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The Law and Finance of Initial Coin Offerings[1]

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Abstract

The rise of new technologies is changing the way companies raise funds. Along with the recent increase of crowdfunding in the past years, a new form of funding has emerged more recently: the use of Initial Coin Offerings (ICOs). In 2017, companies raised more than $4 billion through ICOs in the United States, and more than $17billion has been raised in the first three quarters of 2018. In a typical ICO, a company raises cryptocurrencies giving some rights in return. The different nature and features of these rights, embodied in “tokens”, are generating many controversies among securities regulators around the world. Namely, it is not clear whether and, if so, when these tokens should comply with securities law. Securities regulators are addressing this issue in a very different manner across jurisdictions: while countries like the United States, Switzerland and Singapore are requiring companies to comply with existing securities rules only when a company issues “security tokens”, other jurisdictions, such as China and South Korea, have prohibited ICOs, and Mexico subject any issuance of tokens to a system of full control *ex ante*. Nevertheless, ICOs not only generate these challenges for securities regulators. They also arise many other issues from an accounting, finance, corporate governance, data protection, anti-money laundry and insolvency law perspective. By providing a comparative and interdisciplinary analysis of ICO, this paper seeks to provide regulators and policy-makers with a set of recommendations to deal with ICOs in a way that may promote innovation and firms´ access to finance without harming investor protection, market integrity and the stability of the financial system.

Summary

1. Introduction

After the financial crisis, new financial products or services based on rapidly developing technology are starting to take over the traditional financial services world.[4] Capital markets have not been isolated from these developments. Blockchain–based startups are not only trying to develop ideas that could challenge traditional industries through distribute ledger technologies applicable to the financial services industry but also are innovating in the methods of raising capital. Among these innovative methods to raise capital has emerged the use of Initial Coin Offerings (ICOs). Through this system, companies[5] give some rights ("tokens") to third parties ("tokenholders") in exchange for some funds ("cryptocurrencies").

This paper seeks to address some of the regulatory challenges faced by ICOs from a legal and finance perspective. The article is structured as follows. Section 2 analyzes the rise of ICOs as a source to raise finance. Section 3 analyzes the concept, nature and structures of an ICO, with particular focus on the content and function of the white paper and the type of tokens generally issued by a company. Section 4 explains different regulatory approaches to deal with ICOs. Section 5 analyzes the accounting and finance aspects of ICOs, and why it is relevant for companies, tokenholders and regulators. Section 6 examines some corporate governance issues potentially existing in a world of tokenholders. Section 7 explains the regulatory issues of ICOs from an anti-money laundry perspective. Section 8 presents some remarks about the challenges ICOs face within the scope of privacy law and data protection regulations. Section 9 analyzes how tokenholders should be treated in bankruptcy and other regulatory challenges of ICOs in insolvency proceedings. Section 10 sets forth some policy recommendations and thoughts regarding international cooperation in ICOs. Section 11 provides some ideas about how a tokenized market of securities could shape the future of capital markets. Section 12 concludes by summarizing the most relevant ideas and policy recommendations suggested in this paper.

2. The rise of ICOs as a new source of finance

Initial Coin Offerings are becoming an important source of funding for companies, especially startups. During 2017, ICOs raised around $4 billion in the United States.[6] In the first three months of 2018, ICOs raised more than the whole period of 2017.[7] According to recent data, ICO funding has reached more than $17 billion in the first three quarters of

[4] See Douglas W. Arner, Janos Nathan Barberis and Ross P. Buckley, *The Evolution of Fintech: A New Post-Crisis Paradigm?* UNIVERSITY OF HONG KONG FACULTY OF LAW RESEARCH PAPER SERIES NO. 2015/047 (2015); UNSW LAW RESEARCH PAPER SERIES NO. 2016-62 (2016) (available at https://ssrn.com/abstract=2676553)

[5] In a world of ICOs, not all issuers of tokens are "companies". For this reason, this paper will also use other words to refer to the issuers such as "founders", "developers" or "issuers" themselves. All of these expression, then, will be used as synonyms in this paper.

[6] Frank Chaparro, *ICO funding soars above $4 billion as US regulators crack down.* BUSINESS INSIDER. (2017) Available at: http://www.businessinsider.com/ico-funding-soars-above-4-billion-as-us-regulators-crack-down-2017-12

[7] Accordingly to data collected by Coindesk. See https://www.coindesk.com/6-3-billion-2018-ico-funding-already-outpaced-2017/

2018,[8] a figure that might go a long way toward undermining a common perception that the controversial fundraising method will soon be extinct. On the contrary, ICOs are becoming an emerging issue for regulators. In fact, some authors argue that global data collection indicates that ICO volume has passed the 25 billion globally.[9] Therefore, this is definitely not a small market. According to Gensler (2018) "it surpasses many of the venture capital space and other ways of raising money."[10]

ICOs developments started as a new use case of blockchain. Inspired by cryptocurrencies, startups started to realize that they could fund projects attracting funds through issuing these digital assets as a form of registry of what the issuer raised in the process. Therefore, some companies consider cryptocurrencies the new way of fundraising. In 2008 the world started to talk about blockchain technology[11] and markets witnessed the origin of one of the most famous use cases, which is Bitcoin. From there, the blockchain hype was a reality and developers promised it to be disruptive, even stating that it could lead a revolution similar to the internet.[12]

According to the Gartner hype cycle of new technologies blockchain technologies are extremely hyped, evolving at different trajectories, but should not be ignored. They offer the potential for substantial change in technology development and delivery as well as in how the economy, business and society operate. Gartner's study on the hype cycle of blockchain business,[13] ICOs are not on the rise of the hype cycle, they already are at the

[8] See https://www.economist.com/technology-quarterly/2018/09/01/initial-coin-offerings-have-become-big-business and https://www.ft.com/content/69abdb66-666c-11e8-b6eb-4acfcfb08c11 (this latter article also points out that *block.one*, a Cayman Islands-based company, raised more than 4 billion through a single ICO).

[9] Dirk A. Zetzsche, Ross P. Buckley, Douglas W. Arner and Linus Fôhr. *The ICO Gold Rush: It's a scam, It's a bubble, It's a super challenge for regulators.* EUROPEAN BANKING INSTITUTE WORKING PAPER SERIES 2018 – NO. 18. (2018)

[10] Betsy Verecky. Is a Cryptocurrency a Security? Depends. MIT Management Sloan School (2018) Available at: http://mitsloan.mit.edu/newsroom/articles/is-a-cryptocurrency-a-security-depends/?utm_source=mitsloanlinkedin&utm_medium=social&utm_campaign=gensler

[11] In 2008 Satoshi Nakamoto, a pseudonym used by the inventor(s) of blockchain, published the Bitcoin paper and the source code on the Internet, allowing the most popular use case of blokchain: the first cryptocurrency, Bitcoin. In January 2009, New Liberty Standard opened the first Bitcoin trading platform. The initial exchange rate was 1,309.03 Bitcoin for one U.S. dollar. and in February 2010, the first payment in Bitcoin was processed at a price of 10,000 (more than $140 million at today's exchange rate). The first large companies to accept Bitcoin were WordPress, Overstock.com, Zynga, and TigerDirect. See Satoshi Nakamoto, *A Peer to Peer Electronic Cash System.* (2008) Available at: https://bitcoin.org/bitcoin.pdf
See also Saman Adhami, Giancarlo Giudici, Stefano Martinazzi, *Why do business go crypto? An empirical analysis of Initial Coin Offerings*. JOURNAL OF ECONOMICS AND BUSINESSES (Forthcoming). (2018)

[12] Blockchain technology reduces the role of intermediaries by allowing people to transfer digital assets - property or data -, in a safe, secure, and immutable way, the technology can create: digital registries (cryptocurrencies) that are not backed by any central authority; self-enforcing smart contracts, decentralized marketplaces; decentralized communications platforms. See Aaron Wright and Primavera de Filippi. *Decentralized Blockchain Technology and the Rise of Lex Cryptographia.* CYBERSPACE LAW E-JOURNAL (2015), (available at: https://www.intgovforum.org/cms/wks2015/uploads/proposal_background_paper/SSRN-id2580664.pdf)

[13] David Furlonger, Ray Valdes, Rajesh Kandaswamy. *Hype Cycle for Blockchain Business*. GARTNER INC. ID: G00332628. (2017) (available at: https://www.gartner.com/doc/3778898/hype-cycle-blockchain-business-)

peak. This means that this use case of blockchain is not anymore irrelevant and it is becoming more mainstream for some companies.

This has evolved rapidly in the last couple of years. In 2013, Mastercoin launched the first ICO, which raised $5 million of Bitcoin equivalent.[14] After 2013, blockchain technology became the need of funding from many blockchain-based project developers. Even though it all started as a fundraising mechanism used mostly among the blockchain and tech community to boost innovative ideas, investors and projects are turning to be more mainstream. Recent examples have even included celebrity promoters such as Paris Hilton (LydianCoin), Ghostface Killah from the Wu Tang Clan (Cream Capital), Jamie Foxx (Cobinhood) and Floyd Mayweather Jr. (Stox).[15] Investors have become more interested in ICOs, not only tech interested people are investing in these digital assets but also retail investors who want to diversify their portfolios and find ICOs as an attractive speculative invest[16]. Additionally, broader set of companies are using ICOs as a method for funding projects. The following figure sets forth the different sectors or "industries" using ICOs as a fundraising method. Sectors such as finance, gaming, internet of things, cloud computing and even restaurants[17], are using ICOs in 2017-2018, in comparison to 2014 where ICOs where mainly used by core tech businesses.

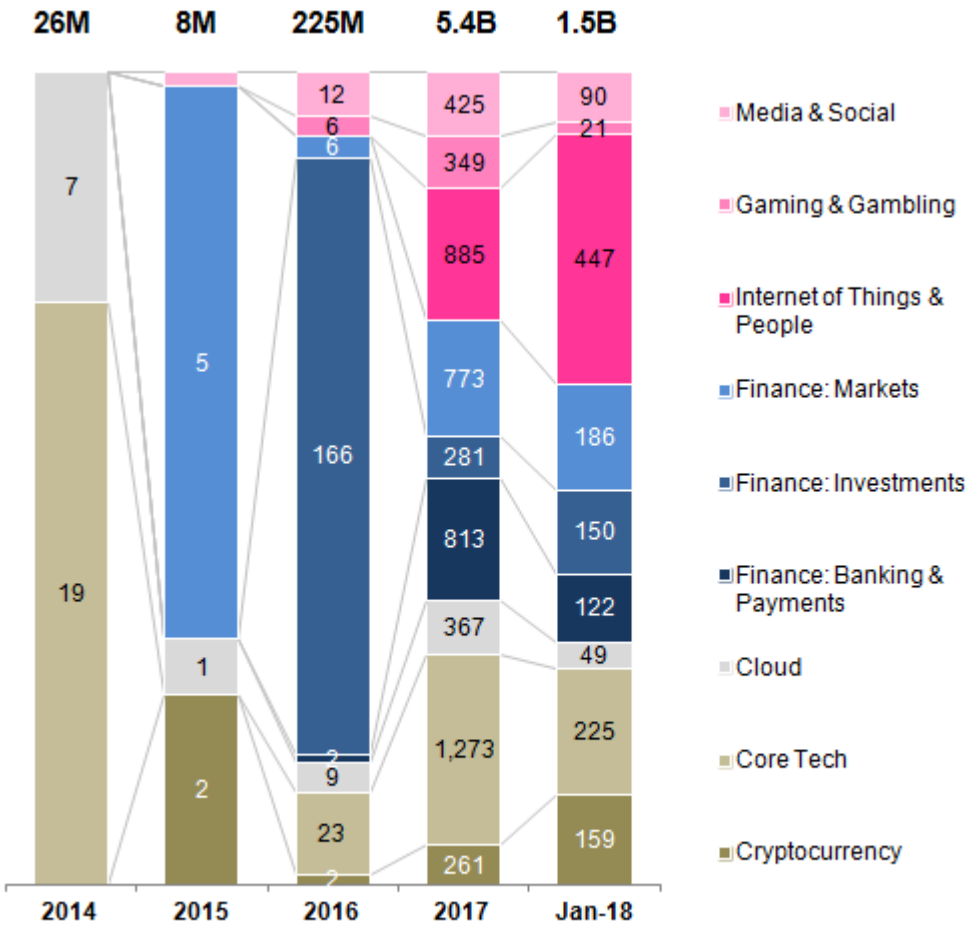
Figure 1. Initial Coin Offerings by Industry (USD Equivalent, $1M+raises)

[14] Alfonso Delgado *et al*, *Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016).

[15] Dirk A. Zetzsche, Ross P. Buckley, Douglas W. Arner and Linus Fôhr. *The ICO Gold Rush: It's a scam, It's a bubble, It's a super challenge for regulators.* EUROPEAN BANKING INSTITUTE WORKING PAPER SERIES 2018 – NO. 18. (2018)

[16] "Now we are seeing (…) that the latest ICOs are getting up to 80% of their funding from smaller buyers," says Daria Generalova, one of the founders of ICO Box in Vancouver. "The Bitcoin rate bleed can be considered as one of the underlying reasons for the upswing in token sales. Most of those tokens are paid for in bitcoin. But now that bitcoin is down, you will see investors holding onto it before they buy the smaller tokens in anticipation of a rate bounce." See Keneth Rapoza, *Is It Too Late To Make Your Fortune In Cryptocurrency ICOs?* FORBES (February 7, 2018) (available at: https://www.forbes.com/sites/kenrapoza/2018/02/07/as-bitcoin-struggles-will-investor-interest-in-icos-weaken/#3c812fd6433a)

[17] Recently, the Spanish Securities Market Authority (CNMV) has been working with a company named Home Meal for launching an ICO in accordance with Spanish securities regulation. See http://www.europapress.es/economia/finanzas-00340/noticia-cnmv-dispuesta-colaborar-home-meal-duena-nostrum-lanzar-ico-espana-20180228164239.html



Source: Autonomous Next.[18]

These numbers do not include either Telegram's $1 billion planned ICO[19], or Overstock's subsidiary $250-500mm raise, so we expect this level to continue through the year. These numbers do not include the 4 billion ICO launched by Block.one on May, 2018[20]. It may be harder for an individual ICO to raise capital given higher standards and competition, so in that sense, the market is equilibrating with the Venture Capital market. Vesting schedules, performance targets and covenants are becoming standard as the early ICO funds are

[18] See https://next.autonomous.com/thoughts/jan-2018-ico-and-crypto-fund-numbers

[19] Telegram's blockchain, called the Telegram Open Network (TON), has not been built yet. As such, Telegram is selling tokens on a pre-sale under the Simple Agreement for Future Tokens (SAFT) framework, which is basically an investment contract for selling future tokens that under United States securities regulations is a security. We will explain the tokens pre-sales in detail in Section 3 of this paper. See Brady Dale, *The Wait for Grams: Why Telegram Might Just Cancel Its Public ICO*. COINDESK (April, 2018) (available at: https://www.coindesk.com/wait-grams-telegram-might-just-cancel-public-ico/)

[20] Cayman Islands start-up Block.one raised $4 billion as of Thursday, eclipsing the world's biggest initial public offerings this year and more than doubling the next biggest offering of that type. See Kate Rooney, *A blockchain start-up just raised $4 billion without a live product.* May, 2018, CNBC. Available at: https://www.cnbc.com/2018/05/31/a-blockchain-start-up-just-raised-4-billion-without-a-live-product.html

joined by mega VCs like Andreessen.[21] Traditional early stage investors are writing equity checks into blockchain companies, but those numbers are less than 20% of the overall numbers.[22]

But, why is this fundraising method so attractive for both buyer of tokens and companies? Is this mechanism likely to fund the same type of ventures that are funded by venture capital firms and professional investors, or crowdfunding? Are ICOs a way to fund projects that cannot be funded through traditional sources of capital or are substitutes for other sources of funding? Even more complex questions arise with the hype of ICOs, such as which financing model maximizes the returns? Why these companies find attractive a funding method that exchanges tokens for cryptocurrencies rather than cash? As of May 2018 date, no analysis has been conducted to explain how a token, particularly utility tokens,[23] can have value in the absence of additional rights. Even in the absence of fraud and incompetence, how precisely tokens have value in the absence of additional rights on the venture is not obvious.[24]

For founders, a token sale could jump-start network effects at the earliest and most vital stages of a software project´s development. What is this so called network about? Blockchain networks are decentralized networks that work as the sum of many parts that interact with each other in order to develop the functions that founded that particular community. The Bitcoin ecosystem, for example, boils down to four parts: the users sending and receiving payments, the miners generating the cryptocurrency, the investors buying it, and the developers that monitor and maintain the net. No single part of the equation works without the others being there too. That is why blockchain networks are also known as peer to peer systems. In any event, a series of ingredients must work together well to keep a blockchain project operational.

Blockchains can be used for diverse ends. Each blockchain project depends entirely on where participants want to go and what they want to build as a network. In other words, decentralization and distribution in blockchain mean blockchain ecosystem is not merely constructed from high-quality components, but from components that work together harmoniously. Because of this form of functioning of a blockchain is that ICOs are the only funding method in where project/issuers interact directly with tokenholders/"investors". Both of them are indispensable for developing the ecosystem because the tokenholder is expected to be also a user of the network in many ICOs – since many of them try to structure the token a an utility token from the functionality perspective, which we will explain later on this paper -, not merely an investor.

Companies start these networks normally use an existing blockchain such as Ethereum. Ethereum was proposed in 2013, crowdfunded with 30,000 bitcoin in the summer of 2014

[21] Autonomous Next. *Jan 2018 ICO and Crypto Fund Numbers*. February, 2018. Available at: https://next.autonomous.com/thoughts/jan-2018-ico-and-crypto-fund-numbers

[22] Autonomous Next. *Jan 2018 ICO and Crypto Fund Numbers*. February, 2018. Available at: https://next.autonomous.com/thoughts/jan-2018-ico-and-crypto-fund-numbers

[23] We will address the concept of utility tokens in Section 3, but basically these tokens grant access to the platform but do not provide economic or government rights to the tokenholders, as opposed to traditional debt or equity instruments.

