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1 *Blockchain Technology and Financial* 2 *Regulation: A Risk-Based Approach to the* 3 *Regulation of ICOs*

AQ1

4 Primavera **DE FILIPPI** , Alexis **COLLOMB** and Klara **SOK**

AQ2

5

6 *This paper compares Initial Public Offerings (IPOs) and equity crowdfunding with Initial Coin*
7 *Offerings (ICOs) and explores the corresponding risks and limitations of these different*
8 *fundraising practices, with a view to analysing the extent to which the latter should be*
9 *subject to the same regulatory framework as the former. After assessing the underlying*
10 *principles and current regulatory framework for IPOs and equity crowdfunding, with a focus*
11 *on Europe and the US, we investigate the possibility of applying existing financial*
12 *regulations to ICOs. Drawing from the notion of “functional equivalence”, we contend that*
13 *many ICOs share a sufficient number of similarities with traditional IPOs and equity*
14 *crowdfunding, to be regulated in a similar manner. However, given the various attempts by*
15 *token issuers to escape from the scope of securities laws by assigning a different function to*
16 *their ICOs tokens, we argue that principle-based regulation based on an in-depth risk-*
17 *analysis could be an effective way of addressing the regulation of ICOs, thereby moving*
18 *from “functional equivalence” to “risk equivalence”. Finally, we explore the use of*
19 *blockchain technology as a regulatory technology, incorporating specific rules and*
20 *constraints into the technological fabric of an ICO, in order to ensure compliance with the*
21 *fundamental principles of financial regulation.*

22 I. INTRODUCTION

23 New fundraising techniques have emerged in the last few years, with the advent of
24 blockchain technology. An Initial Coin Offering (ICO) – also referred to as a “token
25 sale” or “token generating event” – can be loosely described as a new fundraising
26 technique, whereby blockchain-based tokens are sold in exchange for
27 cryptocurrencies (or fiat money) with a view to supporting the development of a
28 particular project or initiative. Different functions can be assigned to these tokens:
29 they can be used as a means to access a particular product or service (*utility tokens*),
30 as a proxy to another physical or digital asset (*asset-backed tokens*), as a digital
31 representation of an equity share or a stock (*investment tokens*), or even as a right of
32 governance into the project or initiative being funded (*governance tokens*). Moreover,
33 regardless of the function ascribed to the ICO tokens, most of the actors purchasing

34 these tokens are also interested in the potential gains that can be derived from the sale of
35 these tokens on a secondary market.

36 The first token sale was done by Mastercoin in July 2013, followed in 2014 by
37 Ethereum and a few other token sales. ICOs started to pick up with TheDAO's token
38 sale in May 2016, which raised circa US \$150 m. But it was only in 2017 that
39 significant volumes were achieved. By the end of 2018, ICOs had cumulatively
40 raised about US \$24 billion through more than 5,000 token sales¹ and, despite
41 various regulatory headwinds, the pace and volume of these offerings kept growing
42 until March 2018 – with a peak of circa \$1.8 billion raised during that month alone.

43 This paper will first provide an overview of financial regulations related to IPOs and
44 equity crowdfunding, both in Europe and in the US It will then describe the ICO process,
45 delineating the various steps that characterises an ICO – prior, during, and after the
46 contribution period. The paper will then analyse the specificities of ICOs, and the
47 extent to which they can be assimilated to more ordinary fundraising practices.
48 While, from the perspective of a formal analysis, ICOs differ significantly from
49 traditional IPOs, from a functional analysis, there are nonetheless important
50 similarities between the two. The paper will investigate whether these similarities
51 could justify bringing these new fundraising practices within the scope of existing
52 regulatory frameworks for security offerings, or whether – in light of their distinctive
53 characteristics – ICOs might benefit from a different set of regulations.

54 Many actors experimenting with ICOs have been trying to find ways to prevent their
55 tokens from being characterised as securities, thereby bypassing the need to comply with
56 securities regulations. Yet, by comparing the risks involved in IPOs, equity
57 crowdfunding, and ICOs, it becomes immediately clear why the latter might be
58 subject to similar regulatory constraints as the more traditional fundraising practices.
59 Indeed, although they differ in their format and design, all ultimately fulfil the same
60 function: they all represent a means of raising public funds for the development of a
61 particular project or initiative, with a certain degree of risk for investors with regard
62 to their potential return on investment.

63 This paper claims that past and current attempts by token issuers at running afoul of
64 security regulations by merely pretending that, because of its technical design or intended
65 function, a token shall not be regarded as a security, ultimately illustrates an important
66 misunderstanding of the role and purpose of securities regulations. Indeed, while
67 securities laws are intended to facilitate capital formation within a fair, orderly and
68 efficient market, one of their most prominent functions is also to protect investors
69 against undue potential losses, and to make sure they clearly understand the financial
70 risks they are taking. Hence, regardless of their legal qualification, the public issuance
71 of blockchain-based tokens might constitute a regulated activity to the extent that it
72 imposes a similar set of risks to investors.

73 This paper argues that, in order to establish whether an ICO should be regulated as a
74 securities offering, one should not look at the legal qualification of the tokens being
75 issued, but rather at the functions assumed by these tokens. Building upon the notion
76 of *functional equivalence* – a legal doctrine used to extend existing regulations to

¹ Sources: <w.coindesk.com/ico-tracker> and <icobench.com/reports/ICO_Market_Analysis_2018.pdf>.

