DOI: 10.17803/1729-5920.2021.170.1.101-117

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Trough Equity Crowdfunding Evolution and Involution: Initial Coin Offering and Initial Exchange Offering

Abstract. This article analyzes two of the last innovative financing instruments of the crowdfunding family: Initial Coin Offering (ICO) and Initial Exchange Offering (IEO). Having both a potential financial nature, they will be addressed as «sons» of Equity-based Crowdfunding (EBCF). The main scope of this paper is to show opportunities and dangers of ICO and IEO through a comparison with EBCF. Indeed, at the end of the analysis it will be possible to understand if ICO and IEO can be considered as positive evolution of EBCF or — at least one of them — can be considered so dangerous to appear as a sort of «involution».

In order to answer our question, the discussion firstly focuses on EBCF, the innovative financing instrument being one of the most important figures of the «crowdfunding family». Its importance lies in its financial nature that makes this instrument different from the other models (meaning the donation, reward and lending). Participating in an EBCF-campaign, indeed, lets participants become shareholders of the company they are giving money to. So, the main pros and cons of the participation in an EBCF campaign will be disclosed. In particular, granting easier access to capitals together with the possibility to benefit from the so-called «*wisdom of the crowd*» allowed EBCF to become one of the most innovative financing tools of our age. However, these advantages need to be mitigated with the main risks occurring during a crowdfunding campaign. These are: moral hazard and frauds, arbitrary exclusion during pre-emptive screening by platform and, last but not least, illiquidity.

Therefore, the discussion moves to the technological advanced new entry of the crowdfunding family, meaning ICO and IEO. In order to understand why ICO and IEO are so similar to EBCF, both the main characteristic of these instruments will be described. With reference to ICO, first of all this article provides a brief description of the technology that makes this innovative financing tool the advanced «son» of EBCF. Indeed, through the launch of an ICO, a company asks the crowd a precise amount of money in exchange of a «token»: an informatic instrument through which the participant may exercise also some financial rights towards the company. From this point of view, an ICO-campaign is very similar to an EBCF one, lying the main difference in the technological solutions used, the queen on those is blockchain. Furthermore, ICO characteristic will be outlined in order to disclose its functioning — meaning the relation with blockchain and smart contracts — and the different models of tokens.

After that, also IEO will be described. IEO could be considered one of the last variants of ICO. The main difference, indeed, lies in the fact that IEO campaigns are not conducted in the website owned by the company but in a specific platform, that is a crypto-asset exchange.

The exam of ICO and IEO potentialities (i.e. programmability, disintermediation and tokenization) will highlight how ICO and IEO may solve most of the mentioned EBCF cons. This will lead to the potential consideration of ICO and IEO as evolution of EBCF. However, also ICO and IEO cons will be highlighted (meaning lack of transparency, not clear regulatory regime and, for IEO in particular, dangerous proximity with investors and potential conflict of interest). From the comparison between ICO and IEO pros and cons it will be possible to discuss on if we are really in front of two evolution of EBCF or nearer to an «involution» of this instrument, considering regulatory solutions in order to avoid this second scenario.

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Keywords: financing instruments; crowdfunding; «crowdfunding family»; Initial Coin Offering (ICO); Initial Exchange Offering (IEO); Equity-based Crowdfunding (EBCF); programmability; disintermediation; tokenization.
Cite as: *Furnari S. L.* Trough equity crowdfunding evolution and involution: initial coin offering and initial exchange offering // *Lex russica*. — 2021. — Т. 74. — № 1. — С. 101–117. — DOI: 10.17803/1729-5920.2021.170.1.101-117.

Эволюция и инволюция акционерного краудфандинга: первичное размещение монет и первичное биржевое предложение

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Аннотация. В статье анализируются два инновационных инструмента краудфандингового финансирования: первичное размещение монет (ICO) и первичное биржевое предложение (IEO). Оба инструмента имеют потенциальный финансовый характер, поэтому в статье они рассматриваются как родственные механизмы акционерного краудфандинга (EBCF). Основная цель данной работы заключается в том, чтобы показать возможности и риски ICO и IEO через сравнение с EBCF. Проведенный анализ позволяет понять, можно ли рассматривать ICO и IEO как положительную эволюцию EBCF или по крайней мере один из этих инструментов можно ли считать настолько рискованным, чтобы рассматривать его как своего рода «инволюцию».
Чтобы ответить на данный вопрос, автор в первую очередь рассматривает EBCF, инновационный инструмент финансирования, который является одним из самых важных родственных видов краудфандинга. Его значение заключается в его финансовом характере, который отличает этот инструмент от других моделей (а именно пожертвования, вознаграждения и кредитования). Участие в EBCF-кампании позволяет участникам стать акционерами компании, которой они дают деньги. В статье раскрываются основные плюсы и минусы участия в кампании EBCF. В частности, предоставление более легкого доступа к капиталу вместе с возможностью воспользоваться так называемой «мудростью толпы» позволило EBCF стать одним из самых инновационных инструментов финансирования нашей эпохи. Тем не менее эти преимущества пропадают из-за основных рисков, возникающих в процессе привлечения средств через механизм краудфандинга. К этим рискам относятся: моральный риск и мошенничество, произвольное исключение во время упреждающего скрининга платформой и последнее, но не менее важное — неликвидность.
Далее в статье рассматриваются новые, более технологически продвинутые варианты краудфандинга, а именно ICO и IEO. Чтобы раскрыть, почему ICO и IEO так похожи на EBCF, автор приводит основные характеристики этих инструментов. Что касается ICO, в первую очередь в статье приводится краткое описание технологии, которая делает этот инновационный инструмент финансирования передовым «дочерним элементом» EBCF. Действительно, через запуск ICO компания просит у «толпы» конкретную сумму денег в обмен на «токен» — информационный инструмент, с помощью которого участник может осуществлять также некоторые финансовые права по отношению к компании. С этой точки зрения ICO-кампания очень похожа на EBCF, отличаясь от нее в основном используемыми технологическими решениями, главным из которых является блокчейн-технология. Кроме того, в статье дается характеристика ICO с точки зрения ее функционирования, а именно ее связь с блокчейном и смарт-контрактами, а также различные модели токенов.
IEO можно считать одним из новейших вариантов ICO. Основное различие между ними заключается в том, что IEO-кампании проводятся не на сайте, принадлежащем компании, а на конкретной платформе, а именно на бирже криптоактивов.
Изучение возможностей ICO и IEO (например, программируемость, отказ от посредничества и токенизация) показывает, каким образом ICO и IEO могут обойти большинство упомянутых минусов, присущих EBCF. Это позволяет рассматривать ICO и IEO как эволюцию EBCF. В статье также рассматриваются недостатки ICO и IEO (нетранспарентность, неясный режим регулирования, для IEO — опасная близость с инвесторами и потенциальный конфликт интересов). Сравнительный анализ плюсов и минусов ICO и IEO позволяет понять, действительно ли мы находимся перед двумя эволюционными технологиями EBCF или они ближе к «инволюции» этого инструмента, принимая во внимание регуляторные решения, которые могут помочь избежать второго варианта.