[24] Christian Catalini and Joshua S. Gans, *Initial Coin Offerings and the Value of Crypto Tokens*. MIT SLOAN SCHOOL OF MANAGEMENT WORKING PAPER 5347-18. (2018)

and launched a year later in 2015.[25] Its core feature is *smart contracts*, which run automatically and exactly as coded, without any possibility of downtime. This feature posed Ethereum as an attractive blockchain to launch ICOs[26]. From a technical point of view, an ICO is essentially a program that collects cryptocurrency from contributors and, after reaching a target amount, distributes newly created tokens to the ICO's contributors. In order to do so, the ICO needs a system that can be programmed to distribute the tokens without outside input. These programs are precisely the so called smart contracts. An ICO relies on common programming commands like conditional statements to analyze, verify, and respond to incoming transactions. These pieces of code need to integrate with the blockchain on which the ICO is built. Ethereum allows developers to easily program those rules for launching an ICO. Thus, they do not have to wait until their own platform is finished. However, in order to do so, potential buyers of the new tokens need to become part of the Ethereum platform and, therefore, buy Ether – Ethereum's cryptocurrency – for buying the new tokens.

Additionally, Ethereum offers a standardized way to create new tokens on its blockchain called the ERC-20 protocol. ERC-20 is not a piece of code, software, or technology. Rather, it is guidelines that facilitate the integration of various currencies. Before ERC-20, each new cryptocurrency token created its own system for verifying account balances and initiating transfers. These systems included different functions and arguments that were not necessarily compatible with tokens issued in an ICO.

However, Ethereum is not the only platform that uses smart contracts. NEO[27] runs decentralized software in a manner similar to Ethereum, and in fact is trying to position itself as the "Chinese Ethereum." The difference is that NEO apps are written in popular programming languages like Python, whilst Ethereum relies on its own custom Solidity language. Additionally, NEO lets users digitize certain assets and track them – not only tokens- on its blockchain, making it simple to trade them as users see fit.

Some projects manage to develop their own platforms so they are able to exchange their own coins – the issued coins – for currency such as dollars. One example is XRP. XRP is the cryptocurrency created by Ripple, a company that developed a blockchain based payments system for financial institutions.[28] XRP is sold in some cryptoexchanges, such as Bitstamp, where you can buy it funding the e-wallet with dollars. In this paper we will refer mainly to those ICOs which tokens are exchanged by other cryptocurrencies and not

[25] Bernard Marr. *Blockchain: A very short history of Ethrereum Everyone Should Read*, February, 2018. FORBES Available at: https://www.forbes.com/sites/bernardmarr/2018/02/02/blockchain-a-very-short-history-of-ethereum-everyone-should-read/

[26] Most ICOs use Ethereum platform. Ernst & Young. *EY research: Initial Coin Offerings.* December, 2017. Available at: http://www.ey.com/Publication/vwLUAssets/ey-research-initial-coin-offerings-icos/$File/ey-research-initial-coin-offerings-icos.pdf

[27] NEO Blockchain is also know as the Ethereum of China. See https://neo.org/

[28] Ripple's big bet is that XRP will become a "bridge currency" that many financial institutions use to settle cross-border payments faster and more cheaply than they do now using global payment networks, which can be slow and involve multiple middlemen. Mike Orcutt, *No, Ripple Isn't the Next Bitcoin*, January, 2018, MIT TECHNOLOGY REVIEW, available at: https://www.technologyreview.com/s/609958/no-ripple-isnt-the-next-bitcoin/

to cases such as Ripple, since it is not clear whether this case falls under the scope of securities laws.[29]

The duration of an ICO depends on the nature of the project. Thus, founders can sell tokens for long periods, even for just expanding the ecosystem – the network we mentioned – they intend to build. In other words, ICOs need to create a network (like a club where peers can enter with the tokens) in order to function. These networks create ecosystems where participants (founders, users, investors, among others) can interact with each other. This means that ICOs operate as blockchain peer to peer networks, which means that ICOs do not need intermediaries to connect parties to the networks, such as underwriters – in Initial Public Offerings – or managers of a platforms – as in crowdfunding.

For "investors", tokens mean earlier liquidity because token have a secondary market when the crowdsale phase is taking place and this secondary market exists within the same network where the tokenholder bought the token without intermediaries since it is a distributed and decentralized peer to peer network. Most crowdfunding regulations among jurisdictions[30] prohibit a secondary market of crowdfunding participation instruments. In traditional capital markets – bond and stocks – liquid secondary markets exist as well, but investors need to operate by the rules of those markets, which means, they will need some intermediaries – and pay fees to them - in order to sells their securities. Users likely stand to benefit the most as they may participate directly in the creation and growth of the value of a network. Theoretically, if executed as set forth in the whitepaper and complying with securities regulations, a token sale can permit users to participate financially in that creation and growth without taking on significant enterprise risk.[31] However, it is not clear from an empirical point of view why a company or an investor would prefer ICOs.

Then, it is inevitable the comparison –at least for now in theory– between ICOs and other financing methods, such as crowdfunding or other peer to peer financing mechanisms, venture capital, angel investment and initial public offerings (IPOs). Actually, ICOs are sometimes considered as an application of the crowdfunding mechanism to blockchain-

[29] Law firm Taylor-Copeland law has filed a class action suit against Ripple Labs for the sale of unregistered securities, according to the complaint filed on May 3. The lawsuit targets Ripple, its subsidiary XRP II, and Ripple CEO, alleging that Ripple's sale of XRP tokens is a violation of U.S. securities laws. The class action suits alleges that the defendants have violated both the Securities Act and the California Corporations Code. The plaintiffs request that the court declare the sale of XRP an unregistered securities sale and to prevent the defendants from further violating securities laws. See Molly Jane Zuckerman. *Class Action Lawsuit Against Ripple Alleges Sale Of Unregistered Securities*, May, 2018, Cointelegraph, available at: https://cointelegraph.com/news/class-action-lawsuit-against-ripple-alleges-sale-of-unregistered-securities
Regarding this, the SEC has stated that Ether and Bitcoin are not securities, however, SEC has not made any statement regarding XRP. See SEC Director of the Division of Corporate Finance, *Digital Asset Transactions: When Howey Met Gary (Plastic)*, June, 2018. Available at: https://www.sec.gov/news/speech/speech-hinman-061418

[30] Argentina is an exception, since their fintech law allows a secondary market for crowdfunding participations within the same platform the projects are founded.

[31] The SAFT Project supports this view. See Juan Batiz-Benet, Jesse Clayburgh and Marco Santori. *The SAFT Project: Toward a Compliant Token Sale Framework*. Protocol Labs & Cooley LLP (2017) (available at: https://saftproject.com/static/SAFT-Project-Whitepaper.pdf)

based companies or projects.[32] Even though there are no empirical studies that conclude why companies would prefer ICOs over the other fundraising methods, we will try to describe the main differences and similarities between them from a functional, finance and regulatory perspective as the following table sets forth.

Table 1. Differences and Similarities between ICOs and other sources of financing

	IPO	Crowdfunding	Venture Capital	ICO
Level of regulatory compliance	IPOs are heavily regulated in all jurisdictions by securities regulations. This process often requires the intervention of an underwriter (one or more investment banks) and law firms.	Crowdfundings is not regulated in all jurisdictions, but in US, UK and some continental Europe countries it is already regulated. (i.e. US regulations of crowdfunding are in place since 2012). Some countries in Latin America recently (2018) enacted primary legislation regarding crowdfunding (i.e. Mexico, Argentina). The secondary legislation is still to be discussed.	VC is subject to the same basic regulations as other forms of private securities investments. Additionally, private equity firms often have to register with securities regulators and are subject to some reporting requirements.	ICOs are regulated in some jurisdictions. Only those considered securities are subject to securities regulations[33]. There are almost no barriers to entry for those who wish to conduct an ICO (especially if the token is a non-security token). Some basic coding skills to generate tokens is the only entry barrier[34]. .
Limits /caps	No limits.	In almost all jurisdictions crowdfunding is capped to certain amounts.	No limits in investing but the VC funds have a fixed life.	No limits.
"Investors"	Institutional investors and retail investors participate in distribution of securities through IPOs.	Funds raised from members of the public, many of whom are not professional / institutional investors. However, crowdfunding campaigns generally take place through an intermediating platform that extracts fees from issuers	A venture capitalist is a person who makes venture investments, and these venture capitalists are expected to bring managerial and technical expertise as well as capital to their investments. VC funds are typically managed by a venture capital	None of the regulatory approaches so far have limited ICOs[35], which means that they currently include institutional investors and retail investors.

[32] Alfonso Delgado *et al*, *Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016).
[33] We will describe the different regulatory approaches in Section 3.
[34] The Ethereum's introductory tutorial teaches this basic coding skills. See Alfonso Delgado *et al*, *Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016)
[35] This statement excludes jurisdictions that have prohibited ICOs, such as China.

	IPO	Crowdfunding	Venture Capital	ICO
			firm, which often employs individuals with technology backgrounds (scientists, researchers), business training and/or deep industry experience.	
Disclosure requirements	IPOs require the preparation of a prospectus, whose structure and content is highly regulated.	Companies issuing equity (or debt) via crowdfunding platforms are required to disclose essential information to investors	VCs are accountable to their own investors. This provides an incentive to screen and monitor investments carefully	The content of a whit paper is not regulated.
Secondary market of the instruments issued	The securities will have a secondary market which is determined in the prospectus. The securities, when issued, are registered in a stock exchange.	Securities are privately-held and, generally, there is no secondary market to trade them	These funds have a fixed term.	Depending on the structure of the token, some will have a secondary market. This feature could mean in some jurisdictions that the token is a security.
Pricing	IPOs have different mechanisms for pricing: Fixed price, Dutch auction, Bookbuilding (which is the most common method)	The platform is responsible for the valuation and pricing of the projects in almost all jurisdictions. The platforms is a supervised entity.	In return for financing one to two years of a company's start-up, venture capitalists expect a ten times return of capital over five years.[36]	Price comes from issuer and it is subjective. The ICO mechanism allows entrepreneurs to generate buyer competition for the token, which, in turn, reveals consumer value without the entrepreneurs having to know, ex ante, consumer willingness to pay.
What is being sold	Securities: equity or debt.	Equity (in case of equity crowdunfing). In some jurisdictions the instruments are considered securities.	Equity	Coins or tokens. Depending on the structure of the token and the regulation applicable, the

[36] Bob Zider. *How Venture Capital Works*. HARVARD BUSINESS REVIEW. (1998) (available at: https://hbr.org/1998/11/how-venture-capital-works)

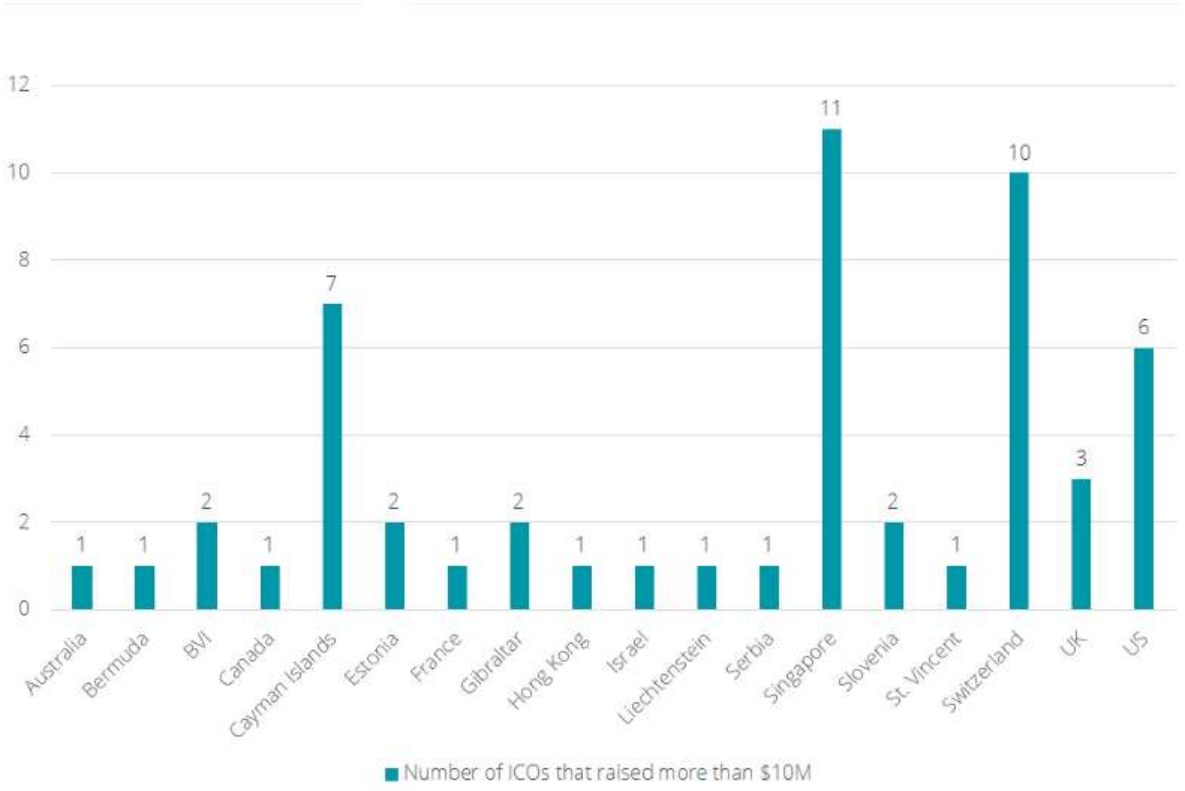
	IPO	Crowdfunding	Venture Capital	ICO
				token could be considered security or commodity.
Accountability	Issuers, law firms and underwritters in an IPO may be liable for misrepresentations or omissions in a prospectus.	The funding portals or platforms are subject to registration and supervision from the securities market authorities.	VCs are accountable to their own investors. This provides an incentive to screen and monitor investments carefully.	ICOs can be securities offerings and they may need to be registered.

Source: Alfonso Delgado *et al* (2016) and authors' elaboration

ICOs, independently of the functionality of the token, can be considered securities. In that regard, the features of an ICO become more similar to a regulated form of raising capital. Despite these similarities and legal uncertainty, ICO market was 40% of the size of the IPO market and 30% of the size of the venture capital market during the first quarter of 2018.[37]. Additionally, despite the regulatory uncertainty, some jurisdictions are already being perceived as more "friendly" to launch an ICO. We will cover this matter in Section 4 where we will address the different regulatory approaches to deal with ICOs. In our view, ICO markets are starting to create regulatory competition to attract this type of innovative form of financing.

Figure 2. Number of ICOs that raised more than USD$10M

[37] Caitlin Long. *6 Facts Institutional Investors Should Know about Crypto.* (April, 2018). https://caitlin-long.com/2018/04/24/6-facts-institutional-investors-should-know-about-crypto/



Source: Applicature[38]

The ICO market is becoming too relevant for traditional institutions and regulators to ignore. Even sophisticated investors are starting to be attracted to this market. According to Autonomous Next, by April 2018 there were about 250 funds – mainly hedge and venture funds – investing in crypto assets.[39] Does this mean traditional venture should start being listed as a crypto fund? Data is not yet available to make those predictions but blockchain hype seems to be spreading through capital markets. According to Bloomberg, hedge funds have figured out that one of the surest ways to get make profits with ICOs market.[40] What hedge funds are doing reminds to some of the practices that took place during the IPO peak of the 1990s, when many preferred investors would quickly resell shares for big profits.

In the following section we will address the structure of an ICO and the different structures of a token from both a functionality and regulatory perspective.

[38] Olga Hryniuk. *The Best Country for an ICO Launch.* Applicature (March, 2018) https://applicature.com/blog/ico-friendly-countries-2018

[39] Hedge funds focused on trading cryptocurrencies more than doubled in the four months to Feb. 15, hitting a record high of 250, showed new data from fintech research house Autonomous NEXT. See *Initial Coin Offerings: 1Q 2018 in review*. Autonomous Next (April, 2018) (available at: https://next.autonomous.com/thoughts/initial-coin-offerings-1q-2018-in-review)

[40] Kharif, Olga. *Hedge Funds Flip ICOs, Leaving Other Investors Holding the Bag.* Bloomberg (October, 2017) (available at: https://www.bloomberg.com/news/articles/2017-10-03/hedge-funds-flip-icos-leaving-other-investors-holding-the-bag)

3. Structure of an ICO

Tokens are basically *digital assets* used in connection with decentralized services, applications, and communities known as token networks. In other words, tokens are digital assets that are recorded on a distributed ledger and can be transferred without an intermediary.[41] In exchange of these tokens, companies received cryptocurrencies – often Bitcoin or Ether – to develop the project. It is very common that tokens start to be sold before the network is in function. Some of these tokens will be functional once the platform is developed.

The structure of an ICO may differ according to the needs of the developers or founders. However, almost all of them have the following steps in common: (i) the whitepaper, (ii) the pre-sale of tokens, (iii) use of proceeds and execution of the project, (iv) launching the network where investors and developers begin sales of the token to the public. We will address each one of the steps in order to provide a common understanding regarding this matter.

