	9949	109
X 1 variable	0,000005009 16684	1,00846E -06	4,96713 3754	7,41268E-05	2,90555 E-06	7,11278 E-06	2,13975 E-06	7,87858 E-06

¹⁹ BTC IN USD data are retrieved from. <https://www.statista.com/statistics/326707/bitcoin-price-index/>.

ICO FUNDS are retrieved from. <https://www.icodata.io/stats>

TABLE 3: here is presented the 20 ICOs' samples. Every ICO is listed with its amount raised and the total amount of funds that the company wanted to raise. Moreover, in this table are specified the end date of the ICOs and the percentage of the amount raised compared to the amount needed²⁰.

ICO PROJECT NAME	AMOUNT RAISED (LOG.N)	TOTAL AMOUNT (LOG.N)	WHITE PAPER	ENDED	PERCENTAGE RAISED/TOTAL	NUMBER OF TWEETS BEFORE END	NUMBER OF DI PAROLE PRESENTI NEL WP	PERCENTAGE OF TECHNICAL LEVEL	NUMBER OF WP PAGES
DUO NETWORK	15.45	15.45	AVAILABILE	27/04/2019	100%	260	139	0,5305	15
MATIC NETWORK	15.54	15.54	AVAILABILE	26/04/2019	100%	285	139	0,5305	20
DREP	16.94	16.94	AVAILABILE	25/04/2019	100%	64	152	0,5802	51
FORCE PROTOCOL	13.82	13.82	AVAILABILE	22/04/2019	100%	44	194	0,7405	86
LUDOS	13.12	13.12	AVAILABILE	22/04/2019	100%	245	179	0,6832	36
X-BLOCK	15.83	15.83	AVAILABILE	22/04/2019	100%	135	159	0,6069	20
CNNS	17.02	17.02	AVAILABILE	22/04/2019	100%	5	153	0,5840	49
AIVIA	14.29	14.29	AVAILABILE	20/04/2019	100%	296	192	0,7328	55
UNIVERSAL PROTOCOL	15.43	16.00	AVAILABILE	20/04/2019	63%	242	178	0,6794	71
RED FOX	15.55	15.56	AVAILABILE	19/04/2019	99%	220	116	0,4427	42
FACEPOWER	15.82	15.82	AVAILABILE	17/04/2019	100%	16	159	0,6069	51
NEWTON PROJECT	17.38	17.38	AVAILABILE	16/04/2019	100%	412	164	0,6260	15
EVAIO	15.61	15.61	AVAILABILE	15/04/2019	100%	119	164	0,6260	22
OATH PROTOCOL	15.20	15.20	AVAILABILE	11/04/2019	100%	624	162	0,6183	54
MULTIVAC	16.74	16.74	AVAILABILE	09/04/2019	100%	296	154	0,5878	11
ARMORS	17.50	17.50	AVAILABILE	03/04/2019	100%	11	166	0,6336	27
LIGHTSTREAMS	15.45	16.81	AVAILABILE	01/05/2019	25%	160	161	0,6145	34
MOVIEBLOC	15.22	15.22	AVAILABILE	03/05/2019	100%	28	127	0,4847	38
OCEAN PROTOCOL	17.24	17.27	AVAILABILE	03/05/2019	97%	1839	190	0,7252	59

²⁰ All ICO's information are retrieved from <https://www.icodrops.com>.

EVEDO	13.32	14.75	AVAILABL E	07/05/201 9	23%	197	139	0,5305	44
THUNDER TOKEN	17.74	17.74	AVAILABL E	09/05/201 9	100%	650	150	0,5725	74
WEBLOC PROTOCOL	14.59	16.70	AVAILABL E	10/05/201 9	12%	337	145	0,5534	71
CONNECTOM E	15.17	15.32	AVAILABL E	11/05/201 9	86%	344	123	0,4695	22
EVERITOKEN	14.29	14.29	AVAILABL E	12/05/201 9	100%	416	167	0,6374	36
BITFINEX	20.72	20.72	AVAILABL E	13/05/201 9	100%	1832	113	0,4313	18
ECOMI	16.18	16.18	AVAILABL E	13/05/201 9	100%	2861	165	0,6298	48
GOWITHMI	16.10	16.10	AVAILABL E	18/05/201 9	100%	1188	135	0,5153	42
BOOSTO	15.82	15.82	AVAILABL E	20/05/201 9	100%	340	139	0,5305	61
VOLUME NETWORK	10.31	10.31	AVAILABL E	21/05/201 9	100%	27	141	0,5382	24
REVERSE STABILIZATIO N	16.11	16.11	AVAILABL E	22/05/201 9	100%	247	151	0,5763	26

TABLE 4: this table represents the multivariate regression analysis. The amount raised represents the dependent variable; the number of white paper’s pages, the percentage of technical level and the number of tweets represent the independent variables.

residuals:				
Min	1Q	Median	3Q	Max
-5,1437	-0,6027	-0,044	0,769	2,8092
coefficients:				
	estimate	std.error	t value	Pr(> t)
intercept	17,3957616	2,3651713	7,355	8,24e-08***
number_of_wp_pages	-0,0078797	0,0171974	-0,4580	0,6506
percentage_of_tecnical_level	-0,0331415	0,0428421	-0,7740	0,4462
number_of_tweets	0,0011388	0,0004867	2,3400000	0,0272*
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1				
Residual standard error: 1.696 on 26 degrees of freedom				
Multiple R-squared: 0.2028, Adjusted R-squared: 0.1108				
F-statistic: 2.205 on 3 and 26 DF, p-value: 0.1115				