77 new products or practices which are formally distinct, and yet functionally equivalent to
78 previous regulated products or activities – the paper analyses the extent to which existing
79 financial regulations might apply to different types of ICOs. The paper then suggests a
80 reinterpretation of the doctrine of functional equivalence, focusing not only on the
81 *function* but also on the *risks* posed by these new fundraising practices. It provides a
82 risk-based analysis to establish the extent to which the risks raised by an ICO are
83 similar to those raised by traditional IPOs. If the risks of the two are sufficiently
84 similar (both in degree and in kind), it is fair to contend that they should both be
85 subject to a similar regulatory framework.

86 The paper concludes by providing a series of recommendations and best practices for
87 token issuers, suggesting that instead of trying (in vain) to construct their ICOs so as to
88 reduce the likelihood that their tokens will be regarded as a security, tokens issuers should
89 rather focus on exploring the use of blockchain technology as a “regulatory technology” –
90 ie as means to decrease the risks for investors (eg by providing increased transparency,
91 auditability and accountability) and consequently reduce the regulatory burden that
92 issuers might be subjected to.

93 II. EXISTING REGULATORY FRAMEWORK FOR “PUBLIC FUNDRAISING”

94 1. Policy objectives and underlying principles for the regulation of IPOs

95 Capital markets regulation has the ambition to provide a clear, yet flexible framework
96 with a multi-pronged objective of protecting issuers and investors from any potential
97 fraud or abuse, while fostering economic growth. With regard to securities, the
98 International Organization of Securities Commissions clearly summarises the three
99 key objectives of securities regulation:² (i) protecting investors; (ii) ensuring fair,
100 efficient and transparent markets; and (iii) reducing systemic risk. The regulation of
101 IPOs, whether in Europe or in the US, aims at fulfilling these three broad regulatory
102 objectives.

103 The ordering of these objectives suggests that investor protection is the first concern of
104 securities commissions. In fact, in the wake of the 2008 financial crisis, the need for
105 investor protection has been recognised of utmost importance in a set of high-level
106 principles on consumer protection in the field of financial services which was called
107 for by the G20 Finance Ministers and Central Bank Governors in February 2011,³
108 and introduced in October of the same year.⁴

² See p 3 <www.iosco.org/library/pubdocs/pdf/IOSCOPD561.pdf>.

³ This set of high-level principles was developed by “the Task Force on Financial Consumer Protection of the OECD Committee on Financial Markets (CMF), in close co-operation with the FSB and its Consultative Group, other international organisations and standard setter bodies and consumer and industry associations”: see <www.oecd.org/daf/fin/financial-markets/48892010.pdf>.

⁴ This set of common principles comprises ten sections respectively dealing with: (i) the legal, regulatory and supervisory framework; (ii) the role of oversight bodies; (iii) the equitable and fair treatment of consumers; (iv) disclosure and transparency; (v) financial education and awareness; (vi) responsible business conduct of financial services providers and authorised agents; (vii) protection of consumer assets against fraud and misuse; (viii) protection of consumer data and privacy; (ix) complaints handling and redress; and (x) competition. It is interesting to notice that this list of high-level principles combines moral objectives (eg the equitable and fair treatment of consumers) with more practical means to achieve consumer protection (eg financial education and awareness).

109 The second objective underlines the economic importance of having efficient markets
 110 so that issuers can find investors to finance their operations, through a fair and transparent
 111 process. According to standard economic theories, one of the central market functions is
 112 to maximise economic welfare and economic surplus.⁵ One of the key issues that may
 113 hamper the good functioning of markets is information asymmetry. According to
 114 Akerlof's seminal paper on the market for "lemons", adverse selection⁶ may drive
 115 high-quality products out of the market, and potentially unravel it.⁷ Maximising
 116 economic surplus through an efficient market mechanism means that funds should
 117 find their way to an actual investment project every time it is mutually advantageous
 118 for the parties concerned. In a world without information asymmetries, this can be
 119 achieved via market mechanisms alone. However, markets are littered with
 120 uncertainty and information asymmetries. Insurance or financial market theorists, in
 121 the wake of Akerlof, have long been aware of the potentially destructive power of
 122 information asymmetries. Some market-based solutions have been suggested to
 123 mitigate the impact of information asymmetries and adverse-selection, with
 124 techniques such as signalling⁸, intermediation and third-party certification, or "buyer
 125 search" – whereby purchasers can acquire information on the true status of goods
 126 sold at a cost, by "visiting" a seller or testing the product for sale – as reviewed by
 127 Fox.⁹ In the context of an IPO, part of an underwriter's value, as an intermediary, is
 128 precisely to use its reputation to certify that the offering price reflects the issuer's
 129 insider information, which investors are not aware of, or simply cannot be sure of.¹⁰
 130 However, as Fox shows,¹¹ these methods are not perfect antidotes for eradicating the
 131 adverse effects of information asymmetries, especially when dealing with public
 132 offerings of securities that are not already traded in a secondary market.¹²

133 The last objective of reducing systemic risk has been emphasised ever since the 2008
 134 subprime crisis "spilled over and became the catalyst for a much broader global financial
 135 crisis".¹³

136 Stepping back, it can be observed that economic and financial history has been fraught
 137 with examples where one – or several – of the three aforementioned objectives were
 138 trampled upon. From the South Sea Company bubble of 1711–1720 to the great crash
 139 of 1929, and the crisis of 2008, there are many instances where investors have been

⁵ On this issue, see Just et al, *The Welfare Economics of Public Policy* (Edward Elgar 2004) chs 7–9.

⁶ A market with products of various qualities (eg high and low) will be said to experience adverse selection when sellers of high-quality products decide not partake in the market because buyers are unable to distinguish between high- and low-quality products, and are hence unable to pay a high enough price for matching high-quality sellers' reservation price.