Ключевые слова: инструменты финансирования; краудфандинг; «краудфандинговая семья»; первоначальное предложение монет (ICO); первоначальное биржевое предложение (IEO); акционерный краудфандинг (EBCF); программируемость; отказ от посредничества; токенизация.
Для цитирования: *Furnari S. L.* Trough equity crowdfunding evolution and involution: initial coin offering and initial exchange offering [Фурнари С. Л. Эволюция и инволюция акционерного краудфандинга: первичное размещение монет и первичное биржевое предложение] // Lex russica. 2021;74(1):101-117. DOI: 10.17803/1729-5920.2021.170.1.101-117. (In Eng., abstract in Russ.).

Introduction

According to the Oxford Dictionary, 'evolution' is «*the gradual development of something*». While the definition is simple, it is not simple to recognize when we are in front of it. But what is more difficult is to distinguish between positive and negative evolution, that is to say from 'real' evolution and involution.

Choosing the right financing instrument is a fundamental activity for an entrepreneur. This is true not only from a pure economic point of view (i.e. the amount of money that could be collected), but also for all the potential and collateral consequences (and benefits) that may be connected to the choice. When those consequences imply potential damages for the investors, financial authorities need to take action in order to influence the company's choice. This is usually done forbidding the use of too dangerous financing instrument or limiting their usage.

So, during the centuries financing instruments has transformed, facing financial authorities' decisions, evolving and «involving».

As a necessary consequence, there are some period of time in which the real state of «in» or «e»-volution of a new financing instrument is still not clear. Indeed, while history, years and experience give us the chance to know every aspect of traditional financing instruments, those of the new «candidate» are not completely revealed.

This paper has the aim of participating in the highlighting process of revealing new finance instruments face. In particular, it is dedicated to the last sons of the crowdfunding family: ICO and IEO will be analysed to the light of an already regulated financing instrument as EBCF is.

EBCF: when finance meets Internet

As it is now well known, EBCF is an innovative financing instrument belonging to the «crowdfunding family». This scheme differs from his brothers (i.e. donation, reward and lending crowdfunding) because, when participating in an EBCF campaign, the participants have the chance to become shareholders of the company they are giving money to. From the entrepreneur point of view, the money received (or, better, collected) represents the *contribution in kind* for the acquisition of the company's shares[1]. Concerning the «distribution» of shares, above all the other crowdfunding schemes, EBCF is one of the most relevant in terms of the amount of money that is possible to collect[2].

To briefly recap the EBCF functioning, it is just enough to remember that an EBCF campaign involves the participation of three subjects. The issuer company, the crowd of contributors and a crowdfunding platform. The first is the creator of the crowdfunding campaign that needs funds to develop an entrepreneurial project. Usually, his goal is to expand his current business, considering that this instrument is mostly used by start-ups or SMEs. The platform is a website that gives the possibility to the issuer to publish his idea on the web. The crowdfunding platform is the necessary intermediary that connects entrepreneurs to financers. In the specific case of EBCF, thanks to the use of Internet, the platform is fundamental in order to help the issuer to reach a huge amount of people, the «future shareholder-crowd», who send money to help the development of the presented project and receive back shares of the funded company.

[1] However, usually the newcomer investor is not considered always as a fully-fledged partner, since the company could establish some limitation in the participation acquired such as no voting rights.

[2] A deep market analysis of alternative finance instrument, detailing the average amount of money that each different crowdfunding scheme permits to collect, is provided by the Cambridge Center for Alternative Finance in its last research published, such as Cambridge Centre For Alternative Finance (2016), Sustaining momentum, the 2nd European Alternative Finance Industry Report; Cambridge Centre For Alternative Finance (2017), Entrenching Innovation — The 4th UK Alternative Finance Industry Report; Cambridge Centre For Alternative Finance (2017b) Hitting Stride — The Americas Alternative Finance Industry Report.

So, the crowd, i.e. the potential investor, is the third involved subject.

Born and developed during the financial crisis, EBCF has been a precious resource for companies, specially start-ups and SMEs. Considering the difficulties of having access to other forms of financing[3], the success of EBCF can be found in the offering of disintermediation — or, better, «different intermediation» — in the relationship between issuer and investors. Notwithstanding the intermediary is often a simple website, this new form of intermediation has won where others failed. It this way, it could have been considered cheaper and more efficient in finding funds for companies in a situation in which most of the times those were refused help by banks and venture capitalists. The platform, that is to say, a simple website easily accessible through a computer, has taken the place of traditional financial intermediary. This brings to the table a lot of advantages for issuers and for investors.

Main pros and cons of using EBCF

Pros: wisdom of the crowd, crowd participation and marketing

The first advantage usually described is one on the reason that brought EBCF to born and, specially, to succeed. EBCF grants an easier access to capitals, especially for certain kind of company (SMEs and start-ups). Indeed, immediately after the financial crisis, smaller companies found lots of difficulties in having granted loans from traditional sources such as banks; while capital markets where too expensive for medium size companies[4]. This forced those companies in looking for alternatives. One of that was EBCF that at the same conditions granted an easier access to capitals than obtaining a loan from a bank or money from a venture capital[5]. Indeed, EBCF improves the capacity of the entrepreneur in finding people more interested in the project promoted and so more willingness to fund it. The Internet eliminates territorial limitations that usually limits or impedes the funding process[6]. But the undiscussed biggest «social» benefit of EBCF is the possibility to enjoy the famous «*wisdom of the crowd*»[7]. This is a sociological theory according to which a large group's aggregated *help* that involve quantity estimation, general world knowledge or spatial reasoning, can be as good as, and often better than, the answer given by any single individual of the group. This mechanism is so powerful that according to some authors may solve most of the problem that usually affect a start-up project (such as market validation, pricing difficulties or marketing).

For example, publishing a project widely on the web help immediately in testing his future success. From this point of view, EBCF is very useful for market validation. According to Martin (2012)[8], the crowd creates communities that provide feed-

[3] For a complete analysis of the macroeconomics determinants of EBCF development, please see Furnari (2018b).

