

The New Kid on the Block: ICOs



Gunther Wuyts,
Professor at KU Leuven, Faculty of Economics and Business,
Research Center Finance and RISK, Belgium

ABSTRACT

Initial coin offerings (ICOs) extend the universe of funding sources for firms. Indeed, ICOs are a fast, cheap and convenient way to raise for firms. Also, they offer a number of potential benefits for investors such as access to a product or service or financial gain. Moreover, ICOs eliminate the need for a trusted intermediary by recording smart contracts in a public and immutable blockchain. Despite this claim and its advantages, however, ICOs still require a leap of faith from investors as important risks should not be overlooked.

1. Introduction

In recent years, blockchain and its distributed ledger technology has shown the potential to challenge the status quo for financial intermediaries and capital markets in various ways. As such, financial institutions as well as regulators are currently paying close attention to blockchain. As an illustration for this point: Bank & Financieuzen has already discussed applications such as cryptocurrencies (Vergote (2018)) and Blockchain in banks (Hermans (2018)).



My paper complements these earlier contributions by focusing on how blockchain can be used by firms in capital formation. More specifically, I show how Initial Coin Offerings (henceforth ICOs) have the potential to offer an easy and cheap way for firms to raise funding. ICOs already exist for several years, but they experienced an exponential growth in the period 2016-2017, in part following the attention for cryptocurrencies such as Bitcoin. Section 2 shows how ICOs work and presents descriptive statistics. It should be noted, however, that with the decline in the price of cryptocurrencies, also the number ICOs and amounts raised have gone down since mid-2018. Nevertheless, today ICOs are still used to attract funding since they offer a number of advantages for issuing firms, see Section 3.

In addition, ICOs have several benefits to investors (Section 4). But care is needed as well since some important risks have been identified and concerns have been voiced about both scams and irrational exuberance. These are discussed in Section 5.

2. What Are Initial Coin Offerings?

2.1. Definition

In an ICO, a firm raises capital through the sale of cryptographically secured digital assets, which are called *tokens*¹. Most take the form of a *utility tokens*². Here, the firm makes the commitment that these tokens can be used later to buy the products or services that will be developed. In general, no commitment is made about prices of products, however. In other words, utility tokens serve as a medium of exchange (one could also say a digital currency) to transact the firm's product. The commitment of the firm can be implemented in *smart contracts*. Essentially, this is a contract that is embedded in software where the commitment is automatically executed if a certain pre-specified condition is met. As such, these smart contracts replace the intermediary. Important is that most tokens do not imply ownership rights. Obviously, raising finance in exchange for usage rights is not new. For instance, in 1920, Centre Court in Wimbledon was built by giving investors (temporary) exclusive access to stadium seats.

¹ Technically, a distinction can be made between *coins*, which are digital assets that operate on their own blockchain, and *tokens* which uses an existing blockchain (the main one being Ethereum). As is common in the finance literature, I will not make this distinction in what follows.

² Next, to utility tokens, also security tokens exist, which derive their value from future cash flows of the venture. We do not discuss this type of token further since they are much more rarely used.



Before actually offering the tokens during the ICO, the issuing firm typically releases a “white paper”. This document is somewhat similar to a prospectus during an IPO but is not audited or regulated. As such white papers vary dramatically in terms of information that is provided. Most contain a description of how the proceeds of the token can be used by the holder and how the blockchain supporting it will function. Perhaps surprisingly, a budget for the development of the product is not always provided. Also contact information or location are not provided in a significant percentage of the ICOs.

During the ICO, an investor submits an order to buy a number of tokens. Typically, the payment takes place in cryptocurrency, the most common one being Ether (the coin in the Ethereum blockchain). Ether can be bought on cryptocurrency exchanges in exchange for fiat currency. Subsequently, the token contract automatically sends the tokens that were acquired to the address of the buyer in the blockchain. So, the token of the ICO is recorded in a smart contract, which is recorded in a blockchain (often Ethereum), and which also secures the commitments made by the issuing firm. No intermediation is needed in this process. The length of an ICO period is variable, ranging from one day until multiple months. The final step to list the token on an exchange (secondary market) where it can be traded.