3.1. The White Paper

As a first step in ICOs, developers publish their whitepaper, which is a document that explains the project to be fund. A white paper is essentially a business plan for projects to be fund by an ICO –most of them blockchain projects, as we already explained. Most coins will allow potential investors –or actually any interested reader– to download their white Paper off their official website. Some websites are also databases for the most recent white papers published.[42] White papers are also one of the first elements of a project you should look at when deciding if it is a solid investment or an attractive asset to buy.[43]

The first white paper, and clearly the one that was used as a model for ICOs, is Satoshi Nakamoto's paper on Bitcoin. Since the structure of a white paper has not been regulated, market participants are starting to find a common ground on what should be the contest of these documents. According to some empirical studies regarding ICOs and their whitepapers,[44] there is one consistent characteristic among them: a technical description of the underlying technology for which funding is sought, as well as some description of the potential use and benefits of said technology. Basically, a general description of the project to be executed and the benefits and disruption that project can bring to the table.

ICO whitepapers are inconsistent regarding the applicable law, the regulatory status of the ICO –which means whether the functional tokens or even pre-sold tokens should be considered as securities under the applicable securities regulation–, and the location of the

[41] Alfonso Delgado *et al, Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016) (available at http://extropy.io/publications/bluepaper.pdf).
[42] For example http://whitepaperdatabase.com/
[43] As we will see in following sections, not all tokens are investments. For example, some of them only grant access to a platform or a discount. These particular tokens should not be considered necessarily as an investment contract.
[44] Dirk A. Zetzsche, Ross P. Buckley, Douglas W. Arner and Linus Fôhr. *The ICO Gold Rush: It's a scam, It's a bubble, It's a super challenge for regulators.* EUROPEAN BANKING INSTITUTE WORKING PAPER SERIES 2018 – NO. 18. (2018)

funds once received by the issuer.[45] These elements are avoided in whitepapers probably because companies and investors believe that, as financial contributions to an ICO are made in cryptocurrencies (and benefits returned to participants are instrumented through tokens or digital assets), these instruments exist beyond the jurisdictions or laws.[46] The lack of standardization needs to be solved in order to avoid several problems, including selective disclosure, lack of comparability, and adverse selection problems.[47]

These asymmetries of information might be corrected by either setting which elements should be included as a minimum in the white papers, or letting markets decide the best way to guarantee a certain degree of standardization, for example using analysts or law firms as advisors in structuring ICOs or through peer reviews.[48] Companies might also engage in public discourse, defending the white paper and even advertising an upcoming token sale. As a result of this marketing, advertising and public discourse, some pre-sales could make many tokens meet the definition of 'security' under some countries' securities laws.[49]

When the white paper is first published, usually developers have little more than the description of that they want to achieve after the ICO. However, in some white papers part of the code is published. Thus, the tokens offered in this stage are not functional for using the platforms. Those tokens cannot be utilized yet, despite the fact that they can be traded.

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[45] Only 31% of the ICOs in a sample of 450 ICOs mention the law applicable to the ICO. In 37.7% of the cases the white paper excluded investors from certain countries from participation. In 86.5% of the cases there is no information at all as to the regulatory status of the ICO. This also included cavalier disregard of the need to inform a participant as to where precisely their funds are going. See Dirk A. Zetzsche, Ross P. Buckley, Douglas W. Arner and Linus Fôhr. *The ICO Gold Rush: It's a scam, It's a bubble, It's a super challenge for regulators.* EUROPEAN BANKING INSTITUTE WORKING PAPER SERIES 2018 – NO. 18. (2018)

[46] This statement comes only from intuition. It has not been empirically tested.

[47] For an analysis of the rationale of imposing mandatory disclosure in capital markets, see John Armour *et al,* PRINCIPLES OF FINANCIAL REGULATION (Oxford University Press, 2016), pp. 164-167; Luca Enriques and Sergio Gilotta, *Disclosure and Financial Market Regulation*, in Eilis Ferran, Niamh Moloney and Jennifer Payne (eds)., THE OXFORD HANDBOOK ON FINANCIAL REGULATION (Oxford University Press, 2015), pp. 511-25; Merrit Fox, *Retaining Mandatory Securities Disclosure: Why Issuer Choice is not Investor Empowerment*, 85 VIRGINIA LAW REVIEW 1335 (1999); Zohar Goshen and Gideon Parchomovsky, *The Essential Role of Securities Regulation* 55 DUKE LAW JOURNAL 711 (2006). Pointing out the benefits of standardization in some particular rules (e.g., accounting), see John Armour *et at,* THE ANATOMY OF CORPORATE LAW: A COMPARATIVE AND FUNCTIONAL APPROACH (Oxford University Press, 2017), pp. 19. Likewise, using Akerlof´s seminal work about asymmetries of information, it can be argued that the lack of enough information about all issuers may lead to an adverse selection problem: investors will not be able to distinguish "good" and "bad" issuers. Therefore, they might be reluctant to provide finance, or they will do so at a higher cost for everyone, taking into account that, in the absence of mandatory (and standardized) disclosure, many "bad issuers" may decide to provide just "selective disclosure" of what it can be only in their interest. For a general analysis of this problem, see George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism, 84* THE QUARTERLY JOURNAL OF ECONOMICS 488 (1970). In the context of ICOs, Professor Chris Brummer has advocated for standardizing disclosure in white papers. See https://bitcoinmagazine.com/articles/congressional-hearings-we-must-distinguish-digital-commodities-icos/

[48] Some advisors and law firms are specialized now in review ICO papers, and some of them are "certified" by a peer review.

[49] The SAFT transaction might rely on Rule 506(c) of the Securities Act (United States federal securities regulation) which allows for general solicitation of investors, but requires that the offering must be limited, in the end, only to verified accredited investors.

These offerings are typically known as the "pre-sales" of tokens, which we will explain below.

3.2. The pre-sale of tokens

As we mentioned, tokens can either be functional or non-functional. Non-functional tokens have the sole function of acting as a fundraising mechanism and are offered to the public when the platform or the network has not been developed. Non-functional tokens do not contain any features that are intrinsically linked to a blockchain project; thus their value is driven only by speculation[50]. The pre-sales of tokens are not unusual. Around 70% of ICOs had been previously offered in a presale to a private investor group prior to the crowdsale.[51]

A pre-sale or a pre-ICO is a term that refers to the process that takes place before the crowdsale begins. It usually allows the investors to buy tokens before the crowdsale starts. Moreover, this token sale event usually has separate smart contracts from the main crowdsale event.[52] The main idea of a presale is to provide discount. The buyers that participate in the presale often get cheaper prices per token as well as a higher bonus amount. Therefore, those people sometimes get additional bonuses such as some free access, a bonus card, among others. In other words, ICO pre-sales include advantages for early investors. Because ICOs impose a minimum and maximum threshold for their token crowdsales, blockchain startups often present discounted rates and merits for investors that purchase their crypto-tokens at an early stage.[53] Thus, investors in the crowdsale phase of the ICO are required to purchase tokens at a higher rate than early investors. According to blockchain investment funds and even Ethereum co-founder, since last year, the incentivization system for early investors by popular ICOs has led to the network congestion of Ethereum, driving average fees to over $5.[54]

Some companies decide to conduct the pre-sale of tokens only with "accredited" investors. By some informal accounts, funds from accredited investors make up between 60%-80% of the total funds raised in a direct token pre-sale.[55] Some of these accredited investors

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[50] Alfonso Delgado et al*. Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016), pp. 33.

[51] This percentage is based on a sample of 450 ICOs. See Dirk A. Zetzsche, Ross P. Buckley, Douglas W. Arner and Linus Fôhr. *The ICO Gold Rush: It's a scam, It's a bubble, It's a super challenge for regulators.* EUROPEAN BANKING INSTITUTE WORKING PAPER SERIES 2018 – NO. 18. (2018) pp. 11.

[52] See Hackernoon. *How is the Presale Different From the Crowdsale.* https://hackernoon.com/how-is-the-presale-different-from-the-crowdsale-f369f484794d

[53] These discount rates can go up to 30%. For example, in the ICO of the messaging application Kik, the pre-ICO sale allowed Blockchain Capital, Pantera Capital and Polychain Capital to purchase kin tokens at a 30 percent discounted rate. See https://techcrunch.com/2017/08/29/kik-ico-september-125-million/ and https://www.reddit.com/r/KinFoundation/comments/743eim/icos_must_stop_institutional_investors_from/

[54] For instance in March of 2017, Ethereum co-founder Vitalik Buterin revealed that an investor in the ICO of BAT spent $2,210 as a transaction fee for one payment to receive the advantages and discounts granted to early investors. See https://www.ccn.com/hedge-funds-investing-early-in-icos-is-abusive-cryptocurrency-investor/

[55] See Juan Batiz-Benet, Jesse Clayburgh and Marco Santori. *The SAFT Project: Toward a Compliant Token Sale Framework*. Protocol Labs & Cooley LLP (2017) (available at: https://saftproject.com/static/SAFT-Project-Whitepaper.pdf) pp. 4.

are hedge funds, as we previously mentioned in section 2 of this paper. These market players are performing bump-and-dump practices in ICO markets when participating in pre-sales of tokens.[56]

Furthermore, in these token pre-sales, some issuers enter into a Simple Agreement for Future Tokens with these accredited investors. The SAFT is an investment contract whereby investors purchase the right to receive tokens in the subsequent network launch. In exchange, the company promises to deliver tokens upon the launch of the network for the investors' promise to pay immediately. The SAFT is considered under US regulations a security.[57]

3.3. The crowdsale and distribution of tokens to the public

After the token pre-sale, the company can start to build the network or develop the project described in its White Paper. As of the date of this paper, no empirical studies have measured the rate of token pre-sales that are indeed executed into a real project and what percentage results in an undeveloped idea against buyers' interests. Therefore, completion or abandonment rates remain unclear and could be part of a future empirical study regarding ICOs.

Once the network is developed, the company sells part of its tokens in exchange of cryptocurrencies such as, generally, Bitcoin or Ether. The crowdsale is then the core of an ICO. It is the process of raising funds from all type of buyers or investors. This sounds easy, however, the risk of not developing a project is relatively high – at least theoretically – taking into account that many of these project promise to develop some kind of use case of blockchain technology. This could be complex to develop considering blockchain as an emerging technology. Additionally, operational risks are a reality when using blockchain technology.[58]

For example, The DAO[59] investigation proved that vulnerabilities in the code can be exploited by hackers in order to make funds disappear. The DAO launched on 30th April, 2016, with a 28-day funding window. The DAO was popular, raising over USD$100m by 15th May, and by the end of the funding period, The DAO was the largest ICO by the time, having raised over $150m from more than 11,000 individuals. During the crowdsale,

[56] *Hendge Funds Investing Early in ICOs is Abusive: Cryptocurrency Investor.* Altcoin Analysis (October, 2017) (available at: *https://www.ccn.com/hedge-funds-investing-early-in-icos-is-abusive-cryptocurrency-investor/)*

[57] This has been used only in pre-sales of non-security tokens. See Juan Batiz-Benet, Jesse Clayburgh and Marco Santori. *The SAFT Project: Toward a Compliant Token Sale Framework*. Protocol Labs & Cooley LLP (2017) (available at: https://saftproject.com/static/SAFT-Project-Whitepaper.pdf)

[58] See Deloitte. *Blockchain risk management – Risk functions need to play an active role in shaping blockchain strategy.* (2017) (available at: https://www2.deloitte.com/content/dam/Deloitte/us/Documents/financial-services/us-fsi-blockchain-risk-management.pdf)

[59] A DAO is a Decentralized Autonomous Organization. Its goal is to codify the rules and decision-making apparatus of an organization, eliminating the need for documents and people in governing, creating a structure with decentralized control. "The DAO" is the name of a particular DAO, conceived of and programmed by the team behind German startup Slock.it - a company building "smart locks" that let people share their things (cars, boats, apartments) in a decentralized version of Airbnb.

several people expressed concerns that the code was vulnerable to attack.[60] A bug was exploited by a hacker who took more than $3.6m Ether by mid-June. Additionally, the price of Ether dropped from over $20 to under $13 and caused the finalization of the project.[61] ICOs tend to have a minimum threshold for funding – if this threshold is not met by the end of the funding period, the funds are usually returned to investors automatically.[62] In today's ICOs it is not clear what happens if the project is not developed and what is the enforcement mechanism for making the developer accountable to the tokenholders. This accountability will also vary if the tokens are security tokens or non-security tokens.

3.4. The concept and features of tokens

There are no unified classifications of tokens. Tokens may differ from one to another, and different countries may even have different classification to refer to similar tokens. In our opinion, though, it might be useful to classify tokens from two different perspectives: (i) *functionality* of the token, focused on the function and economic substance of the token; and (ii) *legal nature* of the token, based on the particular features of the token (including its distribution), and the definition of "security" established in a particular jurisdiction.

3.4.1. Functional classification

From the perspective of their functionality, this paper follows the classification proposed by the FINMA. The Swiss Financial Markets Supervisory Authority categorizes tokens into three types: (i) payment tokens; (ii) utility tokens; and (iii) asset tokens.[63] Likewise, they recognize that "hybrid" tokens can also be found. FINMA defines *payment tokens* as synonymous of cryptocurrencies.[64] Therefore, these tokens have no further functions, and they can only be used to make payments generally with the issuer –for example, to pay a future product or service provided by the issuer in which the only accepted payment are these "cryptocurrencies" issued by the company. The ability of these tokens to make payments with third parties will depend on the acceptance of these tokens by the market or the particular counterparty.

The concept of *utility tokens* used by FINMA refers to those token which are intended to provide digital access to an application or service.[65] Therefore, many companies developing technological products may opt for the issuance of this type of tokens. From a functional and accounting perspective, these tokens seem to reflect the purchase of a future good or service provided by the issuer. Finally, FINMA defines *asset tokens* as those representing assets such as participations in real physical underlyings, companies,

[60] See *Understanding DAO hack.* Coindesk (2017) (available at: https://www.coindesk.com/understanding-dao-hack-journalists/)
[61] Alfonso Delgado *et al*, *Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016). pp. 26.
[62] Alfonso Delgado *et al. Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016). pp. 9.
[63] See https://www.finma.ch/en/news/2018/02/20180216-mm-ico-wegleitung/
[64] Ibid.
[65] Ibid.

or earnings streams, or an entitlement to dividends or interest payments.[66] In terms of their economic function, these tokens are analogous to equities, bonds or derivatives.[67]

3.4.2. Legal classification

The functional classification is very useful to understand the features, nature and economic function of tokens. Likewise, it may provide some guidance about the *tentative* legal regime applicable to the tokens. For example, as asset tokens are analogous to debt or equity, there are many chances that these tokens can be classified as "securities". Nevertheless, this intuitive relationship between the functional classification and the legal classification is just that: intuitive. Indeed, the fact that a token is classified as an "asset token" from a functional perspective does not necessarily mean that, from a legal perspective, it will be classified as *security token* –even though it will usually be so.

Perhaps more importantly, the fact that a token is classified as "payment token" or "utility tokens" from a functional perspective does not mean that these tokens cannot be considered as securities. The classification of a token as a "security token" or a "non-security token", which are the legal classifications, will depend on how a particular country defines "securities". [68] In general, this judgment should be made after assessing a variety of factors, including the structure of the token, the functionality of the token, and the way the token was distributed. If, according to a particular legal system, a token is classified as a "security", these tokens will be classified as "security tokens" from a legal perspective, and the issuance of these tokens should comply with existing securities laws. By contrast, if a token does not meet the requirements existing in a particular country to be considered

[66] Ibid.
[67] https://www.finma.ch/en/news/2018/02/20180216-mm-ico-wegleitung/
[68] For example, in the United States, securities are defined according to the "Howey test", which basically requires the existence of four elements: (i) an investment of money; (ii) the expectation of profits from that investment; (iii) the existence of a common enterprise; and (iv) the generation of profits derived from the efforts of a promoter or third party. For a detailed analysis of the "Howey Test", and more generally the concept of security in the United States, see John Coffee, Jr. and Hillary A. Sale, SECURITIES REGULATION: CASES AND MATERIALS (Foundation Press, 12th Edition, 2012), 246-327. This definition of security follows a functional approach and it is focused on the economic substance of the investment rather than its legal form. In countries in which the concept of security is defined following this functional approach, it will be easier that an investment is considered a "security". However, this is not always the case. In some countries, the concept of security is established in a more formalistic way. Namely, the legislator may establish the type of financial instruments that can be considered a security (e.g., shares, bonds, etc.). As a result, any financial instrument which is not especially mentioned in the legislation would escape from the scope of securities regulation. Finally, other countries may follow an intermediate approach: in order to facilitate the concept of security, they may establish a list of financial instruments that are always deemed a "security", but they also allow including as securities other financial instruments that may meet certain requirements. This latter approach is partially followed, for example, in Spain (see article 2 of the 2015 Securities Market Act). The approach followed by a legal system to define "security" will have great implications in the context of ICOs. For instance, while countries with a flexible concept of securities (as it happens in the United States) will make easier to include a token within the scope of securities regulator, those countries defining securities by reference to a given list of financial instruments will unlikely allow a token to be classified as a security unless the legislation is amended to especially include tokens (or a particular type of tokens) as securities. For a useful analysis of a variety of tokens to see whether they meet the requirements to be considered "securities" under Singapore law, see Monetary Authority of Singapore, *A guide to digital token offerings* (2017), pp. 8-12.

a “security”, the token will be classify as a “non-security token” for the purpose of this paper. Therefore, the issuance will *not* have to comply with existing securities laws.

Sometimes, the features of the token will determine its legal nature. However, as shown by cases such as *Munchee*[69], the distribution of the token may end up being the crucial factor to define a token as a security. Therefore, even though a functional classification of tokens can be useful for several purposes, the legal classification of the token will require a deeper analysis of the token as well as the circumstances surrounding the issuance.