[4] For a deeper analysis on how the banking sector and the financial market level of development influenced EBCF, please see Furnari (2018b), Pp. 6–12.

[5] Agrawal, Catalini, and Goldfarb (2013) P. 10.

[6] Other Authors explained the success of EBCF also in light of various economic theories. For instance, Biffi (2013) try to explain the success of crowdfunding applying the Prospectus Theory elaborated by Kahneman and Tversky in 1979. Prospect theory is a behavioural economic theory that describes the way people choose between probabilistic alternatives that involve risk, where the probabilities of outcomes are known. The theory states that people make decisions based on the potential value of losses and gains rather than the final outcome In accordance to this theory, when people have the possibility to lose little sums of money to obtain a small chance of gaining bigger ones, they behave as risk seekers and decide to bet. The application on crowdfunding are interesting. The investment in start-ups involves a high risk but can as well grant high economic returns. For this reason, retail investors may decide to invest little amount of money, notwithstanding the high probability to lose it. Conversely, in those case, venture capitalists behave as risk averse, since they are fewer than retail investors and usually invest higher amount of money looking for more certain economic returns. At the end of the day, according also to this theory, it is more probable that common people may support start-ups than venture capitalists. Please see also Armour and Enriques (2017) on the influence that herding behaviour may have on a crowdfunding campaign.

[7] The term was used for the first time by Surowiecki in an article published in 2005. On this, see also Willfort and Weber (2016), P. 215 and Nasrabadi (2015).

[8] Martin (2012).

backs and responses to the entrepreneur during the campaign. Those can be used to drive future products to be successful on the market[9]. Indeed, the members of the community are also the first and so probably the future clients of the campaign creator. Therefore, a successful campaign is important for the fund seeker in the long-term run, because he will gain not only the money, but also his first clients and supporters.

In addition, EBCF gives the possibility to bundle the sale of equity with other valued goods, such as discounts for future shareholders or the possibility to have a prototype of the product. Moreover, allowing the «pre-sale» of a product on the market let the entrepreneur to test it in order to avoids huge investments in a future failure of that product[10]. Here, a failure can be a chance to learn by the errors committed, thanks to the advice given by the community. Agrawal et al. (2013) report that crowd's suggestions are often taken in high consideration[11]. The company gains undeniably a pre-market analysis at zero cost. This, co-creation and market validation have an important role in reducing the risk of failure.

Another advantage that can be reported from crowd participation is marketing. Each campaign has a community that follows creator's updates. Most of the times they became real «evangelist investors» ready to spread the word within their network so helping fund seekers reaching their goal. They are encouraged to help the success of the company because they have a direct interest in the success of the campaign, owning its share. This can vary from shares and revenues, to products or other direct returns[12].

Other direct possible advantages coming from the *wisdom* is the possibility to expand company's team. The people attracted by the investment are usually also expert in the issuer's business. According to Nasrabadi A. G. (2015), with that «expert crowd» the issuers can fulfill an experience gap in certain fields. And if investors will not have the possibility to enter the start-up team, they at least can send their idea to the funding start-up. From this point of view the crowd can be deemed as a 'stimulator' of innovation because it is composed by a variety of people coming from different cultures. In this regard, some Authors used the concept of Fleming (2004) who developed the idea of «*cross-pollination of idea*», that is to say, the bolstering of high innovation thanks to the contribution of authors of different cultures, ethnicities, type of knowledge and point of view[13].

But no advantages come without risks and the use of EBCF involves some drawbacks for, both, promoters and contributors.

Cons: moral hazard, pre-emptive screening and illiquidity

As already said, the innovation of EBCF lies on the offering of shares via the Internet. But the web is one of the best place in which it possible to use false information to create fake funding campaigns[14]. This is also true thanks to the possibility for campaign creators to reach a high number of people at a very low cost. Those facts make crowdfunding an appealing target for professional criminals. Moreover, because each single investment is usually small and thanks to the high possibility to free-ride on investment decision of others, individuals will not find incentives in making due diligence[15]. From this point of view, the risk of fraud is not just a potential drawback for investors. The fear of fraud and moral hazard — that is to say when the entrepreneur does not use the funds received as he promised — , it is a real danger for the entrepreneur as less people will use EBCF for this fear.

However, while acts of moral hazard are difficult to impede, the risk of fraud in EBCF can be really reconsidered thanks to the mentioned «*wisdom of the crowd*» together with the participation of the platform in the «pre-selection» of the companies that can collect money using this financing instrument. Indeed, Internet has a re-

9 Nasrabadi (2015), P. 208.

10 This is also possible thanks to the presence of a «particular slice» of the crowd that highly values the possibility to have the «first» access to that kind of innovation. They are the so called «early adopters», that is to say, people that assume the risk of buying that product only to be the first to have it.

11 This was the case for the Pebble watch as reported in Agrawal, Catalini, and Goldfarb (2013) P. 13

12 Nasrabadi (2015), P. 208.

13 Hewlett, Marshall and Sherbin (2013).

14 According to Agrawal et al. (2013), while projecting a crowdfunding campaign «it is relatively easy to use false information and craft fraudulent pages».

15 Agrawal et al. (2013) P. 20. see also Cornell and Luzar (2014) and Furnari (2018b).

ally good ability in maintaining transparency and the crowd has a strong ability in recognize fraud or, at least, in not forgetting it. If someone would prepare a fake campaign in one of these big platforms than it is difficult that he could escape. The whole community, spreading the word of the fraudulent action, will not let him do something similar again. For those reasons there were little cases of fraud in proportion with the number of campaigns concluded with success[16]. In this number, in most cases all the investors received their money back and the creator has been punished[17].

EBCF platforms participate actively in the reduction of the risk of fraud. This is usually done through a sort of «screening» operated by the platform, the only and *necessary* intermediary of a crowdfunding operation. However, in their substantial role of *gatekeeper* this screening cannot always be considered a positive aspect of EBCF, being it also a potential drawback[18]. Considering how easy is creating scams collection using Internet, this form of investors protection is necessary, also to avoid a damage to the platform's image. Become «victim» of the pre-emptive screening made by EBCF platform is quite common. Indeed, platforms usually limit the projects that are shown to the public. This is usually done not only by the imposition of objective prerequisites but also through arbitrary evaluations.