It should be noted that up to 50% of ICOs opt for a so-called pre-ICO. In this phase, tokens are sold to a number of parties, such as early developers or adopters or even venture capitalists, typically at lower prices than during the ICO itself. Reasons for this include rewarding early developers or adopters, and raising money to cover the costs of the ICO itself (advertising, road shows, hiring people, ...).

2.2. Some descriptive statistics

The first ICO, held by Mastercoin, took place in 2013. Since then, over \$8 billion has been raised. The huge majority was done in the period 2017- mid 2018, not coincidentally the period when cryptocurrencies soared. Howell, Niessner and Yermack (2018) show that in their sample the average amount per ICO is around \$16 million. Amounts over \$100 million are no exception, however. Since then, even the \$1 billion mark has been passed, and the largest ICO to date is over \$4 billion (EOS tokens). It should be noted, however, that the second half of 2018 has seen a sharp decline, in line with the steep drop in prices of most cryptocurrencies such as Bitcoin.

In terms of location, ICOs takes place in countries all over the world, but Huang, Meoli, and Vismara (2018) show that they are more likely in countries with developed financial



markets, advanced digital technologies, and the availability of investment-based crowdfunding platforms.

In addition, a shift in industries has been observed over time. In the early period, industries of firms with ICOs were dominated by data storage/computing, new blockchain protocols, and prediction markets/gambling. More recently, however, the market has shifted to more specific business applications, including payments and wallets, enterprise, health and identity, and smart contracts.

3. What's in it for issuing firms?

ICOs offer several distinct benefits to issuing firms. The first is that transaction costs are low. Indeed, there is no need for intermediation, an audited and approved prospectus (as with an ICO) and (so far at least, see further) regulation has been benign.

Second, ICOs allows firms to raise money from future consumers of their product or service. As such, they can use the ICO as a signal to learn about potential demand.

Third, tokens can play an important role in the adoption of platforms and increase network effects (see e.g., Cong, Li and Wang, 2018; Li and Mann, 2018; Bakos and Halaburda, 2018). When a new platform is developed, there is a coordination problem. A potential user will only join a platform if he believes that others will do as well. One way to solve this is for platforms to sponsor early adopters. Bakos and Halaburda (2018) show that tokens, required to access the platform, also solve the coordination problem by fostering adoption by potential users. Intuitively, tokens allow early adopters to benefit when they can sell there tokens at a high price when the platform becomes successful. As such, they become vested in the platform's success and have a larger incentive to join it, in this way reducing the coordination problem. Cong, Li, and Wang (2018) show in addition that tokens reduce user base volatility because productivity shocks are dampened by endogenous token price changes. The intuition is as follows. Assume a negative productivity shock to the platform. This induces less users to adopt. But at the same time, it leaves the potential for more users to join in the future. This leads to higher expectations about the future appreciation in the token price, giving an incentive to join and counterbalancing the initial negative effect. Similarly, after a positive productive shock, more users join now which is positive. But this leaves less potential new users in the future, resulting in a decline in expected token price appreciation, offsetting the initial positive effect.



Third, tokens can be used to finance decentralized networks. Indeed, intermediaries are eliminated in the ICO process, so the value of the network accrues fully to the owners of the tokens. As such, ICOs allow to compensate initial developers without giving them more control of the network than any other token holders. This aligns incentives between the developers and later users. An example is to reward in this way creators of open source applications, which have traditionally relied on volunteer work (e.g. Wikipedia and Unix).

Fourth, ICOs allow firms to raise capital quickly. Indeed, blockchains such as Ethereum use a technical standard that induced some standardization in ICOs, lowering technical barriers and time needed. This makes it easier and fast for firms to create a token and record it on a blockchain, thus spurring interest in ICOs.

Fifth, tokens allow firms also to commit to immutable governance policies. These can be embedded in the smart contracts and are

4. What's in it for investors?

The previous section showed that ICOs offer several advantages to firms. We now address the question of why investors are attracted to ICOs? A first explanation is that they gain access to the product or service once it has been developed. Also, typically ICOs are accessible for both retail and institutional investors.