References

1. Ahlers, Gerrit, and Cumming, Douglas J. and Guenther, Christina and Schweizer, Denis, Signaling in Equity Crowdfunding (October 14, 2012). Available at SSRN: <https://ssrn.com/abstract=2161587> or <http://dx.doi.org/10.2139/ssrn.2161587>
2. Belleflamme, Paul and Lambert, Thomas and Schwienbacher, Armin, Crowdfunding: Tapping the Right Crowd (July 9, 2013). Journal of Business Venturing, 2014, 29(5), 585-609; CORE Discussion Paper No. 2011/32. Available at SSRN: <https://ssrn.com/abstract=1578175> or <http://dx.doi.org/10.2139/ssrn.1578175>
3. Blaseg, Daniel, Dynamics of Voluntary Disclosure in the Unregulated Market for Initial Coin Offerings (October 3, 2018). Available at SSRN: <https://ssrn.com/abstract=3207641> or <http://dx.doi.org/10.2139/ssrn.3207641>
4. Chun-Ta Lu, Sihong Xie, Xiangnan Kong, and Philip S. Yu. The University of Illinois at Chicago, Chicago, IL 60607, USA. “Inferring the Impacts of Social Media on Crowdfunding”. Retrieve from. https://www.cs.uic.edu/~xkong/wsdm14_lu.pdf
5. Eurostat. Structural business statistics & global business activities_Small and medium-sized enterprises (SMEs). Retrieved from. <https://ec.europa.eu/eurostat/web/structural-business-statistics/structural-business-statistics/sme>
6. Fisch, Christian, Initial Coin Offerings (ICOs) to Finance New Ventures (September 29, 2018). Journal of Business Venturing, 34(1), January 2019, 1–22. Available at SSRN: <https://ssrn.com/abstract=3147521> or <http://dx.doi.org/10.2139/ssrn.3147521>
7. Florysiak, David and Schandlbauer, Alexander, The Information Content of ICO White Papers (March 8, 2019). Available at SSRN: <https://ssrn.com/abstract=3265007> or <http://dx.doi.org/10.2139/ssrn.3265007>
8. Kleemann, F. Voß, G.G., and Rieder, K. (2008). “un(der)paid Innovations: The Commercial Utilization of Consumer Work Through Crowdsourcing”. Science, Technology & Innovation Studies Vol. 4, No. 1, July 2008. Retrieved from. <https://core.ac.uk/download/pdf/46909382.pdf>
9. Lyandres, Evgeny and Palazzo, Bernardino and Rabetti, Daniel, Do Tokens Behave like Securities? An Anatomy of Initial Coin Offerings (April 20, 2019). Available at SSRN: <https://ssrn.com/abstract=3287583> or <http://dx.doi.org/10.2139/ssrn.3287583>
10. Malmendier, Ulrike and Shanthikumar, Devin M., Are Small Investors Naive About Incentives?. Journal of Financial Economics, Forthcoming. Available at SSRN: <https://ssrn.com/abstract=975028>

11. Mia Gray and Bryan Zhang, handbook on the geographies of money and finance. (2017). Retrieved from. <https://www.elgaronline.com/view/edcoll/9781784718992/9781784718992.00034.xml>
12. Momtaz, Paul P., Token Sales, and Initial Coin Offerings: Introduction (November 2, 2018). The Journal of Alternative Investments, 22 (4), Spring 2019, 1-6. Available at SSRN: <https://ssrn.com/abstract=3277707> or <http://dx.doi.org/10.2139/ssrn.3277707>
13. Paul Vigna. “Raising Money in the Crypto World Has Gotten a Lot Harder”. Wall Street Journal, March 31, 2019. <https://www.wsj.com/articles/raising-money-in-the-crypto-world-has-gotten-a-lot-harder-11554037201>
14. Schwienbacher, Armin and Larralde, Benjamin, Crowdfunding of Small Entrepreneurial Ventures (September 28, 2010). HANDBOOK OF ENTREPRENEURIAL FINANCE, Oxford University Press, Forthcoming. Available at SSRN: <https://ssrn.com/abstract=1699183> or <http://dx.doi.org/10.2139/ssrn.1699183>
15. Statista website. Web link: <https://www.statista.com/>
16. The 2017/2018 annual report on European SMEs. Brussels, 20 November 2018. Pdf available: <https://ec.europa.eu/docsroom/documents/32601/attachments/1/translations/en/renditions/native>
17. V. Buterin (2016). “Ethereum White Paper. A Next Generation Smart Contract & Decentralized Application Platform”. Retrieved from. [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=2ahUKEwjwzNyIxs_iAhUPQhoKHW7eDHEQFjABegQIARAC&url=http%3A%2F%2Fblockchainlab.com%2Fpdf%2FEthereum white paper-a next generation smart contract and decentralized application platform-vitalik-buterin.pdf&usg=AOvVaw1qVSQCb0vpvDOKma2qOP6Q](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=2ahUKEwjwzNyIxs_iAhUPQhoKHW7eDHEQFjABegQIARAC&url=http%3A%2F%2Fblockchainlab.com%2Fpdf%2FEthereum%20white%20paper-a%20next%20generation%20smart%20contract%20and%20decentralized%20application%20platform-vitalik-buterin.pdf&usg=AOvVaw1qVSQCb0vpvDOKma2qOP6Q)