From the noble purpose of preventing users from potential scams this control may be turned into a judgment not only on the fact that the entrepreneur is a cheater or not, but also on the «potentiality» of the campaign created. Expecting this kind of control is all but a remote possibility. Platform revenues are usually connected to the amount collected by the entrepreneur. They amount to a specific percentage of the money totally collected — usually the 5 %. Considering that the success of EBCF campaign are usually connected with the reaching of a determined amount, when the entrepreneur cannot reach this amount, the platforms spent internal resource for nothing, sustaining a useless cost. So, the platform has no interest in publishing projects with low chance to collect money under their economic (but still arbitrary) evaluation.

Therefore, from the initial aim of preventing users from wasting their money, contributing to the promotion of blatantly unsuccessful projects, they moved to avoid that the same platform «*does not make the best use*» of internal resources without this use being offset by the success of the collection.

This is a danger that should not be underestimated. Indeed, it should be considered that in EBCF platforms are fundamental infrastructures. According to some legislations, indeed, it is not possible to start an EBCF campaign without the participation of an authorized platform on which the idea can be published. Contrary to the risk of fraud, there are fewer solution against the barrier created by pre-emptive screening, considering also that usually the market for platforms is an oligopoly[19].

But the undiscussed drawback of EBCF is illiquidity. In comparison, indeed, illiquidity can be considered one of the worst risk-characteristic of EBCF. Generally, the illiquidity problem arises when after buying shares in a company, the buyer is unable to easily re-sell them to have his money back. Illiquidity can be considered an «*intrinsic*» risk of EBCF because, dealing most with SMEs or start-up shares, their shares are not admitted be traded in regulated markets. Indeed, small enterprises usually do not have the resource to complain with the necessary law obligation to «go public» and, generally, business law do not consent to freely trade shares in such small companies without the intervention of a public notary or of a public register. These characteristics make this a problem very difficult to be overcome.

Against illiquidity there are little solutions that could be taken or there is no solution at all. One of the reasons for the fact that the secondary market of such instruments is still underdeveloped in most case is created by specific regulations than generally provide stricter rules for transferring share in «small» companies. In addition, from a «global» point of view, rules on the direct transfer of shares of SMEs, without any financial intermediation,

[16] Actually, cases of fraud are still really few. For further information, see Cornell and Luzar (2014).

[17] For instance, in Hanfree's Case the creator, Seth Quest, was literally punished by the legal system and the community. Not only he went bankrupt after the lawsuits for a claim of only 70$, but, as reported, he had also real difficulties in finding a new job because of his bad reputation. For further information about the whole story see: Markowitz (2013).

[18] For a deeper analysis on the role of EBCF platform as gatekeeper please see Iovieno (2016).

[19] Furnari (2018b), P. 2

vary from country to country. This sole fact, it is itself an unresolvable cause of illiquidity[20].

ICO and the IE0

Technological premise to ICO and IEO

After EBCF, the mentioned evolution in the fields of financing instruments has not ended. The launch of Bitcoin in 2009 and the spread of the technology at the base of its functioning have introduced new and innovative instruments for companies and investors to collect and give money. Some of its results are what today is called ICO and IEO.

To be in a position to understand deeply its functioning, drawbacks and benefits it is important to briefly explain some core concepts. To do, it seems useful to spend a premise describing the «basics» of ICO and IEO, that are: blockchain, tokens and smart contract. A «prepared» reader may pass to the next paragraph.

Blockchain is a form of Distributed Ledger Technology (DLT). It is a technology which permits to operate a decentralized-database, that is to say a «register» under the control of a peer-to-peer network of participants. This database can keep the record of the transactions made by the system's participants without the need of a unique and central authority that manage the system. Indeed, DLT technologies allows full disintermediation, since each participant to the network, called «node», possess a full copy of the register. Register that, according to the most common blockchain, can be consulted by everyone. These two facts make DLT a transparent and cyber-secure system. Transparent because the records of the database and their modification in times are easily accessible; cyber-secure, since who desires to modify the information stored needs the approval of (or to attack the PC of) the 51 % of the participants at the same time.

Among the information that could be stored, one kind in particular has been know with the term «token». A token can be defined as a record in favor of a participant that let him to be recognized by the entity who released the token as the holder of a precise amount and kind of right. Giving a precise definition of token is not simple. So, from a *technical* point of view, a token is nothing more than a simple registration in favor of the participant contained in a (usually) distributed ledger «blockchain» register. From a *fuctional* point of view, a token can be considered as an informatic «instrument» through which the participant may exercise a precise kind of rights towards the offering company. Those rights are, indeed, the subject of the offer it-self, that is, what an investor will gain in buying the offered token[21]. Sometimes they serve confer the access to a service provided by the platform. In other case, they confer voting or, also, economic rights. Hence, tokens are adaptable tools which often confer, upon token holders, some kinds of benefit, such as privileged access, the recognition of the right to a share of specific revenue streams, or rights of participation in the platform developing process such as control on how the amount of money collected can be spent.

In addition, after being issued by a company, token can easily be sent to or exchanged with other participants.

A token is usually created by a smart contract. Some blockchain, such as the Ethereum one, can use the power of calculation given by the participant to the blockchain to run a so-called *virtual machine*. It can be imagined as a «big *phantom* computer» created thanks to the power given by all the computer of the participant. So, smart contracts are an algorithmic sequence elaborated by such big computer. Being the virtual machine, such as every information recorded on the blockchain, under the control of nobody, smart contracts acquire the following important and interesting characteristic that make them suitable to be used for the execution of contract from which they took their name.

Such as every software, smart contracts are self-executing; but being launched on a blockchain, they are also unstoppable. If a smart contract is programmed to perform a determined action, it will work until the action is completed. If a precise mechanism to stop its functioning has not being «programmed» by the party who launched it, nobody can stop its functioning without taking the control of the 51 % of the power of calculation alimenting the blockchain.

This also means that a smart contract completely lacks the human interaction for its execution. It this way it can be used to perform obligation deriving from a real contract that could be

[20] For a deeper analysis on how EBCF development could be influenced by its regulation, see Furnari (2018b), P. 12.

[21] Furnari (2018a) P. 144.

written within the smart contract it-self[22]. A contract of this kind could help the managing of the performance execution since there is no need for the interpretation of the terms of the contract so that the parties of the agreement do not need to trust each other before the conclusion of the agreement since its execution its fully automated. This principle applies particularly for the collection of money through the launch of an ICO. If the collection of money is managed using a smart contract, this program will automatically deliver the token in exchange of the money received. Just this fact lets the ICO procedure a safer way to collect money. Finally, smart contract can be also used by the issuer to strongly grant the right attached to the token distributed. For instance, if a token grants the access to a specific service of the issuer, if the access is regulated with the use of a smart contract, the buyer of the token could be more secure that he will enjoy the service he paid for.