Second, ICOs offer the potential to realize a significant return. This return can come from ICO underpricing (like underpricing at IPOs). The idea is that to attract investors (by compensating them for risk) and to generate enough market liquidity on the secondary exchange, ICOs are offered at a discount. As a result, prices in the secondary market in the first days after the ICO, have a strong upward potential. Momsatz (2018) finds ICO underpricing of about 15% on average, measured as the raw and abnormal first-day returns. But in certain cases, and especially at the height of the success of ICOs, underpricing of tens of percents have been documented as well. Another way to profit from ICOs is if the value of the token increases with the value of the network. Once the product has been developed, and the network of interested users expands, owners of tokens benefit from the increasing value.

Third, there is no need to trust an intermediary (which potentially may have incentives that are not aligned with the ones of the investor). In contrast, trust is embedded in the smart contracts recorded in the blockchain.



Fourth, since most tokens are listed on a secondary exchange, market liquidity is available in case an investor would like to sell tokens acquired during the ICO.

Finally, tokens can have lower transaction costs than Bitcoin or fiat money.

5. What Are the Risks in ICOs?

ICOs offer numerous advantages both for issuing firms and investors. But they also pose significant risks, which should not be overlooked.

The first is that investors have little to no control or accountability by firms about how the proceeds of an ICO are used. Indeed, smart contracts do specify the rights of owners once the product is developed, but offer little protection e.g., when the firm just takes the money and the product or service is never developed (or of inferior quality). The numerous scams that have plagued ICOs in recent years show that is a real risk.

Secondly, while promised returns are high, also are the downside risks (the previous point being obviously an extreme). ICO underpricing can have a dark side if issuing firms can quickly sell their stake in the days after the ICO, thus hampering their incentives to develop the product. Also, if the product is of inferior quality or a competitor emerges, the increase in the value of the network (and thus of the token linked to it) may be less than anticipated. Hence, ICOs currently are a highly-speculative investment.

Third, tokens typically offer no control or voting rights to investors. Moreover, the information that is provided in the white paper is unregulated and unaudited, potentially casting doubt on its accuracy.

Fourth, liquidity is not guaranteed; many ICO tokens never trade on exchange, and even if the token is listed, a holder may not be able to find a counterparty.

A final risk is regulatory. Initially, regulatory authorities did not really act on ICOs. More recently, countries have taken a wide range of regulatory stances toward ICOs, ranging from an outright prohibition (e.g., China) to creating a friendly environment (e.g., Singapore). An important question is whether tokens in ICOs are securities. Most regulators aim to take this path, but this is not obvious as utility tokens aim to give access to the network (and are thus used as a customer) and not necessarily a financial return. Moreover, there is uncertainty on how tax laws apply. The above is complicated further by the fact that public blockchains such as Ethereum do not reside in one particular jurisdiction.



6. Conclusion

ICOs are a new kid on the block for firms to raise funding for investment projects. It clearly offers advantages to issuing firms by offering, among other things, quick access to capital, low transaction costs, and promoting the product or service and the network. ICOs also offer a few benefits for investors such as access to the product and possibly a financial return. Moreover, they eliminate the need for a trusted intermediary by recording smart contracts in a public and immutable blockchain. But ICOs also offer some important risks, such as scams, no control or voting rights, limited information in the white paper and limited legal protection. Finally, the regulatory and tax framework is still unclear today. This last point poses a serious constraint for institutional investors to enter in ICOs. For ICO markets to fully take off, a clear and stable legal framework should be developed in the near future.

References

- Bakos, Y., and H. Halaburda (2018), "The Role of Cryptographic Tokens and ICOs in Fostering Platform Adoption," Working Paper.
- Cong, L. W., Y. Li, And N. Wang (2018), "Tokenomics: Dynamic Adoption and Valuation," Working Paper.
- Hermans, D. (2018), "Blockchain: the truth is in there", Bank & Financierwezen.
- Li, Y., and W. Mann (2018), "Initial Coin Offerings and Platform Building," Working Paper.
- Momtaz, P. (2018): "Putting Numbers on the Coins: The Pricing and Performance of Initial Coin Offerings," Working Paper.
- Howell, S. T., M. Niessner, and D. Yermack (2018): "Initial Coin Offerings: Financing Growth with Cryptocurrency Token Sales," Working Paper.
- Huang, W., M. Meoli, and S. Vismara (2018): "The Geography of Initial Coin Offerings," Working Paper.
- Vergote, J. (2018), "Cryptomunten: Een Overzicht", Bank & Financierwezen.