⁷ Akerlof, "The market for 'lemons': quality uncertainty and the market mechanism" (1970) 84(3) *The Quarterly Journal of Economics* 488.

⁸ M Spence, "Competitive and optimal responses to signals: an analysis of efficiency and distribution" (1974) 7(3) *Journal of Economic Theory* 296.

⁹ MB Fox, "Regulating Public Offerings of Truly New Securities: First Principles" (2016) 66 *Duke Law Journal* 673.

¹⁰ Such an analysis of an underwriter's value can be found in.

¹¹ Fox, *supra*, note 9.

¹² Fox therefore argues that we should be going back to first principles to answer "whether, and, if so, under what circumstances, government regulation should be added to the mix", *supra*, note 9, p 677.

¹³ FA Longstaff, "The subprime credit crisis and contagion in financial markets" (2010) 97(3) *Journal of Financial Economics* 436.

140 ruined by collapsing share prices. Investor protection is a difficult goal as financial
141 markets can go mad, and investors may be prone to irrational exuberance. Similarly,
142 the fairness, efficiency and transparency of markets is another difficult objective to
143 achieve, as markets can be manipulated by powerful actors.¹⁴ Lastly, the recent
144 subprime crisis has shown that systemic risk can gradually build up and remain
145 unnoticed until it is too late. Furthermore, these three goals are inherently correlated
146 and it will be hard to achieve one without the others. For instance, an efficient control
147 of systemic risk will require a certain level of transparency in the markets, just as
148 investor protection will be hard to achieve if another systemic crisis were to unleash
149 its devastating effects. We now turn to analysing the regulatory framework
150 established in Europe and in the US to achieve the three objectives of securities law.

151 *a. European IPO regulatory regime*

152 In the aftermath of the 2008 financial crisis, European financial regulation was adjusted to
153 improve the functioning of financial markets. Directive 2003/71/EC¹⁵ (the Prospectus
154 Directive), which was the cornerstone of European IPO regulation, was repealed on
155 14 June 2017 and replaced by Regulation (EU) 2017/1129¹⁶ (the Prospectus
156 Regulation) in an effort to build a Capital Markets Union and “help businesses tap
157 into more diverse sources of capital from anywhere within the European Union, make
158 markets work more efficiently and offer investors and savers additional opportunities
159 to put their money to work, in order to enhance growth and create jobs”.¹⁷ If, overall,
160 this new Regulation maintains the fundamental principles laid out in the 2003
161 Directive, it introduces certain technical modifications designed to strengthen investor
162 protection and overall market efficiency, while introducing more flexibility for
163 issuers. We can see a triple objective at work in this regulatory adjustment: (i)
164 reinforcing investor protection; (ii) making markets more efficient, especially in the
165 greater context of capital markets union; and (iii) introducing more flexibility to
166 stimulate economic growth.

167 One of the important means to achieve the first key objective of protecting investors is
168 to provide the latter with all essential information, in order to make sure that they properly
169 understand the risks involved in their investments. The Prospectus Regulation gives the
170 European Securities Markets Authority (ESMA) a mandate to develop guidelines to
171 assist competent authorities – typically at the national level – in their review of the
172 various risk factors that issuers will need to disclose.¹⁸ The ESMA guidelines require
173 these risk factors to be specific, material, and presented across different categories

¹⁴ RJ Aggarwal and G Wu “Stock Market Manipulations” (2006) 79(4) *The Journal of Business* 1915.

¹⁵ Directive 2003/71/EC of the European Parliament and of the Council of 4 November 2003 on the prospectus to be published when securities are offered to the public or admitted to trading and amending Directive 2001/34/EC, available at <eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32003L0071>.

¹⁶ Regulation (EU) 2017/1129 of the European Parliament and of the Council of 14 June 2017 on the prospectus to be published when securities are offered to the public or admitted to trading on a regulated market, and repealing Directive 2003/71/EC, available at <eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32017R1129>.

¹⁷ Introductory remark (1) of Prospectus Regulation.

¹⁸ Art 16(4) of Prospectus Regulation; *ibid*.

174 depending on the nature of the risk. Quantitative – when possible – and qualitative
175 information also needs to be provided for investors to properly assess potential risks.¹⁹

176 Yet, as pointed out by Hacker and Thomale,²⁰ the Prospectus Regulation is not the only
177 regulatory instrument concerned with the public offering of securities, or the dealing of
178 financial instruments within Europe. The Market Abuse Regulation,²¹ which is focused
179 on preventing various forms of insider trading and market manipulations, also applies to
180 the trading of securities on trading facilities and regulated markets. Similarly, the Markets
181 in Financial Instruments Directive (now in its second version, the MiFID II Directive²²)
182 seeks to improve the competitiveness of the EU’s financial markets with a legislative
183 framework intended to harmonise the degree of investors’ protection in financial
184 instruments. Among other things, the Directive sets out reporting requirements,
185 transparency obligations for the trading of shares, as well as a series of rules on the
186 admission of financial instruments.²³ It also recognises that as “more investors have
187 become active in the financial markets and are offered an even more complex and
188 wide-ranging set of services and instruments”, the European legal framework should
189 encompass “the full range of investor-oriented activities” and “provide for the degree
190 of harmonisation needed to offer investors a high level of protection”.²⁴ Again, this
191 underlines how the key objective of protecting investors is pervasive across all these
192 regulations. Furthermore, the idea that standardisation of financial instruments and
193 investment vehicles will contribute to investor protection – helping investors and
194 regulators alike better understand and manage investment risks by providing them
195 with a unified framework across European markets – can also be found in the UCITS
196 Directive,²⁵ which oversees the cross-border operations throughout the EU of
197 collective investment schemes; or its equivalent for alternative investment funds – the
198 AIFM Directive.²⁶ This wider set of European financial regulations²⁷ has been

¹⁹ The final report on ESMA guidelines on risk factors under the Prospectus Regulation may be found at <www.esma.europa.eu/document/final-report-esma-guidelines-risk-factors-under-prospectus-regulation>.