So, to sum up all the informatic landscape of an ICO from a functional point of view, the blockchain is the infrastructure on which tokens are placed, could be exchanged (using also a smart contract) and through which the issuer can distribute tokens to the public without any intermediaries.

ICO: crowdfunding son

Initial Coin Offering can be defined as the first technological advanced «son» of crowdfunding. Indeed, an ICO consist in collection of money from an undetermined crowd via the Internet in which the entrepreneur gives in exchange of the money collected a «token».

Apart from the technology use, from a procedural point of view, another difference between ICO and crowdfunding lies in the substantial lack of a platform that intermediate the collection. Apart from that, setting up a ICO campaign is very similar to a crowdfunding one.

A particular phase of the collecting procedure that is worth mentioning (being usually absent in a crowdfunding campaign) is the practice so-called «Airdrop». This is an alternative and free way of spreading new tokens, different from their direct sale to participants/investors. It is a kind of «parachute distribution» because, using this form, the issuer does not sell its tokens but gives them for free. The main purpose of Airdrop system is to speed up tokens diffusion, hoping they will be used more and more, to sell the following tokens at a more profitable price[23]. This could be essentially possible thanks to the fact that, normally, token creation is free of costs for the entrepreneur[24].

The campaign is presented to the public by the publication of a so-called *whitepaper*[25]*.* It is a document presenting ICOs scope and characteristics. Its content and structure are not fixed, but usually a big part of this document is occupied by the technical description of the token and of the smart contract involved in the offer. Obviously, a whitepaper lack of a controlling third party, aimed at ensuring information flows, as happens during Initial Public Offerings through an «authorized» prospectus. This fact makes the disclosure process an important step for the company. The disclosure on company whitepaper depicts an important signal for investors; in fact, when disclosure quality rises, also investors trust in the project and positive attitude does so[26]. The disclosure exercise is also helped thanks to the use of internet. Apart from the possibility to consult specific website which scope is to review ICO, discussion on a specific ICO could take place in various website or blog, most of which are created by the same company trying to build a community around itself.

As anticipated, the participant of an ICO receive in exchange for their participation a token which can be programmed to play a wide range of roles in the functioning of the company. One of the first and most common token classification has been provided by Hacker and Thomale (2017) that recognize three main categories: currency (or payment), utility and investment tokens[27]. In addition,

[22] To be more precise, they can perform the role of an «online vending machines» to highlight their basic functioning consisting in the performance of a predetermined action in response of a precise input.

[23] Gorini (2018) Pp. 48–49.

[24] As will be highlighted in the next paragraphes, this fact may be harmful for the investors and the market in two particular occasion: when tokens are used to pay for services, such as the one provided by exchanged in IEO; and when they represent administrative right within a company.

[25] Kranz, Nagel and Yoo, 2011 (2019) Pp. 4–5.

[26] Jiafu, Wenxuan and Xianda (2017), Pp. 16–17.

[27] Token classification is one of the most important legal issues of ICO, the legal status of ICOs depending on the nature of tokens offered. Indeed, there is not a legal definition of tokens, so it is quite difficult to enforce them

the classification exercise is not always simple for the presence in the practice of so-called hybrid tokens, tokens that do not fit any of the three traditional categories since they share the characteristics of two or more of them, without being classified as an autonomous category[28].

Currency or payment tokens[29], usually defined simply as «coin», are the result of the launch of a new cryptocurrency[30]. They are used to pay for services or to acquire other tokens. For instance, in the Ethereum ICO, users could receive Ether in return for Bitcoin offer. Benefitting from the decentralized technology of the blockchain, these currencies differ from fiat currencies as they are neither certified nor supported, by central financial institutions. Notwithstanding this fact, in addition to the independence deriving from decentralization, cryptocurrencies are still characterized by transparency, traceability, security and immutability.

Utility tokens gives to the token-holder some functional utility, such as the right to obtain a product or, more commonly, to access a service (but also a simple discount on that product or on that service)[31].

Investment token, finally, is the archetype that better resemble a technological-advanced version of EBCF campaign. Within this broad term, usually it is possible to include more subcategories on the basis of the right coffered to the holder.

Investment tokens[32] are meant as token conferring to the holder some direct right vis-à-vis the issuer company, usually divided in economic (i.e. right to dividends) or administrative right (i.e. right to vote). For this reason, according to most legislations those tokens, manifesting a financial value, maybe be subject to prospectus regulation[33]. So depending on the specific right conferred, within this category it could be possible to distinguish between equity, debt or, more generally, security tokens. The terms «equity token» is used to refer to digitized version of a share; «debt token» refers to a bond while, more generally, «security token» to a security.

The offering of equity token, or more generally, of security token let ICO be the cryptographic version of EBCF.

Equity tokens, indeed, usually represent shares of the underlying company and they work as traditional stocks since they confer administrative and economic right, entitling to a portion of profits and to the voting right in the issuer. They differ from the traditional stocks in the method of recording ownership. In fact, traditional stocks are logged into a database and can be accompanied by a paper certificate; differently, equity tokens record corporate ownership on a blockchain[34].

Being issued after an ICO, the issuance of equity tokens does not need of a platform with the ad-

through existing applicable rules or to create a new set of rules, without previously defining their nature. On this aspect, please see Annunziata (2019), Pp. 37–38.

28 Hacker and Thomale (2017) P. 13.

29 Specifically, among the main cryptocurrencies, the best known are Bitcoin (BTC / USD), Ethereum (ETH / USD) and Ripple (XRP / USD). Today, these cryptocurrencies present still many critical issues concerning not only the lack of a common regulation and monetary policy, but also high volatility.

30 The term «cryptocurrency» points out the digital currencies developed with the blockchain technology, whose cryptographic and decentralized techniques guarantee the security of transactions between the participants.

31 One of the most notorious example of utility token is Filecoin: it promoted the most successful ICO in 2017 that collected more than $250 million. The main task of Filecoin is establishing a decentralized storage network which taps available storage space on computers worldwide.

32 More specifically, the term security tokens could be referred to the general and traditional security asset and they can be defined as blockchain investment products. The sales of this type of tokens recently has been called «Security Token Offerings» (STOs). This system would allow all the functionalities and benefits that traditional security market cannot provide for. Among these ones, STOs would enhance the ability to more easily track the security holders of a specific security. They would also grant a functional profit and losses distribution and allocate for security holders in public companies; moreover, STOs' system would transfer and liquidate securities worldwide in a more efficient manner.