In many situations, issuers will ask third parties (usually lawyers) to provide advice about the nature of the token.[70] In cases in which a formal *legal opinion* is issued, the issuer should enjoy a presumption of *good faith* when analyzing whether it made a mistake in the issuance of tokens – for instance, not complying with securities regulations when it should. However, if it were shown that the third party acted in bad faith or with gross negligence, these “gatekeepers” could be liable.[71] For this reason, we would recommend that, regardless of the potential use of gatekeepers, regulators should implement a kind of “regulatory sandbox” in which they work with the issuers in order to let them know the nature of their issuance and the applicable law.[72] If issuers follow these steps, the good faith of their behavior should be considered as an un-rebuttable presumption. Moreover, they will get this protection without bearing the costs required by the issuance of a formal legal opinion.

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[69] Munchee was a California-based company that was seeking $15 million in capital to improve an existing iPhone app centered on restaurant meal reviews and create an “ecosystem” in which Munchee and others would buy and sell goods and services using the tokens. The company communicated through its website, a white paper, and other means that it would use the proceeds to create the ecosystem, including eventually paying users in tokens for writing food reviews and selling both advertising to restaurants and “in-app” purchases to app users in exchange for tokens. According to the order, in the course of the offering, the company and other promoters emphasized that investors could expect that efforts by the company and others would lead to an increase in value of the tokens. Based on this statements made by the company, the SEC decided to open an investigation for violation of federal securities regulation. Munchee consented to the SEC’s cease-and-desist order without admitting or denying the findings. See SEC Press Release, *Company Halts ICO After SEC Raises Registration Concerns*, Securities and Exchange Commission (December, 2017), available at: https://www.sec.gov/news/press-release/2017-227

[70] This “third parties” are often called “gatekeepers”. In general, a gatekeeper can be defined as a professional who is positioned so as to able to prevent wrongdoing by withholding necessary cooperation or consent. See Reinier H. Kraakman, Gatekeepers: The Anatomy of a Third-Party Enforcement Strategy, 1 JOURNAL OF LAW, ECONOMICS AND ORGANIZATION 53. For an analysis of the concept of “gatekeepers” and how lawyers, auditors, securities analysts, credit rating agencies and investment bankers can serve as such players, see John Coffee, Jr., GATEKEEPERS: THE PROFESSIONS AND CORPORATE GOVERNANCE (Oxford University Press, 2006)

[71] Liability for legal opinions is a controversial issue. In general, it will depend on the jurisdiction and the role played by legal opinions in that particular jurisdiction. In the United States, for example, see Joseph L. Johnson, *Liability of Attorneys for Legal Opinions Under the Federal Securities Laws*, 27 BOSTON COLLEGE LAW REVIEW 325.

[72] This approach seems to have been followed by the Spanish Securities Market Authority (CNMV) in the ICO launched by Home Meal. See http://www.europapress.es/economia/finanzas-00340/noticia-cnmv-dispuesta-colaborar-home-meal-duena-nostrum-lanzar-ico-espana-20180228164239.html

3.5. The cryptocurrencies received in return

In exchange for issuing tokens, issuers receive cryptocurrencies such as Bitcoin or Ethereum. Since some token could be functionally a cryptocurrency, the ones accepted in exchange of token in an ICO are usually commonly traded cryptocurrencies. This may help companies to cash out the proceeds of the ICO. Typically, the issuer specifies in the white paper the type of cryptocurrencies accepted in exchange for the tokens. If the blockchain network used to develop the issuer´s project is Ethereum, the issuer will likely require ethers, since it will help the developer to sustain the platform that intends to develop.

This makes a huge difference between cryptocurrencies and traditional methods to raise funds. The companies launching ICOs must make an analysis of the assumed price of the cryptocurrency received from tokenholders. The value of the cryptocurrency varies during the course of the ICO and the development of the project. This feature of ICOs mandates to analyze the risks and problems companies might face when receiving a volatile asset to fund the development of a project. We will address this issue in section 5.

4. Regulatory approaches to deal with ICOs

Regulators around the world are approaching ICOs very differently.[73] While some countries, such as China[74] and South Korea,[75] has opted for prohibiting ICOs, other jurisdictions like Mexico[76] require an authorization of any issuance of tokens, and other countries, including the United States,[77] Singapore,[78] and Switzerland,[79] are subjecting ICOs to a selective control *ex ante*. As it will be discussed in section 4.1, all of these approaches have pros and cons. For this reason, in section 4.2, we will propose a system to deal with ICO that combines some elements of the existing regulatory models and it includes some new proposals that, in our opinion, may make ICOs less risky for investors and the stability of the financial system without discouraging the use of this way to raise capital that not only may promote innovation but also firms' access to finance.

4.1. Existing regulatory approaches

4.1.1. No regulation

[73] For an analysis of the statements issued by many securities regulator about ICOs, and how some of them plan to deal with ICOs, see https://www.iosco.org/publications/?subsection=ico-statements

[74] The details of this prohibition can be found in several sources. For instance, see https://www.ft.com/content/3fa8f60a-9156-11e7-a9e6-11d2f0ebb7f0

[75] Analyzing the recent ban of South Korea, see https://www.reuters.com/article/us-southkorea-bitcoin/south-korea-bans-raising-money-through-initial-coin-offerings-idUSKCN1C408N

[76] See Mexico Fintech Law (In Spanish: *Ley para regular las Instituciones de Tecnología Financiera*). Available at: http://www.senado.gob.mx/sgsp/gaceta/63/3/2017-10-12-1/assets/documentos/Iniciativa_Ejecitvo_Federal.pdf

[77] The U.S. Securities and Exchange Commission´s statements on ICOs can be found here: https://www.sec.gov/ICO

[78] The Monetary Authority of Singapore´s statement on ICOs can be found here: http://www.mas.gov.sg/News-and-Publications/Monographs-and-Information-Papers/2017/Guidance-on-Digital-Token-Offerings.aspx).

[79] The Swiss securities regulator has provided a coherent and thoughtful guidance on ICOs: https://www.finma.ch/en/news/2018/02/20180216-mm-ico-wegleitung/

One regulatory approach to deal with ICOs may consist of allowing founders issuing tokens without any intervention by the regulator. Under this approach, in which the regulator (if so) would just warn investors about the risks associated with ICOs, the issuance of tokens will be *exclusively* governed be the white paper, regardless of whether the ICO consist of an issuance of security tokens or non-security tokens. As a result, tokenholders would only be protected through the rights and legal mechanisms established in the white paper. While this approach may reduce regulatory costs for issuers, we do not think it is an appropriate way to deal with ICOs. On the one hand, it seems too risky for investors. On the other, if this solution applies to security tokens, the regulator would not provide a similar level playing field for all type of firms and financial products existing in the market: while some securities (e.g., those issued in an IPO) are required to comply with existing securities laws, other securities (e.g., those issued in an ICO) are not. In our opinion, this model may lead to several problems, including lack of protection of tokenholders, regulatory arbitrage and even fraud.

4.1.2. Prohibitions

Another regulatory approach to deal with ICOs may consist of prohibiting this new way to raise capital. Bans on ICOs may take several forms and levels. In its most extreme version, a jurisdiction may decide to prohibit ICOS, as it has been decided by China and South Korea. This approach seems to reflect the skepticism of the regulator about this source of finance. In our view, while these skepticism may sound plausible (especially taking into account than more than 80% of ICOs are scams, and there are no clear proposals to deal with ICOs to promote innovation and firms´ access to finance but, at the same time, promoting both the protection of tokenholders and the stability of the financial system), this can limit innovation and firm´s access to finance. Therefore, if investor protection and the stability of the financial system are the primary concern of these regulators, we would propose to either: (i) limit the prohibition until the regulator gets to know the potential risks associated with ICOS and improve the legislation accordingly; or (ii) adopt other types of limitations. For instance, the regulator may limit the *amount of tokens* potentially bought by a single investor, as it seems to be the approach followed by Russia.[80] Nevertheless, while this model limits both the exposure faced by a single investor and the negative externalities potentially associated with a failure in the issuer, it does not offer an effective protection to investors. Another limitation may consist of restricting the sale of tokens to *certain actors.* For example, the regulator may prohibit the purchase of tokens to retail investors (as a way to protect them from something that they might not understand), commercial banks (due to the fact that they manage other people´s money, as well as the negative externalities that their failures may generate in the financial system), or pension funds (since they also manage other people´s money, and these people might not be qualified investors, as they might be in a hedge fund). In our opinion, this solution may affect individual freedom, and it may also create other problems (e.g., prohibiting many actors from getting the potential benefits associated with being

[80] This approach seems to be proposed in a new bill discussed in Russia. Describing the position of Russia, see http://bitcoinist.com/russia-unveils-ico-regulations-ruble/

tokenholders, as well as reducing innovation and firms´ access to finance). For this reason, it should be limited and always based on sound legal and economic reasons.

Finally, another type of prohibition may consist of limiting the type of companies issuing tokens. The regulator could do so by imposing some *barriers to entry* in the form of licenses, capital requirements or others.[81] In our opinion, this prohibition does not necessarily solve the problems associated with ICOs (i.e., lack of protection to tokenholders and risks for the stability of the financial system). Moreover, it may generate other problems.[82] Therefore, it does not seem an efficient and effective way to deal with ICOs.

4.1.3. Selective control ex ante

Another regulatory approach to deal with ICOs may consist of implementing a selective control *ex ante*. Most countries following this model, including the United States, Switzerland and Singapore, establish that issuers should get authorization from the securities regulator only when they issue *security tokens*. Thus, non-security tokens can be freely issued without any control from the securities regulator. According to this model, any issuance of security tokens should comply with the applicable securities laws existing in a particular country. That means that, in addition to preparing and submitting any material potentially required by the legislator for any issuance of securities, issuers will also be *waived* from doing so in some cases. These *exemptions* will generally apply to private placements, offerings to sophisticated investors and offerings made by small and medium size companies seeking to raise capital.[83]

In our opinion, this model has various advantages. One the one hand, it promotes innovation and firm's access to finance. Moreover, it does so under some control by the

[81] This type of limitation has been proposed in Russia. According to the Russian proposal, ICO organizers should be accredited for a period of 5 years and their registered capital must be at least 100 million rubles (1.7 mill USD). See http://bitcoinist.com/russia-unveils-ico-regulations-ruble/

[82] These barriers to entry may make it harder for start-ups to fund their projects. Therefore, it would indirectly prohibit (or limit) ICOs, and thereby the benefits associated with ICOs (e.g., innovation, access to finance, etc.). Moreover, some empirical studies show that higher costs of entry are associated with higher level of corruption. See Simeon Djankov Rafael La Porta Florencio Lopez-de-Silanes Andrei Shleifer, *The Regulation of Entry*, 117 THE QUARTERLY JOURNAL OF ECONOMICS 1 (2002).

[83] For a general view of exemptions, see John Armour *et al*, PRINCIPLES OF FINANCIAL REGULATION (Oxford University Press, 2016), pp. 167-173. For a US perspective, see John Coffee, Jr. and Hillary A. Sale, SECURITIES REGULATION: CASES AND MATERIALS (Foundation Press, 12th Edition, 2012), 328-407. In the European Union, see the Regulation No 2017/1129 of the European Parliament and of the Council on the prospectus to be published when securities are offered to the public or admitted to trading on a regulated market. This regulation repealed the Directive 2003/71/EC which governed the offer of securities in the European Union since 2005. In Singapore, an offer may be exempt from the Prospectus Requirements where, amongst others, the offer is a small offer of securities of an entity, or units in a CIS, that does not exceed S$5 million (or its equivalent in a foreign currency) within any 12-month period, subject to certain conditions; the offer is a private placement offer made to no more than 50 persons within any 12-month period, subject to certain conditions; the offer is made to institutional investors only; or the offer is made to accredited investors, subject to certain conditions. See Monetary Authority of Singapore, *A guide to digital token offerings* (2017), p. 4. Similar requirements apply in other jurisdictions.

regulator. On the other hand, it avoids regulatory arbitrage and provides a similar level playing field for any issuance of securities, regardless of the legal form adopted by the security (e.g., shares, bonds, tokens, etc.).

Despite these general benefits, however, there are some risks associated with this model. First, while security tokenholders can be protected by existing securities laws, it is not clear whether this level of protection is enough, due to the complexity of some tokens and business models. Second, even if we assume that security tokenholders are protected, this regulatory approach does not to protect non-security tokenholders. Third, unless the securities regulator analyzes *all* issuances of tokens (and, under this model, they do not do so), there will be a risk that companies classify as 'non-security tokens' something that, after a careful analysis, may be classified as a security token. There will be situations in which this inaccurate classification can be made in bad faith just to avoid regulatory costs or even with the intention to commit fraud. However, this labelling can also occur in good faith, since the concept of "security" is not always clear, as shown by cases such as *SEC v Howey, Munchee,* or *Reves v Ernst & Young*. [84] Moreover, even though the threat of being subject to sanctions may encourage issuers to think twice the type of token that they say they are issuing, the *enforcement* of these sanctions and thereby the *credibility* of this threat faces a problem: if the regulator does not control *ex ante* all issuance of tokens, it might not be aware of all of them. And if so, it will be difficult to initiate investigations. Finally, another risk associated with this model may consist of the lack of control of the cryptocurrencies received through ICOs.

Indeed, even though the cryptocurrencies rose through ICOs might not seem relevant at first glance for securities regulators,[85] they can be so for those regulators whose mandate includes financial stability. Indeed, due to the volatility of cryptocurrencies, a decline in value of these assets in the issuer´s balance sheet may generate significant losses. Therefore, securities regulators should pay attention to this situation and its potential impact on financial stability. Moreover, monetary authorities may also be interested in getting to know the amount of cryptocurrencies raised through ICOs, just to assess their importance in the economy. Likewise, since cryptocurrencies can be used for money

[84] These cases were decided in the United States. For the concept of "security" in the United States, see John Coffee, Jr. and Hillary A. Sale, SECURITIES REGULATION: CASES AND MATERIALS (Foundation Press, 12th Edition, 2012), 246-327; Hal S. Scott and Anna Gerlpern, INTERNATIONAL FINANCE: TRANSACTIONS, POLICY AND REGULATION (Foundation Press, 21st edition, 2016). For a comparison between the United States and Europe, see Philipp Hacker and Dr. Chris Thomale, *Crypto-securities regulation: ICOs, Token Sales and Cryptocurrencies under EU Financial Law,* 17-36. For the concept of security in Singapore, for example, see Hans Tjio, Wan Wai Yee, and Yee Know Hon, PRINCIPLES AND PRACTICE OF SECURITIES REGULATIONS IN SINGAPORE (LexisNexis, 3rd Edition, 2017). For an analysis of the concept of securities in the United Kingdom, Australia, South Africa and India, see Frederick H. C. Mazando, *The Taxonomy of Global Securities: is the U. S. Definition of a Security too Broad*? NORTHWESTERN JOURNAL OF INTERNATIONAL LAW & BUSINESS 121, 148-176.

[85] As a general rule, securities regulators should pursue five main objectives: (i) investor protection; (ii) the prevention of financial crime; (iii) the promotion of competition; (iv) market efficiency; (v) financial stability. See John Armour *et al*, PRINCIPLES OF FINANCIAL REGULATION (Oxford University Press, 2016), pp. 61-69. These objectives, however, may differ across jurisdictions. In the United States, for example, the SEC has a three-part mission: (i) to protect investors; (ii) to maintain fair, orderly, and efficient markets; and (iii) to facilitate capital formation.

laundry purposes, regulators have an additional incentives (and even mandate) to control the cryptocurrencies raised through IPOs. Therefore, even though this model followed by countries like the United States, Switzerland and Singapore seems to be the most appropriate one to promote innovation and firms' access to finance, it may create some risks that, in our opinion, should be addressed by the regulator.

4.1.4. Full control ex ante

Other countries, such as Mexico, have opted for imposing full control *ex ante* over all issuances of tokens.[86] According to this approach, any issuance of tokens should be registered and authorized by the regulator. Then, depending of the type of tokens, existing securities laws may apply or not. While an issuance of *security tokens* will likely require to comply with securities laws, an issuance of non-security tokens might be subject to lower regulatory burden or even no regulation at all.[87] Apart from these features, another element particularly interesting about the Mexican model consists of the public authority in charge of authorizing the issuance of tokens. Instead of being the *securities* regulator, the Mexican Fintech Law establishes that any issuance of tokens should be authorized by the *central bank*. In our opinion, this approach seems to reflect the regulator´s concern not only for what a company issues but perhaps more importantly for what a company receives in return: cryptocurrencies.

This model solves some of the problems existing in the approach followed by the US, Switzerland or Singapore. However, it has a clear disadvantage: it imposes more costs for issuers and especially for regulators, since this model would likely require the regulator to hire and train people to be ready to analyze any issuance of tokens. Our primary concern with this policy relies on the fact that, while this investment in hiring and training people may be valuable in some cases, there will be many situations (e.g., when a token consists just on a voucher redeemable in the company) in which it is not worth it. Moreover, the new employees will generate a fixed cost for the country´s public finance. Therefore, in this system the costs potentially created by this system may exceed its benefits.

4.2. Toward a safe but efficient system to deal with ICOs

Based on the weakness of some of the existing models, this paper suggests a new one. As a general rule, we build our proposal on the model existing in the United States, Switzerland and Singapore. Therefore, it is a system based on a selective control *ex ante* by the securities regulator. However, since regulators, under this model, cannot easily analyze *ex post* whether an issuance of (apparently) non-security tokens may end up being considered security tokens, this system should be enhanced by requiring issuers to

[86] However, Mexico's Fintech law only mentions "digital assets". It does not refer to ICOs or tokens. Nonetheless, "digital assets" is broader enough to consider tokens and ICOs subject to Mexican Fintech law according to our interpretation.