²⁰ P Hacker and C Thomale, “Crypto-Securities Regulation: ICOs, Token Sales and Cryptocurrencies under EU Financial Law” (2018) 15(4) European Company and Financial Law Review 645.

²¹ Regulation (EU) No 596/2014 of the European Parliament and of the Council of 16 April 2014 on market abuse (market abuse regulation), available at <eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014R0596>.

²² Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments, available at <eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32014L0065>.

²³ To understand MiFID II Directive’s improvements over MiFID’s initial directive, one may consult <www.esma.europa.eu/policy-rules/mifid-ii-and-mifir>.

²⁴ Introductory remark (3) of MiFID II Directive, available at <eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A32014L0065>.

²⁵ Directive 2009/65/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) (recast) (Text with EEA relevance). See <eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0091>.

²⁶ Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 Text with EEA relevance. See <eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011L0061>.

²⁷ Another key European financial regulation that we have not mentioned is the European market infrastructure regulation (EMIR) which rules over over-the-counter (OTC) derivatives, central counterparties and trade repositories. See Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories, available at <eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012R0648>.

199 described by Hacker and Thomale (2018) as an “attempt to extend regulation in order to
200 catch up with the ever-changing forms of investment and speculation practices [and]
201 control the dangers they engender for the public”.

202 *b. US IPO regulatory regime*

203 In the US, the Securities Act of 1933 (Securities Act) introduces a requirement that all
204 public offerings of securities must be registered with the Securities Exchange
205 Commission (SEC),²⁸ unless they fall within one of the specified exemptions. The
206 Securities Exchange Act of 1934 (Exchange Act), essentially concerned with the
207 secondary trading of securities, introduces additional disclosure and reporting
208 requirements to ensure that investors are properly informed of the risks they
209 potentially incur. In order to protect investors, both statutes also impose a series of
210 liability for any misstatement or omission that would result in deceiving or
211 defrauding the investors.²⁹

212 Because these two statutes only apply to the offering of securities, it is important to
213 define the term. A “security” – as defined in the Securities Act (s 2(a)(1)) and the
214 Exchange Act (s 3(a)(10)) – comprises “any note, stock, bond, debenture, evidence of
215 indebtedness, certificate of interest or participation in any profit-sharing agreement,
216 transferable share, investment contract, investment contract, or instrument “commonly
217 known as a security”. The scope of this definition is quite broad; in particular, the
218 notion of an “investment contract” is a catch-all term that could be held to comprise a
219 large variety of financial instruments.³⁰ Whether something qualifies as an investment
220 contract is to be assessed in light of the landmark Supreme Court case *SEC v Howey*
221 (1946)³¹ – which gave rise to the *Howey* test,³² used to determine the legal
222 qualification of financial instruments that do not fit into the traditional categories of
223 securities.³³ The *Howey* test is based on four core criteria, which must all be met for
224 a contract to qualify as an investment contract, and therefore as a security: (i) it must
225 have been issued as a result of an investment of money, (ii) into a common
226 enterprise, (iii) with an expectation of profits, (iv) that mostly depends on the work of
227 others. The flexibility of this test is such that, despite having been developed back in
228 1946, it has been used ever since to bring many new (and irregular) instrument
229 vehicles under the scope of securities law.

²⁸ See the Securities Act of 1933, s 5.

²⁹ See 17 CFR § 240.10b-5. Note that a material fact has been defined to include any fact that would be important to investors when making a decision to buy or sell securities.

³⁰ See J Dax Hansen and CL Reyes, “Legal Aspects of Smart Contract Applications: Digital Asset Sales and Capital Markets, Supply Chain Management, Land Registries, Government Records and Smart Cities, and Self-Sovereign Identity” (May 2017).

³¹ See *SEC v WJ Howey Co*, 328 US 293, 298 (1946).

³² The *Howey* test dates back to a 1946 case (*Securities and Exchange Commission v WJ Howey Co*, 328 US 293) whereby it had to determine whether a leaseback agreement should legally be considered an “investment contract”, one of the types of investments that is listed as a “security” under the Securities Act of 1933 and the Securities Exchange Act of 1934.

³³ See *Landreth Timber Co v Landreth*, 471 US 681, 690 (1985).

230 Specific exemptions exist, usually targeted at a certain category of issuers or investors.
231 Regulation A³⁴ – later reformed into Reg A+, following the implementation of s 401 of
232 the Jumpstart Our Business Startups (JOBS) Act in 2015³⁵ – exempts small and medium-
233 sized companies from the onerous requirement to register with the SEC registration,
234 provided that they do not raise more than US \$20 m (Tier 1) or US \$50 m (Tier 2) in
235 a 12-month period. The general public can invest in these securities offerings,
236 although non-accredited investors³⁶ are limited in the amount of money they can
237 invest under Tier 2.