33 For the difference between American and European approach to token regulation, it is possible to see Hacker P. and Thomale C. (2017), Pp. 15–39.

34 The definition do not address the question if a token could represent share of a corporation according to a country specific legislation. The problem in Italy has been addressed by de Luca (2019) concluding that only Italian Società per Azioni and only under some specific condition could use token to represent the participation in their capital.

vantages that will be highlighted in paragraph 5.2, allowing the realization of innovative schemes of fundraising and capital raising, enabling investors effectively become partners of the undertaking they are giving money to. Finally, as explained in paragraph 5.1, through the use of smart contract, equity token can confer innovative ways of exercising the received rights as never traditional stocks have conceived before[35].

The IEO: the ICO brother

An Initial Exchange Offering can be simply defined as an ICO conducted on a cryptocurrency exchange. A cryptocurrency exchange is a platform that let customers to buy token using fiat currency or to do trading activities using token. Their role is fundamental to grant liquidity to a token issued by a company.

Apart from this simple definition, it is important to highlight in what an IEO differ from an ICO.

Firs of all, the IEO offering is *intermediated.* From the point of view of the promotion of the offer, the cryptocurrency exchange performs the same role of the crowdfunding platform. It is *the* website in which an investor may find different «investment» solution. Indeed, IEO grants an important advantage to the issuer: a prepared crowd of client/investors. Indeed, being daily used to perform trading in tokens and cryptocurrencies, cryptocurrency exchanges are the perfect place not only in which a token offering can be advertised, but also where the offer could take place.

The use of this intermediary grants important advantages also for the investors. They may trust the fact that the exchange had performed a due diligence on the token offering, in order to avoid fraud or scum offering. Due diligence that usually is conducted in the first interest of the cryptocurrency exchange in order to avoid damages to its image.

In addition, another important characteristic of an IEO consists in the fact that it helps the listing of token, thanks to the preferential way given by having the cryptocurrency exchange as a business partner. The exchange may, also, help the issuer from a regulatory point of view, considering that he will carry out most of the law requirements for the offer (such as the KYC or AML obligations).

How ICO and IEO can solve EBCF drawbacks

As highlighted in paragraph 3.2, the use of EBCF has also important risks. ICO and IEO can potentially solve most EBCF risks. Hence, in the following lines we will try to show ICO and IEO advantages on EBCF in a way to highlight how the traditional risk related to EBCF can be solved. In particular, ICO could allow to solve crowdfunding moral hazard and fraud issue, through the programmability of blockchain technology; crowdfunding illiquidity could be overcome through «tokenization».

Programmability to solve moral hazard issues

Programmability means the possibility to set, before the launch of the token offering, the conditions regarding how the money collected shall be spent, together with the «technical» obligation to fulfil the «promise» given. In this way it is possible to exercise a certain control on the offeror and its behavior.

This can be possible thanks to the use of smart contracts. They consent to set up before the collection, the conditions that should be fulfilled to use the money collected that can be stored in an account held by the smart contract itself[36]. So, spending the fund collected by the promoter of the offer can be subordinated to the verify of specific conditions set out before the launching of the offer. For instance, it will be easy to provide in the algorithm of the smart contract that the issuer have to ask the participants the permission to draw an amount of money that is higher that a determined amount within a specific amount of time or after having reached a determined goal. Permission could also be given exercising a voting right through the token they hold.

This connotation has considerable advantages in order to impede success of scum projects since it allows to impose a strict control on how sums collected in the funding campaign could be spent. In this way ICO and IEO programmability could participate in reducing moral hazard problems, consisting usually in the use of funds received in a different way from the one promised before launching the funding campaign. ICO and IEO can give full

[35] Reed (2018).

[36] Indeed, within the network a smart contract appears as an induvial agent, such as any other participant. So, it has the possibility to held cryptocurrency and to release them according to the conditions set within its code. For more information on this aspect, please see Furnari (2019).

control to the contributors that may decide how the money sent to the promoter can be spent.

Therefore, the provision of a mechanism as the one described has also the advantage to enhance trust in potential investors that may be more willing to fund a project with those guarantees. Such mechanism ensures also from the need to look for jurisdictional 'help' in case of breach of the contractual relation between issuer and investors.

But smart contract can also be used to «program» the ongoing business of the company, giving company shareholders or stakeholders power to concretely participate in the business of the company without great sacrifices for the speed of taking important decision for the company[37]. For instance, the use of token and smart contract can «renew» the exercise of voting right. Hence, after an ICO or IEO eligible voters could receive specific tokens, which might permit to exercise the right to vote in more easy and secure way than traditional voting system. Indeed, today the operativity of the general meeting is slowed by the need of physical presence of the voters in a specific place or costly and intermediated proxy systems. Thanks to the implementation of a blockchain-based system, shareholders can exercise their rights «from home» and using their smartphone, having the same guarantee regarding the not corruption of the vote given, as if they were in the same place, voting by show of hands.

Companies particularly interested in transparency — such as foundations, associations, public companies or political parties — may have the possibility to implement systems of real-time accounting. Each operation involving the use of money could be recorded with a time stamp, preventing it from being altered ex-post and allowing to be controlled if needed. Moreover, it would be also possible to uploads firm's entire financial documents so that it could be visible in real-time and while it is created. In this way any shareholder, customer, lender, trade creditor, or other interested party could read it and, eventually, control it. This will let everyone to consolidate firm's transactions with an income statement and balance sheet without relying on quarterly financial statements arranged by the firm and its auditors, enhancing trust in company's data and, potentially, avoiding costly auditors. Another relevant side of real-time accounting deal with allowing observers to immediately distinguish suspicious asset transfers and other transactions which can be outlined as conflicts of interests or related party transactions. Implementing blockchain real-time accountability might cope with all these problems related with transparency, allowing also creditors to engage real-time control against fraudulent conveyances by managers of financially distressed firms[38].

Having highlighted the potentialities derived from smart contract-based system (and its programmability characteristic), it is easier to understand why tools like ICOs might represent the innovation not only for the channels through which firms finance themselves, but also for their corporate governance. This technology can shape in a better way the role and the functioning of management and audit organs, reducing costs and timing and, in addition, improving the exercise of both shareholders and stakeholders' rights.

Tokenization to solve illiquidity

Tokenization can be defined as the operation of including something (or the right to something) in a token in a way that transferring the token will have the effect of transferring the control on the good (or on the right) «tokenized». Transferring a token is equal to exchange whatever is incorporated within it. Indeed, exchanging a token that confer administrative and economic right vis-à-vis a company reaches the same scope of trading shares of that company.