[87] It is not clear how the Mexican approach will operate in practice. At the moment of writing this article, Mexico has just enacted a Fintech Law saying that any issuance of "cryptocurrencies" will be subject to the authorization of the regulator.

disclose *any* issuance of tokens – no matter whether they are security or non-security tokens. The way to do so may consist of requiring issuers to submit a simple, harmonized *electronic form* to the securities regulator or any other public authority.[88] This harmonized electronic form should contain some basic information about the issuance. As some authors have previously noted, this basic information may include the promoter´s location, problem and proposed technology solution, description of the token, blockchain governance, qualifications of the technical team, and risk factors.[89] Likewise, we would also add applicable law, identity of the promoters, legal advisors, accounting and finance aspects of the ICO (among other reasons, to determine whether the tokenholders will be classified as 'equityholders' or 'debtholders', and how the ICO may impact the company´s financial ratios and covenants), and legal or contractual provisions available to protect tokenholders (if any).

By submitting this electronic form, not only it will be easier for both regulators and investors to analyze any issuance of tokens they might be interested in, but it will also be easier to compare ICOs. Therefore, this comparability could serve as an additional tool to protect investors, and it would also facilitate the analysis of information through the use of regulatory technologies (regtech). Therefore, it will allow the regulator to perform surveillance in a more effective and efficient manner, what it may lead to higher levels of investor protection not only by sanctioning *ex post* opportunistic (even fraudulent) behaviors by many founders but, sometimes more importantly, by encouraging a better behavior *ex ante* by companies issuing tokens due to the higher risk of being caught and sanctioned by the regulator.

In addition to this form, we believe that the regulator should implement various additional measures to protect tokenholders and promote the stability of the financial system. First, the purchase of tokens should be considered a risky activity due to several factors mainly associated with the high asymmetries of information generally existing between founders and tokenholders, the lack of many legal devices generally existing to protect investors (e.g., those established in a country´s corporate laws), and the high risk of irrational behavior that might take place in these markets.[90] Therefore, the regulator should warn *retail tokenholders* about the risks associated with the purchase of tokens. Second, the purchase of *pre-sales tokens* should be prohibited to *commercial banks* and *pension funds*, since these institutions invest money from the general public and their potential failure could have severe consequences for the stability of the financial system.[91]

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[88] Moreover, companies required to prepare and submit financial statements should be required to mentioned any issuance of tokens in the notes to the financial statements.

[89] See Chris Brummer, *What should be in an ICO white paper?* (Available at https://cointelegraph.com/news/what-should-be-in-an-ico-white-paper-expert-take)

[90] See Alfonso Delgado *et al*, *Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016), pp. 26-28

[91] Due to the size and the particular features of these institutions, their failure may generate various negative externalities, including lack of confidence, contagion, connectedness and more generally systemic risk. For an analysis of these concepts, see Hal Scott Hal S. Scott, CONNECTEDNESS AND CONTAGION: PROTECTING THE FINANCIAL SYSTEM FROM PANICS (MIT Press, 2016); Steven L. Schwarcz, *Systemic Risk*, 97 GEORGETOWN LAW JOURNAL 193 (2008); Viral Acharya, *A theory of systemic risk and*

Moreover, since most of the capital structure of a bank is formed by deposits, and most of the depositors are non-sophisticated debtholders, we find this protective, risk-averse policy even more convincing for banks. Finally, due to the higher risk of opportunistic behavior by founders, we believe that the protection of non-security-tokenholders should go beyond the white paper. Namely, we argue that regulators should apply some *regulatory strategies* traditionally existing to protect consumers (and financial consumers) to protect non-security tokenholders – after all, security tokenholders are protected through securities laws. These regulatory tools to protect non-security tokenholders will be discussed in section 6.

5. Accounting and finance aspects of ICOs

Another critical aspect raised by the issuance of tokens concerns to the accounting and finance aspects of ICOs. In other source of finance, it seems relatively clear, from an accounting and finance perspective, what a company gives to investors, and what the issuer receives in return. For example, in an IPO, a company gives shares (equity) to public investors, and it receives cash in return. In a debenture, a company gives bonds (debt) in exchange for cash as well. Moreover, the legal nature of the company´s counterparty is also relatively clear. In an issuance of bonds and shares, it seems very clear that the company´s counterparties become debtholders and shareholders, respectively. The different nature of these counterparties may have significant implications, since equityholders and debtholders may have different rights and incentives, and the use of debt or equity may affect the company´s financial ratios, covenants, cost of capital, and corporate governance, among other aspects.[92]

Issuer´s balance-sheet	
Cryptocurrencies (assets)	Tokens (Debt/Equity)

design of prudential bank regulation, 6 JOURNAL OF FINANCIAL STABILITY 224 (2009). For an analysis of the importance of pension funds and other institutional investors in capital markets, see Ronald J. Gilson and Jeffrey N. Gordon, *The Agency Costs of Agency Capitalism: Activist Investors and The Revaluation of Governance Rights*, 863 COLUMBIA LAW REVIEW 928 (2013).

[92] For a pioneer study about the impact of the capital structure on the value of the firm, see Franco Modigliani and Merton Miller*, The Cost of Capital, Corporation Finance and The Theory of Investment*, 48 THE AMERICAN ECONOMIC REVIEW 261 (1958). These authors establish that the value of the firm was independent of the capital structure. However, they make this assertion in a world without asymmetries of information, transaction costs, taxes, and costs of bankruptcy. Once these variables are included in the model, the use of debt seems to generate more benefits for firms. See Michael C. Jensen, *Agency Cost Of Free Cash Flow, Corporate Finance, and Takeovers*, 76 AMERICAN ECONOMIC REVIEW 323 (1986); Richard Brealey, Steward Myers, and Franklin Allen, PRINCIPLES OF CORPORATE FINANCE (McGraw-Hill, 10th Edition, 2011), pp. 460-462; Aurelio Gurrea-Martínez, *The Impact of the Tax Benefits of Debt in the Capital Structure of Firms and the Stability of the Financial Systems,* OXFORD BUSINESS LAW BLOG, March 2017. For a general analysis of the capital structure of firms from a legal and finance perspective, see Eilis Ferran and Look Chan Ho, PRINCIPLES OF CORPORATE FINANCE LAW (Cambridge University Press, 2nd Edition, 2014).

Tokenholder´s balance-sheet	
Tokens (assets)	Cryptocurrencies (assets)

In exchange for the issuance of tokens, the founder receives *cryptocurrencies.* These cryptocurrencies represent an *asset* in the company´s balance-sheet. As a general rule, they will represent a current asset, due to the ability of most cryptocurrencies to be converted into cash in a short-period of time. More problems arise when we look at the registration of an ICO in the other side of the balance-sheet. In this case, the *tokens* issued by the company will be classified as equity or debt depending on the features of the tokens. When the white paper gives tokenholders economic and political rights similar to those held by shareholders, the tokenholder will be an *equityholder.* Therefore, the issuance of tokens will be registered in the company´s equity. By contrast, in those cases in which the features and distribution of the token seem to reflect that the tokenholders are entitled to future services or fixed payments, those tokenholders should be considered *debtholders*. Therefore, they will be part of the company´s liabilities. Depending on the maturity of those rights held by tokenholders, the issuance of tokens will be registered as non-current liabilities (if the maturity is more than a year) or current liabilities (if the maturity is less or equal than a year). In the future, if those liabilities imply a product or service provided by the firm, the issuer should cancel the debt and register an income in return.

From the perspective of the tokenholder, the registration of tokens seems a bit clearer. Since tokenholders gives cryptocurrencies to the issuer in return for acquiring the tokens, this consideration will decrease the tokenholder´s assets. Simultaneously, as the tokenholder receives some rights (tokens) in return for the cryptocurrencies, these rights will increase the tokenholder´s assets.

Another critical aspect of ICOs from an accounting and finance perspective involves the valuation and, if so, the impairment of value suffered by the cryptocurrencies held in the issuer´s balance-sheet. Indeed, cryptocurrencies are a very volatile asset. Moreover, if, as some authors have pointed out,[93] there is a bubble in price of some cryptocurrencies, and this bubble bursts, the issuer will have to register significant losses in their balance-sheet. Likewise, from the perspective of the *tokenholder*, the fact that many projects may fail may force them to register a loss in their assets. Therefore, taking into account that volume and value of ICOs is becoming more and more important, we believe that regulators should pay especial attention to this aspect. Otherwise, we face the risk of observing something similar to what happened in the 2008 financial crisis: the unexpected registration of losses in many companies´ balance-sheets may end up harming not only the financial situation of

[93] These authors include some Nobel Prizes in Economics such as Professor Robert Shiller: https://qz.com/1067557/robert-shiller-wrote-the-book-on-bubbles-he-says-the-best-example-right-now-is-bitcoin/

these firms and their investors but also –and more importantly– the stability of the financial system. [94]

6. Corporate governance issues

6.1. The concept and nature of tokenholders

The type and nature of a tokenholder will depend on the nature of the token, explained above. From a *legal* perspective, tokenholders can be classified as either: (i) *security tokenholders*, if the token is classified as a security; or (ii) *non-security tokenholder* if the token is classified otherwise. From an accounting and finance perspective, however, another distinction can be made. On the one hand, non-security tokenholders will generally be classified as debtholders, since they are probably entitled to future products or services. On the other hand, *security tokenholders* can be classified as either: (i) equityholders, if the tokenholder is entitled to the company´s ownership or future returns; or (ii) debtholders, if the tokenholder is entitled to a fixed return.

Legal classification	**Finance classification**
Security tokenholder	**Debtholder/equityholder**
Equity-based securities	Equityholders
Debt-based securities	Debtholders
Non-security tokenholder	**Debtholder**

The fact that a security tokenholder (legal classification) is an equityholder (finance classification) does not mean that these tokenholders should be considered "shareholders", despite the fact that they may have similar rights and incentives, and therefore similar treatment if, for example, the company becomes insolvent. Indeed, in our opinion, unless the legislation allows otherwise, a tokenholders should never be considered as a shareholder for various reasons.[95] First, it is not clear what a shareholder

[94] This situation would create a problem of correlation and connectedness. For an analysis of these concepts, see Hal S. Scott, CONNECTEDNESS AND CONTAGION: PROTECTING THE FINANCIAL SYSTEM FROM PANICS (MIT Press, 2016).

[95] Our opinion seems to differ here from the Monetary Authority of Singapore. See Monetary Authority of Singapore, *A Guide to Digital Token Offerings* (2017), pp. 3 allowing tokens to be considered "shares" when it confers or represents ownership interest in a corporation, represents liability of the token holder in the corporation, and represents mutual covenants with other token holders in the corporation *inter se*. However, in Singapore, the law seems to distinguish between "stocks" and "shares" – this latter concept seems to be broader. See section 2(1) of the SFA, read with section 4(1) of the Companies Act (Cap. 50), expressing that "share" means "a share in the share capital of a corporation and includes stock except where a distinction between stocks and share is expressed or implied". See also Ricardo Torres, *Problemática jurídica de las ICOs: Un análisis desde el Derecho de sociedades*, BLOG DEL INSTITUTO IBEROAMERICANO DE DERECHO Y FINANZAS (2018) http://derechoyfinanzas.org/blog/problematica-juridica-de-las-icos-un-analisis-desde-el-derecho-de-sociedades/

is generally entitled to. Indeed, while there are some general rights usually held by shareholders (e.g., rights to the company´s future returns, rights to the company´s residual assets, right to call for a shareholders´ meeting, right to sue the managers for a breach of fiduciary duties, etc.), the use of preferred shares or dual-class shares structure show that many shareholders can be considered as such without having some rights generally associated with the condition of shareholders. Therefore, while there are some indicia that may help us identify what a shareholder looks like, it is not always clear.

Second, and perhaps more importantly, even though financial markets and institutions should be analyzed from a functional approach with particular focus on the economic substance, that does not mean that different legal institutions should be considered similar entities from a legal perspective. In our opinion, the fact that, for example, investment banks and commercial banks were hypothetically performing similar functions does not mean that they should be considered similar legal entities. Nevertheless, they should be subject to similar regulations. Therefore, a functional approach to financial regulation should not be interpreted as understanding different institutions equally from a legal perspective. Instead, it should be interpreted as requiring functionally equivalent institutions to be treated similarly. Therefore, in this context, even though a shareholder should be distinguished from those security tokenholders who hold similar rights than those held by the shareholders, they both should be subject to a similar treatment – that is why they both will be part of the company´s equity or they both will be subordinated in bankruptcy.

Third, in some countries, existing shareholders have preemption rights with the purpose of avoiding dilution when a company raises capital. Therefore, if a court or regulator interprets *ex post* that a tokenholder should be considered as shareholders, existing shareholders can lose a right that, regardless of its desirability, the legislator wants them to have. Therefore, even though the legislator can solve this problem by requiring shareholder vote for any issuance of tokens, this solution may increase transactions costs, which might be one of the rationale for issuing tokens rather than shares. Moreover, even in the absence of transactions costs, if old shareholders really want to make tokenholders new shareholders, it may seem more consistent – and more beneficial for legal certainty for both shareholders and tokenholders– to issue shares rather than tokens. Finally, this interpretation may also make unclear the beneficiary of managers' fiduciary duties. Therefore, it may reduce accountability, and it may also make unclear for both the managers and the tokenholders to whom the managers owe fiduciary duties and what kind of actions can be exercised against them.

For all of these reasons, we believe that, even when a tokenholder has similar rights than those generally held by shareholders, the tokenholders will just be considered an *equityholder* (finance classification) and *security tokenholders* (legal classification) but never a "shareholders". A different conclusion not only would create legal uncertainty but it would also be inconsistent with the proper application of the functional approach that should guide financial regulation. In any case, if, as it happens in Singapore, if this equivalence were to be allowed in a particular country, we would require companies

issuing security tokens legally classified as "shares" to subject the approval of this issuance to the shareholder´s meeting, since the interest of the shareholders may be affected.

6.2. Protecting tokenholders from founders' opportunism

6.2.1. Agency problems in a world of tokenholders

While the use of ICOs may general several benefits mainly associated with promoting innovation and firms´ access to finance, the evidence suggests that more than 80% of ICOs are scams.[96] Therefore, the purchase of tokens should be considered a risky investment (or purchase) since the tokenholder is not only exposed to higher asymmetries of information and likely more behavioral biases but also to various forms of opportunism by the founder. In some cases, founders might not pursue the promised projects.[97] In other circumstances, managers might not do so in an efficient manner, wasting tokenholders' resources. Several factors make these managerial (or 'vertical') agency problems particularly important in the context of ICOs. First, tokenholders do not usually have the ability to appoint, remove and remunerate the directors. Second, white papers may not cover how managers should behave in many cases in which the interests of the tokenholders may be at stake. Moreover, unlike what happens in a typical relationship between directors and shareholders where fiduciary duties may help fill some gaps[98], developers do not usually owe fiduciary duties to tokenholders. Therefore, white papers may become more incomplete than a typical corporate contract. Third, while managers in listed companies are subject to public scrutiny and the market for corporate control, and these market forces may encourage managers to behave in better and more efficient manner,[99] the same market forces will unlikely take place in a private company issuing tokens.

The risk of founders' opportunism vis-à-vis tokenholders can be addressed through the implementation of several strategies. First, managers can be required to buy a certain percentage of tokens. Thus, they would have more skin in the game. Second,

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[96] Some authors even speak about "Initial Coin Scams". See https://www.project-syndicate.org/commentary/ico-cryptocurrency-scams-by-nouriel-roubini-2018-05

[97] Corporate governance is, after all, about promises between managers and investors. See Jonathan Macey, CORPORATE GOVERNANCE: PROMISES KEPT, PROMISES BROKEN (Princeton University Press, 2008).

[98] A corporate contract is, by definition, an incomplete contract. The parties cannot agree ex ante on any single contingencies. For these reasons, fiduciary duties and other general provisions may help fill some of the gaps existing in corporate contracts. For an analysis of the literature about incomplete contracts in the context of the firm and a firm´s capital structures, see Oliver Hart, FIRMS, CONTRACTS, AND FINANCIAL STRUCTURE (Oxford University Press, 1995); Oliver Hart y John Moore, *Property Rights and the Nature of the Firm*, 98 JOURNAL OF POLITICAL ECONOMY 1119 (1990); Oliver Hart y John Moore, *Foundations of Incomplete Contracts*, 66 THE REVIEW OF ECONOMIC STUDIES 115 (1999); Philippe Aghion y Patrick Bolton, *An Incomplete Contracts Approach to Financial Contracting* 59 THE REVIEW OF ECONOMIC STUDIES 473 (1992).

[99] See Henry G. Manne, *Mergers and the Market for Corporate Control*, 73 THE JOURNAL OF POLITICAL ECONOMY 110 (1965); Frank H. Easterbook and Daniel R. Fischel, *The Proper Role of the Target´s Management in Responding to a Tender Offer,* 94 HARVARD LAW REVIEW 1161 (1981).

tokenholders may be empowered with some political rights. For instance, they can be allowed to appoint and remove the directors, or even to have a vote on some relevant decisions. Third, there might be some market mechanisms to protect tokenholders. One of them can be the use of platforms to assess issuers and projects, as well as the use of intermediaries in the token industry. Another device may consist of the development of secondary markets for tokens. Thus, tokenholders will be protected through the use of an easy exit right –which may lead in return to "price" founders' behavior.

Nevertheless, while these mechanisms may reduce managerial agency problems,[100] they may generate other issues. First, the fact of requiring insiders to hold a certain percentages of tokens would indeed provide a credibly mechanism to align the interests of managers and tokenholders. However, insiders not always have the resources to buy enough tokens as to credibly have skim in the game. In fact, that is why they may decide to launch an ICO rather than funding the project by themselves. And even if the founder keeps some tokens, this measure would still be inefficient. On the one hand, the founder has not paid for those tokens. Therefore, it would not credibly have enough skin in the game. On the other hand, keeping tokens by founders and/or insiders would generate an opportunity cost, since the more tokens insiders keep, the less cryptocurrencies (and therefore funding) they will be able to raise. Thus, this measure may end up harming firms' access to finance.