238 Regulation D (Reg D) – as amended after the implementation of the JOBS Act –
239 provides an additional set of exemptions from SEC registration for any company
240 willing to raise capital through an unregistered private offering, ie an offering that is
241 not made available to the public at large, but rather is limited to accredited investors.
242 Rule 504 is concerned with offerings up to US \$5 m over a 12-month period. While
243 it precludes registration with the SEC, issuers must nonetheless fulfil the registration
244 requirements imposed by the laws of each and every state in which securities are
245 offered for sale. Rule 506 is more advantageous because it allows securities issuers to
246 raise an unlimited amount of capital and it preempts blue-sky laws, meaning that
247 issuers do not need to comply with state-based registration requirements. The
248 exemption is split into two options, depending on the manner in which the security
249 offering is done. If the issuers do not wish to engage in general solicitation or
250 advertising to market their securities, they are entitled under Rule 506(b) to sell their
251 securities to an unlimited number of accredited investors and up to 35 non-accredited
252 investors who are sufficiently sophisticated to evaluate the merits and risks of the
253 investment. If the issues do engage in general solicitation or advertising, they are
254 entitled under Rule 506(c) to sell their security only to accredited investors, and the
255 burden is on the issuers to determine that each purchaser does indeed qualify as an
256 accredited investor. While securities offerings done under the Reg D exemption do
257 not need to register with the SEC, issuers are nonetheless required to file a Form D,
258 which comprises a limited amount of information about the company and the
259 offering. Moreover, except in limited circumstances, Reg D requires that securities
260 sold under this exemption be “restricted” in that they cannot be sold on the secondary
261 market for a period of at least six months or a year.

262 Finally, Regulation S (Reg S) provides a safe harbour for any securities offering
263 undertaken outside of the US, whether it is done by an US or a foreign entity. It
264 relates to both securities issuance on the primary market (Rule 903) and resale on the
265 secondary market (Rule 904). It distinguishes securities offerings into three separate
266 categories. Category 1 imposes the fewest restrictions and, in particular, does not

³⁴ This regulation is found under Title 17 of the Code of Federal Regulations, part 230, ss 251–263 – 17 CFR §230.251 ff.

³⁵ The Securities and Exchange Commission adopted final rules to implement s 401 of the Jumpstart Our Business Startups Act by expanding Regulation A into two tiers on 25 March 2015. Reg A+ came into force on 19 July 2015.

³⁶ In the US, the term “accredited investors” is used by the SEC (under Regulation D) to refer to investors who are financially sophisticated and able to properly evaluate the risk and rewards provided by more complex securities and investment opportunities, and therefore have a reduced need for the protection provided by regulatory disclosure filings. They include natural high net worth individuals (ie investors who have a net worth over \$1 million or an annual income over \$200,000), banks, insurance companies, brokers and trusts.

267 impose any lock-up period for the resale of securities. In order to benefit from this
268 exemption: (a) the issuer must qualify as a “foreign private issuer” (ie a company
269 owned at least 50% by a non-US person) that (b) reasonably believes there is no
270 “substantial US market interest” in the securities, and (c) the transaction must qualify
271 as an “offshore transaction”, meaning that the offer has not been made to any person
272 located in the US, and the buy order originates from a person that is reasonably
273 believed to be located outside of the US, or the transaction is performed via a foreign
274 security exchange that is located outside of the US. Category 2 applies to any
275 company that fails the requirements for Category 1 but nonetheless qualifies for the
276 reporting requirements of the Securities Exchange Act. It imposes a 40-day lockup
277 period on the resale of securities, along with additional restrictions such as the
278 prohibition to sell securities to US persons even if located outside of the US.
279 Companies that fail to qualify for both Category 1 and 2 (eg US issuers or foreign
280 private issuers that do not file periodic reports with the SEC) may fall under Category
281 3, which imposes a lockup period of one year before the securities can be sold on the
282 secondary market.

283 **2. Policy objectives and underlying principles for the regulation** 284 **of crowdfunding**

285 Crowdfunding is generally understood as the act of soliciting a large number of small
286 individual investments or contributions from a large number of people, usually via
287 the Internet. The goal is to collect and commit funds to the achievement of a
288 particular project or initiative – eg the production or provision of a particular good or
289 service – that will ultimately benefit the funders, either directly or indirectly.
290 Crowdfunding is particularly useful for small enterprises, startups and early-stage
291 initiatives that cannot rely on institutional funding sources.

292 It is possible to distinguish the different modalities of crowdfunding into four distinct
293 categories.³⁷

294 (i) **Reward-based crowdfunding**, whereby funders receive non-financial rewards
295 in return for their contributions (eg merchandising like t-shirts and CDs, specific
296 privileges such as VIP tickets and backstage access to concerts, or actual products
297 in the case of pre-sales). The rewards or “perks” are usually dependent on the
298 amount of contribution provided by each individual funder, where the greater
299 the contribution the better the rewards will be. Reward-based crowdfunding is
300 often geared towards the support of creative endeavours, like film or music
301 production, concerts, books or other artistic projects. The financial
302 contribution provided by funders is motivated by a combination of intrinsic
303 and social motivations, along with a desire for the rewards. Depending on the
304 modalities, the contributions can be regarded either as a plain donation or as

³⁷ P Pazowski and W Czudec, “Economic Prospects and Conditions of Crowdfunding” in Proceedings of Management, Knowledge and Learning International Conference 2014, 25–27 June 2014, Portoroz, Slovenia, pp 1079–1988, available at <www.toknowpress.net/ISBN/978-961-6914-09-3/papers/ML14-685.pdf> (last accessed 4 July 2019).