Tokenization process is possible because, above all, blockchain and decentralized ledgers gives the possibility to create unique version of digitalized documents. Indeed, one of the problems of informatic evolution has always been the possibility to copy data at no cost. This fact makes very easy to create unauthorized copy of files and documents and so on, requiring the participation of an enormous amount of (costly) intermediaries or centralized authorities to carry on digitalized services. The ordinary trading system is based on intermediation, i.e. on the presence of many middlemen that increase costs and timing related to the managing of the related operations.

The launching of an ICO or an IEO allows to provide a secure and cheap ways to transfer the token received after the money collection, without the need to rely on an intricated numbers of intermediaries. Indeed, first, the token can be held by the

[37] For a deep analysis of the corporate governance implication of blockchain, please see Yermack (2017).
[38] Yermack (2017) Pp. 23–26.

participants itself in its «e-wallet». So, there is no need for depositary services that hold the token in the name of the participant. In addition, token can be easy transferred with or without the intermediation of an exchange service.

What is more, a stock sale on blockchain systems would be settled more quickly since it would depend on the independent activity of the algorithm of the blockchain protocols and not in any middlemen activities. In this sense, nodes or miners have really no discretion in carrying on their activity that is essentially based on the «lending» of computational power. So, the technology behind ICO and IEO reduces costs and times usually required for executing and settling trades in securities.

The lower cost and faster speed of settlement can make trading services accessible to SMEs that usually could not afford the necessary costs to «go public». They are, indeed, so costly essentially for the presence of many middleman and infrastructure that only high capitalized companies can have their shares be traded in traditional market[39]. In this way tokenization may enhance the liquidity of the market for share of SMEs.

Cheaper (but still secure) and faster trade execution and settlement would directly increase liquidity and ease both entry and exit of shareholders with all the benefits linked to this fact such as the promotion of ownership acquisition by institutions and activists. Then, once investors have purchased their position, they can exercise the power of influencing firm management through threating sale, exiting, or through negotiation and involvement in corporate voting, or voice. As it has been highlighted, reducing selling costs would lead to more emphasis on exit rights as opposed to voice ones, thus providing a tool for owners to induce managers to improve project selection[40].

Finally, tokenization has also the potentiality to solve illiquidity problems related to rules of company law of a single country. SMEs and startup indeed usually choose for their companies simplified legal form that are always not allowed to have access to trading venues or that can be transferred only using specific ways such as acts made by a notary[41].

ICO and IEO cons: technological information asymmetry

Precedent paragraphs showed how ICO and IEO could solve two of the three EBCF drawbacks highlighted in this paper. But ICO and IEO are not immune from drawbacks. One of this is information asymmetry caused by the intense use of technology in those blockchain-based financing instruments.

Information asymmetry occurs when relevant information are not shared in a full and equitable manner among the involved subjects. As consequence, the fully-informed subjects can take advantage of their position, to the detrimental of less-informed ones. Traditionally this problem involved the relation between company shareholders and its directors. ICO and IEO intense use of technology moves the traditional problem of information asymmetry. It regards new subjects such as informatic expert, on the one end, and 'normal' people on the other. So, the token-buying public, who might not deeply know the technological functioning behind that specific ICO, can only believe in founders and their spokespersons honesty, competence and commitment. But, in truth, only founders (and their IT) can totally know the background and the complete functioning of the procedure on which the token it is based. Notwithstanding the fact that the code could be «public», only few people within the crowd will have the necessary competence to «read» it in the proper way. The fact that the code is public can help reducing this risk thank to the help given by the wisdom of the crowd, mentioned in paragraph 3.1.

In addition, a proper regulation establishing the information that must be published or the protocols that must be adopted may help the exercise of a crowd-auditing. But without precise disclosure mechanisms, today information asymmetry risks in ICO and IEO should not be underestimated.

A regulatory intervention to reduce the mentioned risk could help the development of this technology and its adoption by companies and investors. Adoption that today is still limited by lack of trust in its usage[42]. Indeed, the fear for uncer-

[39] Lucantoni P. (2018).

[40] Yermack (2017) Pp. 19–20.

[41] For more information on this theme and how it could be addressed in Italy, please see De Luca (2019).

[42] Hearing about «lack of trust» could be weird for a blockchain expert, considering the well know mantra according to which this technology resolves the problem linked with the lack of trust between two parties before the conclusion of a transaction. However, we mean lack of trust «in» blockchain (and so in ICO).

tainty that is at the base of all economic actions (especially those related to financial investments) could be enhanced by the obscurity of this new technology for «traditional investors». The fact that the «ordinary» market is considered safer than the cryptocurrency one, since it is guaranteed by authorized authorities and subject to specific and strict laws, maybe be a limit to future ICO and IEO evolution. Nonetheless traditional markets are not ruled by certainty and stability, as the events from 2008 until now still prove. However, in «tokens markets», all risks increase since there is no regulation and no prepared authorities empowered to intervene. Hence, also the lack of assurances by issuers enhances regulatory arbitrage and so uncertainty in the potential conflicts that might arise in ICOs. In this stage, assurances lack should be read in conjunction with disclosure framework and a regulatory lack.

At the end of the day, technological information asymmetry seems to be the most important drawbacks of ICO and IEO. Considering this only great disadvantage and their potentiality to solve most EBCF drawbacks, they could possibly be defined as a real evolution of EBCF. But ICO and IEO are not equal. Therefore, a brief comparison between these instruments may help to discuss the possibility to consider one of them as more dangerous that the other so that, in the future, it could not develop for lack of usage by investors of precise ban by most important financial regulation authorities[43].

ICO vs IEO: evolution or involution?

Money «creation» and conflict of interest

The ability to «tokenize» everything is a great advantage in a digitalized society. As highlighted in paragraph 5.2, blockchain permits to gives «liquidity» to everything in a secure way.

While there is no problem when the tokenization regards physical assets, specific problems arise in the liquidation process of *right* versus companies. Indeed, being companies «*creature of the law*»[44] their creation is very easy as it is easy to provoke their winding up. Therefore, because tokenizing creates something very similar to «money», using «right versus companies» as the underlying asset of the token and use it as a measure of value to buy for services is a risky activity. This is true for the difficulty in recognizing to those tokens a stable value.