Second, while empowering tokenholders may align the interests of the managers and the tokenholders, this solution may also generate several problems. On the one hand, this power given to tokenholders may increase "principal costs", that is, the cost of letting investors decide.[101] Moreover, these principal costs can be higher in the context of ICOs, since the fact of making business decisions about technical projects likely requires more expertise than the general one required for other business ventures. On the other hand, if the white paper confers significant power to the tokenholders, and they have the ability to decide some relevant business decisions, tokenholders take the risk of being considered d*e facto* directors.[102] And if so, they may end up being liable for some damages. Therefore, tokenholders' rights should be designed in a manner that help reduce managerial opportunism but without increasing principal costs or putting tokenholders at

[100] Michael C. Jensen and William H. Meckling, *Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure*, 3 JOURNAL OF FINANCIAL ECONOMICS 305 (1976).

[101] For a novel explanation of principal costs, and how corporate governance should reduce both agency costs and principal costs, see Zohar Goshen and Richard Squire, *Principal Costs: A New Theory for Corporate Law and Governance*, 117 COLUMBIA LAW REVIEW 767 (2017). Providing various arguments to empower the board, see Stephen M. Bainbridge, *Director Primacy: The Means and Ends of Corporate Governance*, 97 NORWESTERN UNIVERSITY LAW REVIEW 547, 573 (2003). See also ee Martin Lipton, *Takeover Bids in the Target´s Boardroom*, 35 BUSINESS LAWYER 101 (1979) and Martijn Cremers and Simone M. Sepe, *The Shareholder Value of Empowered Boards*, 68 STANFORD LAW REVIEW 67 (2016). In favor of empowering investors, however, see Lucian A. Bebchuk, *The Case for Increasing Shareholder Power*, 118 HARVARD LAW REVIEW 833 (2005); Aurelio Gurrea Martínez, *New Agency Problems: New Legal Rules? Rethinking Takeover Regulation in the US and Europe*, INSTITUTO IBEROAMERICANO DE DERECHO Y FINANZAS, WORKING PAPER SERIES 3/2016.

[102] For an analysis of this concept, see Roy Goode, PRINCIPLES OF CORPORATE INSOLVENCY LAW (Sweeet & Maxwell, 4th Edition, 2011), pp. 641-647.

risk. Finally, empowering tokenholders will make the managers more accountable to them. And if so, a type of agency problem among investors may emerge.[103] The law and economics literature has traditionally shown that, while the shareholders, due to limited liability and their variable returns in the corporation, are usually more prone to take risks, creditors usually prefer a less risky (even if it is also less profitable) business strategy. This divergence of interests can be also found: (i) between shareholders and tokenholders; (ii) between debtholders and tokenholders; and (iii) among tokenholders. For example, if the tokenholders' economic rights only depend on a single project, they will likely have incentives to prefer this project even if it is *at the expense* of other tokenholders or even the company´s overall returns. Therefore, empowering tokenholders may exacerbate these horizontal agency problems that corporate law should also address.

Third, there are also some market mechanisms that may lead to better governance. On the one hand, regulators can promote the development and liquidity of a secondary market of tokens. Thus, not only tokenholders will be able to have some exit rights but, sometimes more importantly, the existence of this market may contribute to "price" founders' behavior. On the other hand, there are some platforms that allow investors to compare features of different projects.[104] These platforms, and the rise of a market for analysts assessing these platforms, may also contribute to price founders' conduct.[105] Moreover, the use of these analysts may also serve as intermediaries to "grade" the advantages and risks of any issuance of tokens. However, while this market of intermediaries can generate several benefits for tokenholders, regulators should pay attention to the potential conflicts of interests faced by these actors. Indeed, the lessons learnt in the past from auditors[106], credit rating agencies[107] and proxy advisors[108] show that these "gatekeepers" can be

[103] For an analysis of these conflicts among shareholders, see John Armour, Henry Hansmann, and Reinier Kraakman, Agency Problems and Legal Strategies, in John Armour, Luca Enriques *et al*, THE ANATOMY OF CORPORATE LAW: A COMPARATIVE AND FUNCTIONAL APPROACH (Oxford University Press, 2017), pp. 29-30; Mark J. Roe, *The Institutions of Corporate Governance*, in Claude Ménard and Mary M. Shirley (eds.), HANDBOOK OF NEW INSTITUTIONAL ECONOMICS (Kluwer, 2005).

[104] These platforms may include websites like "icoratings.com", "icoalert.com" and "icomonitor.io". See Alfonso Delgado *et al*, *Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016), pp. 28.

[105] Alfonso Delgado *et al*, *Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016), pp. 28.

[106] Arieh Goldman and Benzion Barlev, *The Auditor-Firm Conflict of Interests: Its Implications for Independence*, 49 THE ACCOUNTING REVIEW 707 (1974); Matthew J. Barrett, *Enron and Andersen - What Went Wrong and Why Similar Audit Failures Could Happen Again*, in Nancy B. Rapoport and Bala G. Dharan (eds.), ENRON: CORPORATE FIASCOS AND THEIR IMPLICATIONS (Foundation Press 2004), pp. 155-168; Walter Doralt, Andreas Martin Fleckner, Klaus J. Hopt, Christoph Kumpan, Felix Steffek, Reinhard Zimmermann, Alexander Hellgardt, Susanne Augenhofer, *Auditor Independence at the Crossroads – Regulation and Incentives*, 13 EUROPEAN BUSINESS ORGANIZATION LAW REVIEW 89 (2012).

[107] Frank Partnoy, *How and Why Credit Rating Agencies are Not Like Other Gatekeepers, Financial Gatekepeers: Can they protect investors?* San Diego Legal Studies Paper No. 07-46 (2006); Carol Ann Frost, *Credit Rating Agencies in Capital Markets: A Review of Research Evidence on Selected Criticisms of the Agencies*, 22 JOURNAL OF ACCOUNTING, AUDITING AND FINANCE 1 (2007).

[108] The conflicts of interest of proxy advisors have not been that evident. They were identified more recently. See Guy Rolnik, *The Powerful Private Regulator and the Effects of Conflicts of Interest,* ProMarket, May 3, 2017 (https://promarket.org/powerful-private-regulator-effects-conflicts-interest/); Tao Li, *Outsourcing Corporate Governance: Conflicts of Interest Within the Proxy Advisory Industry*,

subject to a variety of conflicts of interests. Therefore, regulators can use some of the regulatory approaches implemented for auditors, credit rating agencies and proxy advisors to deal with these problems, such as disclosure (especially when the analyst has been paid by the issuer for any other professional service), restrictions in the variety of professional services potentially provided by these analysts, or liability.

In addition to the potential governance and market mechanisms to protect tokenholders, regulators should also initiate *criminal actions* provided that it is proved that the founders committed fraud. Nevertheless, the enforcement of these criminal actions will generate problems if the issuance of tokens has not been registered in the financial supervisor or any other public authority. For this reason, the *electronic form* proposed to enhance the regulatory model existing in the US, Switzerland and Singapore can also favor the initiation of these actions. And by doing so, crooks will think twice whether or not launching an ICO, and if so under which conditions – since a summary of these conditions should be mentioned in the electronic form submitted to the securities regulator or any other public authority.

6.2.2. The limits and regulatory approach to protect tokenholders: between consumer and investor protection

The different nature of tokenholders should lead to different regulatory approaches to protect tokenholders. As a general rule, both security tokenholders and non-security tokenholders will be protected through the *white paper*. Moreover, security tokenholders will also enjoy the protection generally provided by *securities laws*, which not only includes further disclosure obligations but also more chances to sue the founders for misleading (or the absence of) any material information. Finally, both tokenholders will be protected through the *electronic form* and, if so, the *ex ante* control by the regulator proposed in previous sections. However, a variety of reasons justify a more active intervention by the regulator, and the way to do so should differs depending on whether the tokenholder has been classified as a "security tokenholder" or a "non-security tokenholder".

On the one hand, *security tokenholders* can be protected through a variety of devices generally used to protect *investors* in capital markets. These mechanisms may include disclosure requirements, governance strategies, and market devices. Some of these are currently provided to protect security tokenholders.[109] However, regulators should *go beyond* for several reasons. First, security tokenholders will unlikely be protected through a country´s company laws, since corporate law mainly deals with shareholders and tokenholders do not have this legal classification.[110] Second, market forces might not be

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MANAGEMENT SCIENCE (2018); ESMA, *Discussion Paper An Overview of the Proxy Advisory Industry: Considerations on Possible Policy Options* (2012) (https://www.esma.europa.eu/sites/default/files/library/2015/11/2012-212.pdf)

[109] The fact of requiring compliance with existing securities laws for any issuance of security tokens seeks to pursue these goals, among others.

[110] Depending on the jurisdiction, creditors can also be protected by a country´s company laws. In these circumstances, some tokenholders (those classified as *debtholders* from a finance perspective) can get the protection of these laws.

strong enough in a world of tokenholders, due to the fact that hostile acquisitions will unlikely occur in this context. Third, due to the complexity behind many technologies developed by the promotors of ICOs, linked to the market euphoria currently existing in the "tech" and "crypto" market,[111] there are reasons to believe that tokenholders may be subject to higher asymmetries of information and more pronounced irrational behavior than regular investors in capital markets. Fourth, it is not clear how, and if so where, the white paper will be enforced in case the issuer fails to comply with some of the terms promised to the tokenholders. For this reason, even though security tokenholders will enjoy the protection provided by a country´s securities laws, we believe that regulators should regulate the white paper in order to protect tokenholders.

Namely, regulators should establish a *minimum content* for white papers. This minimum information should include key information about the founder, the project, the risks borne by tokenholders and the applicable law governing the issuance of tokens.[112] Likewise, regulators should favor a system of *smart disclosure* in the white paper. Through this approach, more attention should be paid to the way issuers provide the information rather than the amount of information itself. While this proposal has been developed by various securities regulators for the information provided in the prospectus,[113] and some authors have criticized the effectiveness of this policy,[114] this system of smarter disclosure may be more relevant and effective in a world of tokenholders. Indeed, even though there are not enough data to support our intuition,[115] we believe that the presence of qualified investors in "token markets" is less relevant than in traditional securities markets.[116] Therefore, retail

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[111] Alfonso Delgado *et al*, *Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016), pp. 26-28.

[112] A list of a minimum standardized disclosure requirements for white paper has been proposed by Professor Chris Brummer. See https://bitcoinmagazine.com/articles/congressional-hearings-we-must-distinguish-digital-commodities-icos/

[113] In the United Kingdom, see FCA, *Applying Behavioural Economics at the Financial Conduct Authority*, OCCASIONAL PAPER NO 1 (2013). In Europe, see http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52015PC0583. In the United States, the SEC requires that the prospectus disclosure should comply with the principles of 'plain English' including using short sentences, everyday words, and no legal or highly technical business terminology. See Rule 421 of the Securities Act of 1933.

[114] Luca Enriques, *EU Prospectus Regulation: Some Out-of-the-Box Thinking*, OXFORD BUSINESS LAW BLOG, 10 May 2016 (available at https://www.law.ox.ac.uk/business-law-blog/blog/2016/05/eu-prospectus-regulation-some-out-box-thinking); Niamh Moloney, HOW TO PROTECT INVESTORS: LESSONS FROM THE EC AND THE UK (Cambridge University Press 2010), pp. 291-296.

[115] Our intuition is that, while there are seem to be some hedge funds in the market of *pre-sale* of tokens (https://www.bloomberg.com/news/articles/2017-10-03/hedge-funds-flip-icos-leaving-other-investors-holding-the-bag), the presence of sophisticated investors is probably lower in the market of tokens. Hedge funds might not invest because acquiring tokens is less profitable than acquiring pre-sold tokens, and institutional investors (including pension funds and mutual funds) might not be part of the token market because they usually invest in an entire index rather than in single companies.

[116] Most equity markets are currently owned by institutional investors (mainly pension funds, mutual funds and insurance companies). See Ronald J. Gilson and Jeffrey N. Gordon, *The Agency Costs of Agency Capitalism: Activist Investors and The Revaluation of Governance Rights*, 863 COLUMBIA LAW REVIEW 928 (2013); Jennifer G. Hill and Randall S. Thomas (eds.), RESEARCH HANDBOOK ON SHAREHOLDER POWER (Elgar, 2015); Aurelio Gurrea Martínez, *New Agency Problems, New Legal Rules: Rethinking Takeover Regulation in the US and Europe*, INSTITUTO IBEROAMERICANO DE DERECHO Y FINANZAS, WORKING PAPER SERIES 3/2016 (available at

investors cannot protect themselves by observing and following what sophisticated investors do when they make investment decisions.[117] In other words, the ability of retail investors to "free ride" will be reduced due to the likely lower presence of sophisticated investors in "token markets".[118] Therefore, regulators should become more "paternalistic" when it comes to protecting retail investors in a world of tokenholders. Moreover, since this measure can also reduce regulatory costs for issuers, we believe that this policy can be beneficial for both tokenholders and founders.[119]

On the other hand, we believe that *non-security tokenholders* (or at least those who are not sophisticated actors[120]) should be protected through a variety of devices generally used to protect *consumers* and more especially *financial consumers*, since this type of tokenholders will be even more exposed to the risk of opportunism of founders due to their higher asymmetries of information and the absence of any intervention by the regulator to authorize the issuance of tokens –unless a country opts for adopting the approach followed by Mexico. Therefore, a more intensive regulatory intervention should be implemented to protect non-security tokenholders. This regulatory intervention may consist of a variety of tools. First, as it happens with security tokenholders, regulators should establish a minimum content for the *white paper,* and they should also promote a system of *smart disclosure*. Moreover, while this smarter disclosure can be a controversial

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https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2766208); Julian Franks and Colin Mayer, *Evolution of Ownership and Control Around the World: The Changing Face of Capitalism*, EGCI, FINANCE WORKING PAPER N° 503/2017 (available at http://www.ecgi.global/sites/default/files/working_papers/documents/5032017.pdf).

[117] There are several ways to protect retail investors in IPOs. *Ex ante*, they are usually protected through sophisticated investors. Namely, they can be protected by following what more sophisticated investors do –since they have probably invested in gathering and analyzing information. *Ex post,* retail investors are also protected through the prospectus. Indeed, by having the right to sue the issuer for any misleading information, investors not only are protected *ex post,* but they can also be protected *ex ante,* this this risk of litigation gives issuers more incentives to provide more accurate information in the prospectus. However, retail investors are not usually protected through the analysis of the prospectus. In general, they do not read that information. Therefore, regulators should not assume that the primary purpose of the prospectus is to protect retail investors from an *ex ante* perspective – at least nowadays, taking into account how the information is provided. For a general view about the *real* function performed by the prospectus in securities markets, see Luca Enriques, *EU Prospectus Regulation: Some Out-of-the-Box Thinking*, OXFORD BUSINESS LAW BLOG, 10 May 2016 (available here: https://www.law.ox.ac.uk/business-law-blog/blog/2016/05/eu-prospectus-regulation-some-out-box-thinking). See also John Armour *et al,* PRINCIPLES OF FINANCIAL REGULATION (Oxford University Press, 2016), pp. 161-178.

[118] In fact, this paper argues that the presence of institutional investors *should* be lower in these markets, since we propose that certain institutional investors (e.g., pension funds and commercial banks) should not be allowed to buy certain type of tokens (e.g., pre-sold tokens).

[119] A report of the European Commission estimated the administrative costs of preparing a prospectus for equity offerings were above € 900,000 (seehttp://ec.europa.eu/internal_market/securities/docs/prospectus/cses_report_en.pdf). According to the European Banking Federation, this cost ranges from €1.8m to €2.5m for an IPO prospectus (see https://www.ebf.eu/wp-content/uploads/2017/01/EBF_014393H-EBF-response-to-CP-on-Prospectus-Directive.pdf).

[120] If they were sophisticated actors (e.g., banks, hedge funds, etc.), some of the legal devices to protect non-security tokenholders mentioned above might not apply.

measure to protect *retail investors*,[121] it seems to be a more effective tool to protect *consumers*.[122] Second, regulators may impose "***cooling off" periods*** to any issuance of non-security tokens. Thus, non-security tokenholders will be able to return the token within a given period of time without bearing any cost. This measure not only will protect non-security tokenholders *ex post*, but it will also encourage many issuers to think twice what they are going to sell. Third, policy-makers may also opt for *regulating products.* Through this mechanism, the regulator may think of prohibiting certain terms or even tokens. Fourth, as it has been developed in the context of financial consumers after the failure of some of the previous strategies, regulators may also decide to impose *conduct obligations* on the issuer. Namely, it may require issuers to take into account the interest of tokenholders, avoiding situations in which the issuer seeks to exploit non-security tokenholders' biases and mistakes. Finally, an additional tool to protect non-security tokenholders may consist on using *litigation rules.* For instance, the legislator may establish that any unclear provision established in the white paper should be interpreted in favor of non-security tokenholders. By doing that, not only non-security tokenholders will enjoy *ex post* a higher level of protection, but issuers will also have incentives to draft the clauses established in the white paper in a clearer and more protective way to favor the understanding of these clauses by tokenholders.[123]

7. Anti-Money Laundry implications of ICOS

Tokens created on a blockchain are decentralized and encrypted, sometimes making it harder to track each of the transactions made, and the individuals behind them. Therefore, in theory, anyone with an internet connection and a digital wallet can be part of a token sale event. That can leave room for people to launder money or finance terrorism activities and engage in other fraudulent behaviors. Additionally, taking into account how easy is to launch a token pre-sale, this mechanisms could be use un countries where illegal activities such as corruption are above average in order to move resources without oversight.