305 an actual pre-purchase. While the process does not necessarily need to be done via
306 online means, it has become highly popularised with the advent of the Internet,
307 which has spurred the emergence of a large number of crowdfunding platforms –
308 Kickstarter and IndieGogo are today two of the most popular examples of this
309 type of crowdfunding.³⁸

310 (ii) **Equity crowdfunding**, whereby funders are rewarded with an equity stake in a
311 private company in return for their contributions. Funders essentially engage in
312 profits/revenues sharing with the particular business or initiative they are
313 investing in, and can also be granted voting rights. Equity crowdfunding is
314 particularly common for early-stage companies and startups which are not
315 sufficiently established to attract venture capital investments. It can also be
316 used as a form of *investment fund*, aggregating the funds of multiple small
317 investors that collectively purchase shares in a company; or as a typology of
318 *collective investment*, whereby the contributions of multiple funders are
319 combined into a large and diversified portfolio. The contribution provided by
320 funders is mostly motivated by financial rewards, as funders generally expect
321 the businesses they invest in to be successful and to generate a significant
322 return on investment, through dividends or shares appreciation. In all cases,
323 the financial contributions can be assimilated to an investment, and the equity
324 stakes granted to the investors are essentially securities.

325 (iii) **Lending-based crowdfunding**, whereby borrowers can borrow money directly
326 from lenders, without any financial institution. This type of crowdfunding is used
327 in the context of *micro-financing*, for early-stage businesses and initiatives
328 seeking debt-based capital, and in the context of *peer-to-peer lending*,
329 whereby individuals use their savings to issue micro-loans to other individuals
330 in need, at a particular interest rate. Lending-based crowdfunding represents a
331 potential alternative to bank credit, especially in the developing world. Risks
332 are lower because of the direct connection between lenders and borrowers
333 and, where a secondary market for micro-loans exists, systemic risk is also
334 reduced because a lender's strategy is only dictated by the solvency of
335 borrowers in the loan portfolio, rather than on the strategy of other lenders.
336 Yet, because of the peer-to-peer nature of these transactions, financial
337 intermediation is usually done by Internet platforms that connect lenders and
338 borrowers directly. To further reduce risks, these platforms often implement
339 a credit-score system, and retain some of the risk they facilitate (eg by co-
340 investing in the loans or establishing funds to absorb the first losses).

341 (iv) **Donation-based crowdfunding**, whereby individuals donate funds to a
342 particular project or initiative, often with a social or philanthropic purpose,
343 without receiving anything in return. Funders' motivations, in this case, are
344 mostly based on social or intrinsic motivations, and the contributions provided
345 are simple donations.

³⁸ According to Investopedia, Kickstarter is the most well-known name in crowdfunding and arguably the most active platform, raising over \$2 billion since its launch in 2009. Indiegogo comes next, as the second major crowdfunding platform, raising over \$1 billion since its inception in 2007. See <www.investopedia.com/small-business/top-crowdfunding-platforms/>.

346 Given the particularities of these different modalities, they do not all fall within the
347 same regulatory framework. Equity-based and lending-based crowdfunding are – by
348 virtue of their financial returns and risk elements – likely to fall under the umbrella of
349 securities regulations, whereas donation-based and reward-based crowdfunding are
350 much less likely to be concerned with these types of regulations.

351 *a. European crowdfunding regulatory framework*

352 In Europe, crowdfunding represents an alternative to bank lending, which is often
353 difficult to secure for small enterprises and startups who do not yet have any credit
354 history or sufficient collateral. Crowdfunding is generally done via online platforms
355 that operate as intermediaries between the projects, or entrepreneurs, requesting
356 financial support through an open call to the public, and those who provide funds to
357 these projects. However, as of today, the market for crowdfunding in Europe is not as
358 developed as in other parts of the world, most notably the US. One of the main
359 hurdles is the lack of a common regulatory framework across the EU, which
360 significantly increases the compliance and operational costs for crowdfunding
361 platforms willing to offer their services in multiple EU countries.

362 European crowdfunding regulation essentially distinguishes between investment-
363 based crowdfunding and lending-based crowdfunding.

364 Investment-based crowdfunding platforms generally have to be authorised under the
365 MiFID II, and therefore benefit from a passport to carry out regulated services and
366 activities throughout the EU. However, according to Article 3³⁹ of MiFID II, member
367 states have the option to exempt some firms from registering as an “investment firm”
368 under specific conditions (Art 3.1), and provided they comply with analogous
369 requirements to those required by the Directive (Art 3.2). Under this framework,
370 authorised platforms can carry on crowdfunding-related services and activities at the
371 national level, also in relation to MiFID financial instruments. However, these
372 platforms are not allowed to passport their activities across the EU, unless they seek a
373 full MiFID authorisation.

374 Lending-based crowdfunding usually entails three main activities: credit
375 intermediation, money handling and debt collection. Lending platforms act as
376 intermediaries providing services that allow borrowers to obtain a (mostly unsecured)
377 loan, and lenders to invest in the loan in exchange for a financial return. Unlike the
378 traditional banking model, lenders, rather than platforms, invest in loans to borrowers,
379 unless platforms also choose to invest their own funds. These investments can yield a
380 higher return than saving accounts offered by banks, but will typically be subject to
381 higher risk. No regulatory safeguards (such as bank deposit guarantee schemes or
382 investor protection schemes) protect these investments. Hence, if the borrower
383 defaults or the platform becomes insolvent, lenders risk losing part or all of their
384 investment. Proper credit risk management and money handling are therefore vital for
385 the viability of the platform in the longer run, and for the protection of lenders and
386 borrowers.

³⁹ See <www.esma.europa.eu/databases-library/interactive-single-rulebook/clone-mifid-ii/article-3-0>.

387 The regulatory framework for crowdlending activities significantly differs from one
388 member state to another. Rules range from licensing requirements specific to
389 crowdfunding activity under bespoke regimes to general trade licenses needed at
390 national level in order to operate on the market and to provide consumer credit or
391 credit brokerage services. There are also instances when platforms operate under a
392 payment institution licence under the Payment Services Directive.