Indeed, the valuation and pricing process of a token depends on the stage in which the acquisition took place. In an ICO or in an IEO, tokens can be offered in the primary market, where they are bought directly from the issuer, or in the secondary market, where they could be bought from other investors, usually using the intermediation of an exchange. In the primary market, pricing is made by the company through a comparison with its economic data, i.e. considering the value of the service that the token will help to acquire or the fraction of the company value that the token represents. In the secondary market, the price offered by the investors usually depends on the price the investors bought the token, plus or minus their expectation on the increasing or decreasing of its value in the future. When the mentioned pricing process are «adulterated» the exchange of token could be dangerous because when the bubble will burst, investors will lose their money.

The problem of using token as money with a «false» value is more probable to arise in IEO than in ICO. These are the cases in which the issuer uses the self-issued token to pay for the service received by the cryptocurrency exchange or, immediately after, when those tokens are sold by the cryptocurrency exchange in the market managed by itself. Indeed, in these two particular situations, the rational pricing process can be easy *adulterated* by situation of conflict of interests.

This can easily happen because, as mentioned, the issuer has the power to create tokens from nothing when they are not related to a «specific» asset of the company. Indeed, tokens underling a right to a service of the company (*utility token*) or giving some right towards the company without any strong link with its registered capital (general *investment token*) have no creation limit. The issuer may create as much token as it wants hav-

[43] The permanent ban of ICO (or linked financing instrument) is not something difficult to imagine. Indeed, in 2017 ICO where temporarily banned in China and frequently financial authorities of other country speak about it.

[44] This expression has been used in Daily Mail Case. Here the European Court of Justice denied the possibility to transfer is registered office from the United Kingdom to the Netherlands on the ground that companies may respect the law provided by the Member State regarding their possibility to move from a Member State to another. For more information please see de Luca (2016), Pp. 80–81.

ing it the control on the token that can be issued, especially when they are not linked to its own assets (such as equity of debt token). Indeed, when a company could not offer a service anymore, it simply goes bankrupt. While granting more and additional voting rights has the result of diluting the company share capital.

For the exchange, the evaluation process can be also *adulterated* in the moment in which, being the exchange in control of the order, and so, controlling which order satisfy in a specific moment, gives the exchange the power of deciding the selling price. The exchange will gain a strong guarantee that the token can be sold, be itself in the control of who can sell when someone wants to buy.

The mentioned situations represent a danger that is more probable to be present in IEO than in ICO. Indeed, IEO presents a clear a risk of conflict of interest caused by the position of power acquired by the cryptocurrency exchange. But, while it is clear that this problem need to be addressed by regulator or by the exchange itself (considering the lack of trust that such behavior cold cause in investors), just this major drawbacks seems too weak to induce authorities to ban its usage or to determine investors in not investing in an ICO.

This drawback, indeed, can be easy overcome. From a regulation point of view, it is probable that financial authorities will address this specific problem with regulation aiming at avoiding conflict of interest as the one that today exist in general for intermediaries providing financial services and, specifically, for those managing EBCF platforms. From the investors point of view, a way to gain its trust could be the implementation of smart contract such the one already used by «decentralized cryptocurrency exchange» that will decentralized also the launch of the IEO through the crypto exchange.

Disintermediation to prevent arbitrary exclusion

In EBCF, platforms try to reduce the risk of fraud through a sort of «screening» operated by the platform who assume the role of the gatekeeper. This entails lots of power on the platform since he becomes the only and necessary intermediary of a crowdfunding operation. Born with the aim to preventing users from wasting their money and contributing to the promotion of blatantly unsuccessful projects, however this screening cannot always be considered a positive aspect of EBCF, being it also a serious drawback as highlighted in paragraph 3.2. In fact, platforms have full power to limit the projects that are shown to the public, not only by the imposition of objective prerequisites but also through arbitrary (and economic) evaluations.

Arbitrary exclusion it is not a drawback at all in ICO. ICO prevents it with its intrinsic disintermediated nature. In fact, ICO, operating on blockchain infrastructure, ensures disintermediation, since no entity can manage the system and so «gatekeeping» it[45].

The same it is not true for IEO in which, as in EBCF, the platform re-gain the gatekeeping role and power of excluding potentially unsuccessful projects. But asking again the question if this drawback is enough to determine the future unsuccess of this instrument, the answer could be very similar to the one given at the end of paragraph 7.1. This because arbitrary exclusion is a «drawback of an advantage» that IEO has on ICO, that is to say the possibility to gain a previous screening of potentially scum projects. To solve this «residual drawback», instead of having specific regulation addressing this aspect, it is possible that also here, the use of decentralized cryptocurrency exchange may solve this issue, for instance, conditioning the launch of an IEO on the platform to the previous evaluation of a board of expert, having taken technical solution to gain the desired anonymization. The adoption of this solution could be profitable for all the stakeholders involved. Indeed, this selection process may induce more trust in investors, considering the reduction of potential conflict of interest given by the anonymous evaluation. From this, also the issuer could gain a direct advantage, considering the possibility to sell more token to an entrusted crowd of investors. The same is true for the crypto exchange that can gain from the commission on the transaction concluded.

So if it is true that ICO, disintermediation permits the access to finance using a decentralized networks powered by diffuse contributors, that do not suffer from arbitrary exclusion problems, it is also true that too much decentralization would

[45] It is also based on an encrypting algorithmic code, reinforcing the immutability and the immediate verifiability of the transactions. Hence, this technology offers a much more resilient system, realizing a more effective protection against the different types of fraud and entailing greater transparency without any need for intermediation.

not allow to prevent investors from being victim of scum or fraud. From this point of view, after having taken the right adjustment in order to limit dangers of conflict of interests, IEO could be an instrument that may gain more trust to investors.

Final remarks

The conducted analysis on the three discussed financial instruments let us show how ICO and IEO could both be considered two valid evolution of EBCF. Both solve two important drawbacks of EBCF meaning that both investors and entrepreneur have good reason to collect money using ICO and IEO instead of the now «old» EBCF.

At the end of the day, this paper tries to shed some light in the still cloudy world of blockchain related financing instruments. Further research may focus their analysis on other newcomers of this crypto-family. Some of these are known as: Security Token Offering (STO), which promise to finance a projects offering tokenized version of securities; and Decentralized Autonomous Initial Coin Offering (DAICO), in which the project is conducted by an Decentralized Autonomous Organization as the one created after the now very famous The DAO Case. Indeed, a comparison of their characteristics and the analysis of their risks could help for sure the work of regulators whose time to intervene in a complete and proper way is going to be everyday nearer.

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Материал поступил в редакцию 27 ноября 2020 г.

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