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[121] According to some authors, information (it does not matter if it is "smarter") does not protect *retail* investors in securities markets. See Luca Enriques, *EU Prospectus Regulation: Some Out-of-the-Box Thinking*, OXFORD BUSINESS LAW BLOG, 10 May 2016 (available at https://www.law.ox.ac.uk/business-law-blog/blog/2016/05/eu-prospectus-regulation-some-out-box-thinking).

[122] Advocating for this measure to protect consumers, see Richard H. Thaler and Will Tucker, *Smarter disclosure, smarter consumers*, HARVARD BUSINESS REVIEW (2011) (available at https://hbr.org/2013/01/smarter-information-smarter-consumers); Natali Helberger, *Form matters: informing consumers effectively,* AMSTERDAM LAW SCHOOL RESEARCH PAPER NO. 2013-71 (2013) (available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2354988). Emphasizing the failures of mandated disclosure to protect consumers, see Omri Ban Shagar and Carl E. Schneider, MORE THAN YOU WANTED TO KNOW: THE FAILURE OF MANDATED DISCLOSURE (Princeton University Press, 2014). As shown by Nobel Laurate Daniel Kahneman, many people make decisions based on intuitions and previous experiences. See Daniel Kahneman, *Thinking Fast and Slow*, FARRAR, STRAUS AND GIROUX (2011).

[123] For a general view about the challenges faced by consumer when they make decisions and how regulators can improve consumer protection, see Oren Bar-Gill, SEDUCTION BY CONTRACT: LAW, ECONOMICS, AND PSYCHOLOGY IN CONSUMER MARKETS (Oxford University Press 2012); and Omri Ban Shagar and Carl E. Schneider, MORE THAN YOU WANTED TO KNOW: THE FAILURE OF MANDATED Disclosure (Princeton University Press, 2014). Focusing on financial consumers, and different regulatory approaches to protect financial consumers, see John Armour *et al,* PRINCIPLES OF FINANCIAL REGULATION (Oxford University Press, 2016), pp. 205-223 and 255-271

Nonetheless, we could not find available data showing how much money is being laundered through ICOs.

Regulators in the United States and Singapore have been the more active highlighting the risks of money laundering and fraud that investors face when buying into a digital token sale. Singapore's financial regulatory body and central bank, the Monetary Authority of Singapore (MAS) stated that: "ICOs are vulnerable to money laundering and terrorist financing (ML/TF) risks due to the anonymous nature of the transactions, and the ease with which large sums of monies may be raised in a short period of time. MAS' media release of 13 March 2014 had communicated that while virtual currencies per se were not regulated, intermediaries in virtual currencies would be regulated for ML/TF risks. MAS is currently assessing how to regulate ML/TF risks associated with activities involving digital tokens that do not function solely as virtual currency."[124]

For MAS, even digital tokens that perform functions which may not be within MAS' regulatory purview for not fitting into the legal category of securities, may nonetheless be subject to legislation for combating money laundering and terrorism financing. MAS highlights in particular the following: (i) obligations to report suspicious transactions with the Suspicious Transaction Reporting Office, Commercial Affairs Department of the Singapore Police Force, and (ii) Prohibitions from dealing with or providing financial services to designated individuals and entities pursuant to the Terrorism (Suppression of Financing) Act .and various regulations giving effect to United Nations Security Council Resolutions.

Moreover, issuers of tokens could be subject to licensing requirements under the Securities and Futures Act and Financial Advisers Act. In addition, platforms facilitating secondary trading of such tokens would also have to be approved or recognized by MAS as an approved exchange or recognized market operator respectively. This regulatory authority also announced the drafting of a new payments services framework that will include rules to address money laundering and terrorism financing risks relating to the dealing or exchange of cryptocurrencies for fiat or other digital assets such as tokens. Such intermediaries will be required to put in place policies, procedures and controls to address such risks. These will include requirements to conduct customer due diligence, monitor transactions, perform screening, report suspicious transactions and keep adequate records.[125]

Along the same lines, United States Authorities delivered similar statements in regard of AML compliance and ICOs. On one hand, the Securities and Exchange Commission (SEC) provided guidelines on its website for investors to consider before participating in token sales. Some of the key points the SEC asks potential buyers to consider that there are ways to identify fraudulent investment schemes.[126] On the other hand, the Financial

[124] MAS clarifies regulatory position on the offer on digital tokens in Singapore. Monetary Authority of Singapore (August, 2017) (available at: http://www.mas.gov.sg/News-and-Publications/Media-Releases/2017/MAS-clarifies-regulatory-position-on-the-offer-of-digital-tokens-in-Singapore.aspx)

[125] Monetary Authority of Singapore. *A Guide to Digital Token Offerings* (2017)

[126] The SEC even launched in May, 2018 a fake ICO, pre-selling a coin called Howey Coin, to show how easy it is to scam investors. See https://www.marketwatch.com/story/the-sec-created-a-mock-ico-website-to-show-just-how-easy-it-is-for-investors-to-get-fleeced-2018-05-16 and https://www.howeycoins.com/index.html

Crimes Enforcement Network (FinCEN) published a letter indicating that the U.S. agency will apply its regulations to ICOs. In the letter, FinCEN explained that both developers/issuers/sellers and exchanges involved in the sale of an ICO-derived token would be liable to register as a money transmitter and comply with the relevant statutes around anti-money laundering and know-your-customer rules.[127]

The FinCEN letter recognizes that ICOs vary not only from the functional or legally but approach, but also that there are jurisdictional differences depending on the structure of an ICO and its associated token. In sum, FinCEN asserted that it considers the transmission of newly-issued digital tokens derived from ICOs to be subject to the money transmitter rules under the Bank Secrecy Act . This means that developers and exchanges that sell ICO coins or tokens, or exchange them for other virtual currency or something else of value, must register as money services businesses and comply with (i) the Bank Secrecy Act rules regarding Know-Your-Customer obligations, (ii) the implementation of an anti-money laundering and combating the financing of terrorism compliance program, and (iii) the filing of suspicious activity reports. FinCEN also reminded that U.S. persons must comply with all applicable Office of Foreign Assets Control financial sanctions obligations.

FinCEN reported to the Senate that since 2014 it has examined roughly one-third of the approximately 100 virtual currency businesses that have registered, and has initiated several investigations and enforcement actions against firms and individuals. However, it is important to clarify that this letter is not yet a formal FinCEN guidance.

Regarding the European Union, in February, 2018 European Commission launches the European Union Blockchain Observatory and Forum which will highlight key developments of the blockchain technology, promote European actors and reinforce European engagement with multiple stakeholders involved in blockchain activities.[128] Even though, tokens and ICOs remain unanalyzed by policy makers and regulators by European central authorities, the Council of the European Union approved the 5th AML directive and, among other changes, introduced AML obligations applicable to exchange platforms of virtual currencies.[129] Providers of exchange services between virtual and fiat currencies, and custodian wallet providers will have to comply with the AML directive. Despite this, it is doubtful whether these provisions are suitable to put an end to money laundering using virtual currencies, because virtual currencies can still be exchanged between private persons without any monitoring. Actually, there is no reference in the directive to ICOs.[130]

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[127] See Letter from Financial Crime Enforcement Network to Committee on Finance, United States Senate. (February, 2018) (available at: https://coincenter.org/files/2018-03/fincen-ico-letter-march-2018-coin-center.pdf)

[128] See http://europa.eu/rapid/press-release_IP-18-521_en.pdf.

[129] Neither tokens or ICOs.

[130] It seems that the definition of exchanges does not encompass ICO companies as they do not – generally, but with some exceptions - enable their users to change their tokens into fiat money. It also seems that they do not fall within the definition of wallet providers as the funds, which they receive within the ICO, belong to the company, not to the tokenholders. Developers do not hold their users' private keys for the users' wallets, but only holds private keys for its own wallets.
However, most developers exchange the raised cryptocurrencies to fiat and deposit them at a bank account for their operational needs. Therefore some could argue that they facilitate an exchange from cryptocurrencies to money. See Nejc Novak. *EU Introduces Anti-money Laundering Regulation*. (2018) https://medium.com/@nejcnovaklaw/eu-introduces-crypto-anti-money-laundering-regulation-d6ab0ddedd3

Given the regulatory uncertainty, a number of crypto exchanges in these jurisdictions where they are clearly subject to AML compliance, and also banks, may refuse to work with ICO projects or ICO founders which do not identify buyers of their tokens. This market behavior will possibly force ICOs to voluntarily comply with the AML regulation, or at least to identify the buyers of the tokens. We do not have available data to confirm this hypothesis though.

This means that regulators still need to work on how is the best way to prevent money laundering when operating on a blockchain where the jurisdictional limits become more confusing or non-existing, and where players operate through online platforms rather than physical markets. Perhaps the understanding of these features will lead to different solutions for preventing money laundering in blockhain-based markets, for example, working with digital identity mechanisms in order to countering the anonymities of ICOs nowadays.[131]

8. New challenges for privacy law and data protection

The rise of cryptocurrencies, ICOs and, in general, blockchain use cases, is also generating several issues with regards to privacy law and protection of personal data. The nature of the public blockchain means that every transaction taking place will be published and linked to a published public key that represents a particular user. However, that key is encrypted and no one would be able to directly identify the users settling transactions on a blockchain.[132] In a blockchain, each block contains a reference to the preceding block by including a cryptographic hash of the data within the preceding block. If the data in a block is altered, the hash of the block changes too, and this falsification of the records can therefore be detected.[133]

However, this operation give rise to some issues regarding personal data, especially in countries that follow the European Union standard of the General Data Protection Regulation Directive, also known as GDPR. Data protection rules do not apply to anonymized data and some could consider that because of hashing and encryption, blockchain anonymizes data. This could be debated because anonymized qualification of data is very strict, particularly under European rules. Hashing permits records to be linked, thus it will generally be considered a pseudonymization technique, not an anonymization.[134]

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[131] See World Economic Forum. *Digital Identity. On the Threshold of a Digital Identity Revolution.* Whitepaper (January, 2018) (available at: http://www3.weforum.org/docs/White_Paper_Digital_Identity_Threshold_Digital_Identity_Revolution_report_2018.pdf)
See Also *Digital Identity is the key to the Blockchain Economy*. https://dailyfintech.com/2018/03/24/digital-identity-is-the-key-to-the-blockchain-economy/
See also https://www.bbvaresearch.com/wp-content/uploads/2018/02/Digital-Identity_the-current-state-of-affairs.pdf

[132] See *How Blockchain Encryptation works.* TechRepublic (November, 2017), available at: https://www.techrepublic.com/article/how-blockchain-encryption-works-its-all-about-math/

[133] See *What is Hashing? under the Hood of Blockchain*, Blockgeeks (2017), Available at: https://blockgeeks.com/guides/what-is-hashing/

[134] Hogan Lovels LLP, *A Guide to Blockchain and Data Protection*, available at: https://www.hlengage.com/_uploads/downloads/5425GuidetoblockchainV9FORWEB.pdf

Additionally, Data stored on a blockchain is tamper proof, so deleting it later on is not an option. Moreover, transactions on a blockchain are "immutable", which really means that once a blockchain transaction has received a sufficient level of validation, some cryptography ensures that it can never be replaced or reversed.[135] Thus, this data cannot be deleted once it is inserted in blockchain. This feature could be also conflictive with privacy laws and the Right to be Forgotten or Right to Erasure.[136] This consists in the right to obtain from the controller the erasure of personal data without undue delay. However, it is not clear what *erasure of data* actually means. The GDPR initiative probably did not have in mind a distributed data storage mechanism such as blockchain, but only a centralized or non-distributed data controller. The fact that this unique feature of blockchain technology does not match with privacy rules creates some friction and uncertainty for compliance.

This takes us to the next problem regarding privacy law and blockchain. Who is the data controller on a blockchain? Due to the distributed nature of blockchain, there is not any centralized entity gathering and managing this information. In consequence, more than one party may qualify as controller, which means that several participants of the network could be responsible for compliance with privacy regulations. Governance agreements might be necessary among participants to define the responsibilities as data controllers or data processors.

The applicable jurisdiction can also be a problem for blockchain use cases. Blockchains usually have a cross-border nature and an important aspect for privacy laws. In some jurisdictions, privacy law differs from contract law because parties are not allowed to establish the applicable law. The applicable law depends on factors listed in GDPR,[137] for example. As a result, the way blockchain technology operates (based on a system of encryption and hashing) does not seen to be compatible with the traditional system to protect personal data. Therefore, if policy-makers want to promote the use of blockchain technologies, as we believe they should, the approach to deal with personal data should be changed. Regarding blockchain use cases in general, there is still a long way for developers and policy makers to clarify how blockchain fits into the privacy rules world.

9. Insolvency

The rise of ICOs may also generate some problems in case of insolvency. Indeed, when a debtor becomes insolvent, its assets are not generally sufficient to pay all its debts. Therefore, the way the assets are distributed becomes a very sensitive aspect in bankruptcy.[138] In a world of tokenholder, one may wonder in which position tokenholders

[135] See Gideon Greenspan, *The Blockchain Immutability Myth,* Coindesk (May, 2017), available at: https://www.coindesk.com/blockchain-immutability-myth/

[136] See Section 3, Article 17, GDPR. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679&from=EN

[137] See Article 3, GDPR. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679&from=EN

[138] This work uses the word "bankruptcy" and "insolvency proceeding" as synonyms, since the first expression ("bankruptcy") is commonly used in the United States, while the latter ("insolvency proceeding") is usually used everywhere else.

should be paid. In this context, it seems relevant to distinguish the type of tokenholder from a finance (rather than legal) perspective. In our opinion, equitytokenholders should *always* be subordinated in bankruptcy. Therefore, they should be paid after all the creditors have been paid. They should be paid ahead (or even along with) the shareholders, since equitytokenholders and shareholders are (or can be) functionally equivalent from an economic and finance perspective.

This solution may differ in the case of debtholders. If the white paper does *not* mention anything, they should be paid as general unsecured creditors. Therefore, they will be paid pro rata according to the *pari passu* principle. However, the white paper may establish the treatment of tokenholders in bankruptcy. In those cases, the treatment of tokenholders in bankruptcy will depend on the views taken on insolvency procedures. If a country follows a contractual approach to bankruptcy, these rights should be preserved.[139] However, it is far from clear that it will be applied in practice. Namely, we believe that a subordination clause will probably be applied, since it does not harm other creditors – in fact, it will be for the benefit of the other creditors, since they will be paid first. More problems may arise, however, if the white paper gives a priority claim to the tokenholders in case of bankruptcy. In this scenario, unless the insolvency legislation recognizes this priority or "any priority created by contract", this priority may face some problems of recognition and enforceability.

An insolvency procedure, however, does not only deal with claims. It also deals with assets, since these assets will serve to pay the creditors with either the proceeds received from their sale (in case of liquidation or sale of assets) or the cash-flows generated by the assets (in case of keeping the firm alive). And the issuance of tokens may also create some challenges from the perspective of the issuer´s assets. Namely, since the issuer receives cryptocurrencies in return for the tokens, the person or entity in charge of managing the insolvency proceeding (i.e., the trustee or debtor in possession) will face two primary problems: (i) the valuation of these assets; and (ii) the ability of these assets to be converted to cash (liquidity). When the cryptocurrencies receives by the issuer are generally accepted in the market (e.g., bitcoin, ethers, etc.), the liquidity problem will unlikely exist. Nevertheless, the valuation problem may still be relevant. Indeed, as it was mentioned above, cryptocurrencies are very volatile assets. Their value may rise or dropt rapidly. As a result, this volatility may create some problems not only for the trustee or debtor in possession but also for the creditors, whose rights may be affected by the volatility of these assets. Indeed, the volatility of these assets will probably affect creditors' rights when deciding about the allocation of the debtor´s assets (reorganization or liquidation). For example, if they know that the cryptocurrencies held by the issuer can be sold and get enough cash to repay their debts, perhaps they may prefer liquidation over reorganization. However, if the liquidation value of the company is not enough to pay even part of their claims (among other reasons, due to the lack of value of the cryptocurrencies), a creditor might have more incentives to preserve reorganization over liquidation – especially if the issuer´s future cash-flows are positive. Therefore, we believe that trustees

[139] However, this is not the general rules. Most insolvency jurisdictions provide a mandatory state-provided set of bankruptcy rules. So far, the contractual approach has been proposed just in the literature. See Robert Rasmussen, *Debtor´s Choice: A Menu Approach to Corporate Bankruptcy*, 71 TEXAS LAW REVIEW 51 (1992); Alan Schwartz, *A Contract Theory Approach to Business Bankruptcy*,107 THE YALE LAW JOURNAL 1807 (1998);

or debtor in possession should warn creditors about the importance of the volatility of the cryptocurrencies potentially held by the issuer, since it may be a factor potentially relevant for their decisions in bankruptcy.

10. International challenges and cooperation in ICOs

Most securities regulators are issuing some guidance regarding ICOs. IOSCO has even created a section on its website to include the statements issued by many securities regulators around the world with regards to ICOs.[140] This is a desirable initiative to contribute to the understanding and "brainstorming" about how regulators should address ICOs. Namely, by being able to know how other jurisdictions are addressing this challenge, regulators may have more ideas about the most appropriate way to regulate ICOs in order to achieve an optimal regulation that may promote innovation and development without harming investor protection, market integrity, and the stability of the financial system.