393 These diverging national legislations for both investment-based and lending based
394 crowdfunding make it particularly cumbersome for online platforms to operate across
395 borders. Crowdfunding is thus generally done through national platforms operating in
396 their home market, simultaneously reducing the number of projects that investors can
397 fund and the pool of investors that entrepreneurs can raise money from.

398 In order to address these issues, the European Commission has launched the FinTech
399 Action Plan,⁴⁰ with a view to establishing a more competitive and innovative European
400 financial sector. As part of this plan, the European Commission recently adopted a
401 proposal for a Regulation on European Crowdfunding Services Providers
402 (Crowdfunding Regulation).⁴¹ The goal is to establish an optional set of unified rules
403 for crowdfunding in the EU single market, which will operate as a supplement to
404 existing national rules. Hence, any crowdfunding service provider operating in
405 Europe will be able to choose whether to comply with a multiplicity of national
406 regimes, or whether to abide by this unified set of rules that will enable it to operate
407 across borders. We delineate below the core aspects of the proposed regulation.

408 First of all, in order to operate in the EU single market for crowdfunding, an entity will
409 need to register as a “crowdfunding service provider” with the European Securities and
410 Markets Authority (ESMA) and provide ongoing information concerning its operations
411 and procedural standards. While this registration and authorisation process is more
412 cumbersome than that required by many of the national competent authorities (NCA),
413 it bears the advantage that, once approved, these crowdfunding service providers will
414 obtain a passport enabling them to operate EU-wide crowdfunding offers, without the
415 need to comply with local jurisdictions.

416 However, the benefits of these EU-wide crowdfunding rules are limited to
417 crowdfunding offers that do not surpass the threshold of €1 m calculated over a
418 period of 12 months (which is substantially lower than the threshold provided for
419 other national jurisdictions⁴²). Crowdfunding platforms also need to comply with
420 specific transparency and disclosure requirements in order to protect investors against
421 possible frauds and investment risks. In that regard, crowdfunding service providers
422 are required to provide clear and precise information about the financial risks
423 associated with the projects hosted on their platform, including selection criteria and
424 insolvency risks. They should also make sure that the entrepreneurs or projects
425 seeking public funds through their platform provide prospective investors with a

⁴⁰ See <ec.europa.eu/info/sites/info/files/180308-action-plan-fintech_en.pdf>.

⁴¹ See <ec.europa.eu/info/publications/180308-proposal-crowdfunding_en>, and see <www.europarl.europa.eu/doceo/document/A-8-2018-0364_EN.html> for a full text of the proposal.

⁴² For instance, in Austria, the Alternative Financing Act (AFA) makes it possible to raise up to €2 m with a simple informational leaflet, without having to undergo any cumbersome registration and authorisation from the national competent authority.

426 proper information sheet describing the expected benefits and risks of the investment.
427 Finally, in order to avoid conflicts of interests, crowdfunding service providers are
428 under the obligation to disclose to investors any (financial) relationship they bear
429 with the projects hosted on their platform, and are nonetheless limited in the amount
430 of funds they can contribute to these projects.

431 This proposed Regulation came along with an additional proposal for a new Directive⁴³
432 amending the MiFID II Directive. The aim is to add crowdfunding service providers to
433 the list of exempted entities to which the Directive does not apply, thereby precluding
434 them from the obligation to obtain a licence as an investment firm.

435 *b. US crowdfunding regulatory framework*

436 Securities regulations are triggered when investors are committing funds to a project or
437 initiative, in exchange for potential profits generated by others. Many traditional
438 investment instruments fall within these regulations – including stocks, bonds, notes
439 and the broader category of investment contracts. As previously described, in the US,
440 the *Howey* test had been used for determining whether any given investment qualifies
441 as an investment contract, and should therefore be subject to security laws. Although
442 not designed with crowdfunding in mind, this test is sufficiently broad and flexible to
443 catch a large portion of the investment-based and lending-based crowdfunding
444 activities described above. Hence, for a long time in the US, equity crowdfunding
445 and micro-financing could only be done with accredited investors (in accordance with
446 Regulation D of the SEC regulations).

447 In many jurisdictions, however, crowdfunding has been specifically exempted from the
448 scope of securities regulations, and has thus been granted a more lenient regulatory
449 framework, intended to strike a balance between the need for experimentation and the
450 demand for more lightweight fundraising procedures for small companies on the one
451 hand, and the need to protect investors against frauds and market failures on the other.

452 Despite its strict securities regulations, the US has eventually also followed that path.
453 On 16 May 2018, Title III of the JOBS Act came into effect, with a new Crowdfunding
454 Regulation from the SEC, allowing for early-stage businesses and startups to offer and
455 sell securities to the public at large (not only accredited investors) without having to
456 register with the SEC, according to specific conditions.

457 First, in order to benefit from the exemption, equity crowdfunding must be done via an
458 SEC-registered intermediary – eg broker-dealers or funding portals regulated under the
459 Financial Industry Regulatory Authority (FINRA). Amongst other things, these
460 intermediaries are required to provide educational material to help investors
461 understand their risks, and provide sufficient communication channels to facilitate
462 discussion about their different offerings.

463 Other limitations apply concerning the amount of funds that can be raised and/or
464 invested. On the one hand, the maximum amount of money that can be raised from
465 crowdfunding over a period of 12 months is limited to \$1,070,000. On the other

⁴³ See ec.europa.eu/info/law/better-regulation/initiative/1617/publication/181362/attachment/090166e5b9153a6a_en.