However, this approach is not enough. On the one hand, it is very costly to analyze each country´s regulatory approach to deal with ICOs. On the other hand, this initiative does not analyze the pros and cons of each solution. For this reason, it would seem desirable if an international organization such as IOSCO issues some guidance on ICOs, as least to establish: (i) the rationale and operation of ICOs; (ii) a proposed explanation and classification of tokens; (iii) the different regulatory approaches that may be implemented to deal with ICOs; (iii) the applicable law that should govern ICOs; (iv) the costs and benefits of each regulatory approach; (v) other issues potential relevant for securities regulators, such as how to protect tokenholders, or how to deal with other challenges raised by ICOs such as anti-money laundry. Thus, even though each securities regulator will be able to choose one model or another, all of them will have the opportunity to know and assess each model in order to decide which one fits best in their financial system, taking into account the priorities of the regulator (e.g., investor protection, innovation, financial stability, prevention of financial crime, etc.), as well as the particular features of the country (e.g., type of investors –institutional or retail– existing in their capital markets, size and expertise of the regulator, etc.). In addition, we also believe that the IASB should also issue an IFRS or at least an IFRIC to clarify how to register an issuance of tokens.

Finally, we also believe financial cooperation and the understanding of each country´s laws and regulatory model to deal with ICOs is relevant as a mechanism to know the scope of each country´s competences and extraterritoriality provisions. For example, while some countries may apply their laws just to any issuance of tokens taking place in their countries, other jurisdictions may find themselves competent to require issuers to comply with their existing securities laws (or at least to submit the proposed form in their countries) or to initiate investigations and enforcement actions because the issuer is registered (if an individual) or incorporated (if a company) in the country, or just because some of tokenholders are from their jurisdictions. For this reason, and taking into account the different regulatory models existing to deal with ICOs, we think that issuers, regulators and tokenholders should be aware of the applicable law (and competent regulator) potentially applying to any issuance of tokens. Otherwise, the issuance may be subject to legal

[140] See https://www.iosco.org/publications/?subsection=ico-statements

uncertainty at expense not only of the issuer but also –and perhaps more importantly– of the tokenholders and the financial authorities in charge of protecting these tokenholders.

11. Future of capital markets, finance and corporate governance in a world of tokenized securities

Token networks may bring about positive paradigm shifts to computing, finance, law, government, and more. Tokens leverage computation and cryptography to represent consumption goods (non-security tokens) or replacements for traditional investments ("securities tokens). This means that companies and regulators can learn from ICOs and start thinking about using blockchain as a new way for delivering goods and distributing securities in any market.

Due to the absence of financial intermediaries in ICOs, which means less transactions costs, and the possibility for developers to fund long-term projects where it may take years to capture value[141], ICOs allow companies to raise important amount of funds in early stages of a project. Also, the features of tokens vary among them providing founders and investors different types of instruments to offer or buy in these markets; also since tokens fund networks, the buyers – specially retail buyer - of a token are highly interested in making grow these networks.[142] These characteristics of token sales make us think that probably these trends of tokenizing securities can be attractive for capital markets soon.

Our guess encompasses use cases of blockchain that are trying to bring this technology to the traditional registry of shares. The first state in implementing blockchain technology was Delaware. In May, 2016 the Delaware Blockchain Initiative was launched[143] and now it is implemented. The Delaware General Corporation Law was amended in order to make it legal for entities incorporated in Delaware to use blockchain technology for recordkeeping and administration of stock ledgers. This is impressive since Delaware is regarded as one of the most important states for corporate law in United States and the world. In 2015, 86% of all IPOs chose to incorporate in Delaware; more than half of all United States publicly traded companies and 66% of Fortune 500 companies are incorporated in Delaware as well.[144]

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[141] Since ICOs mostly fund blockchain-based projects. Some of these ideas promise to be disruptive in many markets or industries as use cases of this new technology. Because of this, the implementation of the use cases could take some time to be accepted as a mainstream in many industries. See also Alfonso Delgado *et al*, *Towards a Sustainable ICO Process: Community Guidelines on Regulation and Best Practices* (2016).

[142] This statement is probably not applicable to qualified investors, particularly those funds that are known for participating in pre-sales of tokens and then dump their investments only to make profits.

[143] In May, 2016 Jack Markell – Governor of the State of Delaware – announced an initiative initiative by the State of Delaware to embrace the emerging blockchain and smart contract technology industry, which can help the public and enterprises lower their transactional costs, speed up and automate manual processes, and reduce fraud. This announcement took place in Consensus 2016 conference, which is currently one of the most important international conferences on blockchain currently. See the entire speech here: https://www.youtube.com/watch?v=-mgxEhIvSTY

[144] See Delaware Division of Corporations 2015 Annual Report, available at: https://corp.delaware.gov/Corporations_2015%20Annual%20Report.pdf .

In December 2016, Overstock.com Inc. became the first publicly traded company to issue stock via blockchain thanks to the Delaware Blockchain Initiative[145]. One year later Overstock.com Inc launched an ICO (only pre-sale) through its subsidiary tZERO to fund the development of an exchange to facilitate the trading of blockchain-based assets, including securities.[146] However, Overstock.com Inc. announced the SEC is investigating the tZERO Coin pre-sale,[147] therefore probably the project will be delayed indefinitely.

Despite the uncertainty that these cases portrait for the implementation of blockchain technology for stock ledgers, the advantages of using it should be explored in depth. Initiatives such as Delaware could bring the benefits investors and companies are experiencing with ICOs to a much broader audience and to the development of capital markets, finance and corporate governance. Many years ago the securities markets went digital and now there are not many investors holding physical certificates of, for example, shares, as 50 years ago. However, true benefits of digitization will only reach the securities industry when its layers of settlement processes are finally streamlined, so that securities issuers and investors can again interact directly, which is something that could be achieved by blockchain technology.[148] With blockchain, buyers of shares and corporations will have clear ownership record, lenders holding security interests in pledged stock expect to be able to foreclose after a triggering event, distribution of dividends and payments should clearer as well.[149] Knowing who owns which shares is a fundamental corporate governance requirement. Blockchain technology should make it easy to know at a specific moment the number of shares that a shareholder owns and who exactly are those shareholders. Nowadays corporations – especially publicly trades corporations - rely on intermediaries to know this information (i.e. when using omnibus accounts, central depositories, etc).

The Dole Food Company, Inc class action is only an example of why accurate stock ownership is not achieved in markets today. In this case, there were more than 36 million of shares in the class, but claimants submitted facially valid claims for more than 49 million shares, 33% more Dole common stock than actually existed. Clearly, no single ledger kept track –in real time– of stock ownership. When an investor buys a share of common stock

[145] See Michael Del Castillo, *Overstock Could Rise $30 Million With Blockchain Stock Offering*. Coindesk (November, 2016), available at: https://www.coindesk.com/overstock-raise-30-million-blockchain-stock-offering/

[146] See Bradly Dale, *The Next Step In Overstock's Master Blockchain Plan is Underway*, Coindesk (December, 2017), available at: https://www.coindesk.com/tzeros-ico-one-part-overstocks-master-blockchain-plan/

[147] Overstock.com Inc. (2018). Form 8-K 2018.

[148] For a detailed explanation of the Delaware Blockchain Initiative see Andrea Tinianow and Caitlin Long. *Delaware Blockchain Initiative: Transforming the Foundational Infrastructure of Corporate Finance,* HARVARD LAW SCHOOL FORUM ON CORPORATE GOVERNANCE AND FINANCIAL REGULATION BLOG, available at: https://corpgov.law.harvard.edu/2017/03/16/delaware-blockchain-initiative-transforming-the-foundational-infrastructure-of-corporate-finance/. See also Nydia Remolina, *La incorporación de Blockchain en el Derecho de Sociedades de Delaware.* BLOG DEL INSTITUTO IBEROAMERICANO DE DERECHO Y FINANZAS (2018), available at: http://derechoyfinanzas.org/blog/la-incorporacion-del-blockchain-en-el-derecho-de-sociedades-de-delaware/

[149] Wonnie Song, *Bullish on Blockchain: Examining Delaware's Approach to Distributed Ledger Technology in Corporate Governance Law and Beyond.* HARVARD BUSINESS LAW REVIEW (2018), available at http://www.hblr.org/2018/01/bullish-on-blockchain-examining-delawares-approach-to-distributed-ledger-technology-in-corporate-governance-law-and-beyond/

in a listed corporation, the investor typically does not hold that share directly. Generally, from the corporation's perspective, a company called Cede & Co. (a nominee of the Depositary Trust Company) is the "record owner" of all the stock, all the time. Investor's broker keeps an entry in its database showing you as the stock's beneficial owner, and DTC keeps an entry in its database of the investor broker's ownership.[150]

Additionally, blockchain technology would also allow shareholders to vote their shares directly on that blockchain, as happens on ICO projects, rather than relying on the current proxy voting process and the risk of mistakes that comes with it.[151] Dell's 2013 go-private merger is another type of case blockchain technology could potentially help to prevent. T. Rowe Price lost standing to seek appraisal even though it had vocally opposed and repeatedly tried to vote against the merger. In order to vote its Dell shares, T. Rowe Price had to send its vote through intermediaries. A service provider – third party - later provided an updated record related to the merger. This updated record triggered T. Rowe Price's automated voting system, which was set to vote in favor of any management-recommended merger, like the Dell merger was. Despite T. Rowe Price's intention to oppose to the Dell merger, it ultimately voted in favor losing standing to sue for appraisal. T. Rowe Price ended up paying $194 million to compensate its clients for actions for loss of appraisal rights derived from this proxy voting mistake.[152]

Using smart contracts opens a world of possibilities for corporations, even for compliance processes and corporate governance matters. For example, a corporation could use blockchain to record directors' votes to ensure they act accordingly to regulation and internal policies. A corporation could also program shares issued in a private placement to be issuable only to the digital wallets of those who qualify as accredited investors. Tokenized shares could also be programmed to facilitate the execution of covenants agreed in financing contracts with creditors.[153] And there are more applications to explore for shares issued in a blockchain as tokens in ICOs.

Some other states are following Delaware's ideas. Wyoming is one example. The Wyoming Blockchain Coalition is focused on encouraging the adoption of blockchain technology in Wyoming and, so far, has been incredibly successful. In fact Wyoming has approved blockchain-friendly bills defining utility tokens and has also exempted them from the state's money transmission licenses. The coalition has in mind the implementation of a

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[150] See Matt Levine, *Dole Food had too many shares; It's enough to make you wish for a blockchain*. Bloomberg (February, 2017), available at: https://www.bloomberg.com/view/articles/2017-02-17/dole-food-had-too-many-shares
See also Joshua Ashley Klayman et al, *Why the Delaware Blockchain Initiative Matters to all Dealmakers*. Forbes (September, 2017), available at: https://www.forbes.com/sites/groupthink/2017/09/20/why-the-delaware-blockchain-initiative-matters-to-all-dealmakers/#2ee375f27550
See also In re Dole Food Co. Inc., No. CV 8703-VCL, 2017 WL 624843 (Del. Ch. Feb. 15, 2017).

[151] See G. Thomas Stromberg et al, *Are Headwinds Hampering Delaware's Blockchain Initiative?* Law 360 (March, 2018).
See also *Delaware Blockchain Initiative: Transforming the Foundational Infrastructure of Corporate Finance,* HARVARD LAW SCHOOL FORUM ON CORPORATE GOVERNANCE AND FINANCIAL REGULATION BLOG, available at: https://corpgov.law.harvard.edu/2017/03/16/delaware-blockchain-initiative-transforming-the-foundational-infrastructure-of-corporate-finance/.

[152] In re Appraisal of Dell Inc., 143 A.3d 20 (Del. Ch. 2016).

[153] For example, dividend covenants.

similar initiative to the one passed in Delaware.[154] European markets are being influenced by this initiative. In Germany, for example, models have been developed in which a nominee holds the company's shares as a registered shareholder with tokens. These tokens embed smart contracts that provide for a type of trust agreement between the respective token holder and the nominee. The smart contract is supported by traditional legal solutions (written agreements), thus making the token holder only an indirect shareholder through the written agreement.[155]

In sum, using blockchain technology in the corporate context could revolutionize corporate record-keeping, governance, finance and capital markets. ICOs experience could bring knowledge to the table for regulators and companies to embrace this new technology in benefit of capital markets development. So far, developers incorporated using a simple Delaware corporation probably will take advantage of the Delaware Blockchain Initiative that would allow the entity to itself incorporate directly on a blockchain.

12. Conclusion

This paper has sought to provide an understanding of the legal and finance challenges of the Initial Coin Offerings – that is, a transaction in which a company issues some rights, known as tokens, receiving cryptocurrencies in return. In order to do so, we have started by proposing a concept of tokens based on both their functionality and their legal nature. From the perspective of their *functionality*, we have followed the classification suggested by FINMA. Therefore, we have distinguished between asset tokens (i.e., those tokens that resemble shares, bonds, etc.), utility tokens (i.e., those tokens given access to future services) and payment tokens (e.g., those tokens acting are cryptocurrencies). From the perspective of their *legal nature*, we have distinguished between security tokens (e.g., tokens classified as "securities" according to a particular country´s securities laws) and non-security tokens (i.e., everything else). We have argued that the legal classification of the token (which is the relevant for the purpose of securities regulation) will depend on the features, structure, distribution and marketing of the issuance of tokens, as well as a particular country´s applicable law. Hence, even though the functionality of the token may provide some guidance about the legal nature of the token, a further analysis will be required in order to determine its legal classification.

We have analyzed how securities regulators around the world are dealing with ICOs. While some countries, such as China and South Korea, have opted for prohibiting ICOs, other jurisdictions such as Mexico require an authorization of *any* issuance of tokens (no matter if they are security or non-security tokens), and other countries, including the United States, Singapore, and Switzerland, are subjecting ICOs to a selective control *ex ante* in order to verify, among other aspects: (i) when a company issues security tokens; and (ii) whether the issuance of security tokens complies with existing securities laws.

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[154] See Wyoming Blockchain Coalition website: http://wyomingblockchain.io/

[155] See André Eggert and Yamila Eraso, *Delaware Blockchain Initiative: Revitalizing European Companies' Funding Efforts*, HARVARD LAW SCHOOL FORUM ON CORPORATE GOVERNANCE AND FINANCIAL REGULATION (September, 2017), available at: https://corpgov.law.harvard.edu/2017/09/21/delaware-blockchain-initiative-revitalizing-european-companies-funding-efforts/

Since all of these approaches may have pros and cons, our paper has proposed a new system to deal with ICOs. Our model is built into the approach followed by the United States, Switzerland and Singapore. Therefore, it is based on a selective control *ex ante*. However, since this model does not easily allow regulators to investigate *ex post* whether an issuance of (apparently) non-security tokens may end up being considered security tokens, this system should be enhanced by requiring issuers to disclose *any* issuance of tokens through an *electronic form*. This form should specify the primary features of the ICO and the tokens and it should be submitted to the securities regulator or any other public authority. In addition to the form, our paper suggests that the purchase of pre-sales tokens, which are even more risky than regular tokens, should be prohibited to pension funds and commercial banks due to the fact that these entities use funds from the general public and their failure may generate various negative externalities for the economy.

From an accounting and finance perspective, we have shown that, while it seems relatively clear that the cryptocurrencies received by the issuer should be registered in the company´s assets, it is not clear how issuers should register the issuance of tokens. When the white paper gives tokenholders economic and political rights similar to those held by shareholders, we have proposed that the tokenholder should be classified as *equityholders.* By contrast, in those cases in which the features and distribution of the token seem to reflect that the tokenholders are entitled to future services or fixed payments, those tokenholders should be considered *debtholders*. This paper has also argued that, even if tokenholders and shareholders are entitled to similar rights, a tokenholder should never be considered a "shareholder", unless the applicable law expressly allows otherwise – as it seems to occur in Singapore.

The issuance of tokens may also have relevant implications from an accounting and finance perspective. On the one hand, it may affect the company´s capital structures, and therefore the firm´s corporate governance, value, and cost of capital. On the other hand, and perhaps more importantly, it may affect the company´s financial ratios (e.g., leverage, liquidity, solvency, etc). Thus, the registration of tokens as debt or equity may end up affecting the covenants potentially agreed between issuers and lenders. Finally, another critical aspect of ICOs from an accounting and finance perspective involves the valuation and, if so, the impairment suffered by the cryptocurrencies received by the issuers. Indeed, since cryptocurrencies are subject to a very high volatility, the fact of having cryptocurrencies in the company´s assets will make the issuer vulnerable to the fluctuations in the value of these assets. Therefore, regulators should pay especial attention to the registration and valuation of tokens once they are issued. Otherwise, we face the risk of observing something similar to what happened in the 2008 financial crisis: the unexpected registration of losses (for example, in case of an unexpected decline in value of cryptocurrencies) in many companies´ balance-sheets which my ultimately harm the stability of the financial system.

This paper has also analyzed the corporate governance challenges of ICOs. Namely, we have argued that several factors make tokenholders particularly subject to managerial opportunism, including the higher asymmetries of information faced by tokenholders, the weighted risk of irrational behavior potentially existing in ICOs, and the lack of governance mechanisms to protect tokenholders. In our opinion, the way to protect tokenholders should differ between security tokenholders and non-security tokenholders. We have

argued that security tokenholders should be protected by establishing a minimum content for the white paper, in addition to, of course, subjecting these issuance of tokens to a country´s securities laws. Likewise, the protection of non-security tokenholders should go beyond the white paper. Namely, it has been argued that regulators should protect non-tokenholders through some of the regulatory strategies used to protect consumers, including cooling off periods, conduct obligations and procedural rules.

After analyzing the primary challenges of ICOs from a regulatory, accounting, finance and corporate governance perspective, we analyzed the main challenges of ICOs from an insolvency law, privacy law and anti-money laundry perspective. We have concluded by analyzing the implications of the tokenization of assets and the implementation of blockchain for the future of capital markets and financial regulation. By providing a comparative and interdisciplinary analysis of ICO, our paper seeks to help regulators and policy-makers to deal with ICOs in a way that may promote innovation and firms´ access to finance without harming investor protection, market integrity and the stability of the financial system.