466 hand, investors are limited in the amount of money they can invest over the course of one
467 year. If their annual income or net worth is less than \$107,000, they cannot invest more
468 than \$2,000 or 5% of their annual income or net worth (whichever is higher); otherwise,
469 they can invest 10% of their annual income or net worth, up to a maximum of \$107,000.

470 Moreover, it has to be noted that, if the investment relates to securities, investors are
471 generally prevented from trading these securities for one year, unless they are sold back to
472 the issuer, to an accredited investor, or to a member of the family of the purchaser.

473 Finally, even if under the Crowdfunding Regulation security issuers do not need to
474 comply with the whole set of SEC regulations, if they raise more than \$100,000 in
475 funds, they nonetheless need to communicate a prospectus to the SEC, to the
476 intermediary on which the securities are offered, and to the investors. Additional
477 audits must be communicated if the fundraising goes over \$500,000. The prospectus
478 is much more lightweight than that required under standard SEC regulations. It must
479 include, inter alia, the name of the company's directors, officers, and significant
480 shareholders, along with their business experience; a description of the company's
481 business and business plan; an analysis of the investment's risk; an overview of the
482 company's current financial conditions; as well as the exact price of securities or the
483 method used for determining their price.

484

III. THE ADVENT OF BLOCKCHAIN TECHNOLOGY AND ICOs

485 This section will look at how the practices of raising public funds and resources have
486 evolved over the last few years, focusing in particular on the phenomenon of ICOs
487 that emerged with the advent of blockchain technology. To help the reader
488 understand the similarities and distinctive features of an ICO, when compared to
489 other fundraising mechanisms, such as IPOs or equity crowdfunding, we provide here
490 an overview of the general timeline and main steps necessary for undertaking an ICO.

491

1. The ICO process

492 An ICO consists in issuing a set of "tokens" on top of a blockchain infrastructure, and
493 offering them to the public in exchange for a financial contribution, as a means to raise
494 funds for the development of a particular blockchain-based project or initiative, to which
495 these tokens are inherently linked (see below for an overview of how these tokens might
496 related to the project at hand). So far, a large majority of ICOs have been performed on top
497 of the Ethereum⁴⁴ blockchain (typically using the ERC20 token standard⁴⁵). Yet, other
498 blockchain solutions exist (such as Stellar, Neo,⁴⁶ or Waves⁴⁷ to name a few) proposing
499 similar opportunities to token issuers. Though it is not the focus of this paper,
500 compatibility with existing crypto-wallets and the ability to list ICO tokens on crypto-

⁴⁴ See <techcrunch.com/2017/06/08/how-ethereum-became-the-platform-of-choice-for-icod-digital-assets/>.

⁴⁵ See <theethereum.wiki/w/index.php/ERC20_Token_Standard>.

⁴⁶ See <themerkle.com/can-neo-become-chinas-go-to-platform-for-icos/>.

⁴⁷ See <wavesplatform.com/>.

501 exchanges for secondary trading are key elements for token issuers in choosing a
502 particular blockchain solution.

503 Regardless of the blockchain being used, we can break down a standard ICO timeline
504 into three different phases: (i) prior to, (ii) during, and (iii) after the contribution period,
505 but before the launch of the project. We briefly describe below the main objectives and
506 considerations of each phase.

- 507 (i) Prior to the contribution period, a potential token buyer must exercise due
508 diligence in assessing the characteristics of the ICO project, the specificities of
509 the token sale, as well as the success or risk factors attached to it. Additional
510 steps might need to be performed by token issuers for all these token sales
511 which are restricted to accredited investors meeting minimum income or net
512 worth requirements (eg Filecoin⁴⁸), or those requiring the identification of all
513 buyers in order to comply with Know Your Customers (KYC) and Anti-
514 Money Laundering (AML) regulations. Because of regulatory pressures in
515 many jurisdictions, these practices of “whitelisting” have been used in a
516 variety of ICOs, such as Aventus, Airswap or Polkadot, etc.⁴⁹
- 517 (ii) The contribution period might range from a few seconds (eg Brave’s ICO) to a
518 couple of weeks (eg TheDAO), or even a year (as in the case of EOS token sale).
519 The period can be fixed in time, or capped by a particular threshold. Contributions
520 are usually made through dedicated websites owned and managed by the
521 respective project teams. The modalities and amounts of contributions are
522 determined according to different schemes, whose rules are announced to the
523 public prior to the ICO launch. For instance, some ICOs may rely on specific
524 auction mechanisms determining the closure of the contribution period once a
525 specific cap (ie a preset maximum amount) has been reached (eg Gnosis⁵⁰);
526 others may be cancelled if a floor (ie a preset minimal amount) has not been
527 attained over the contribution period (eg Snips⁵¹). Moreover, these schemes
528 might include a variety of incentive mechanisms in order to lure people into
529 purchasing more tokens, at an earlier stage. As we have learned from the
530 economics of competitive bidding,⁵² different auction structures might lead to
531 different types of results. It is thus important for token buyers to study and
532 understand the contribution schemes prior to participating in an ICO.
533 Sometimes, however, the auction mechanisms are too complex to be precisely
534 understood by all potential token buyers.⁵³ In light of this, specialised ICO
535 firms are emerging with new intermediaries providing technical assistance,
536 advisory and rating services.⁵⁴ Contributors who are unfamiliar with

⁴⁸ FileCoin (August 2017) was the first ICO exclusively restricted to accredited investors.

⁴⁹ For a list of ICO who have been using an investor’s white list as part of their KYC procedure, see <www.reddit.com/r/ico/crypto/comments/76e1zb/current_list_of_icos_where_whitelist_is_active/>.

⁵⁰ See <gnosis.pm>.

⁵¹ See <snips.ai>.

⁵² PR Milgrom, *Economics of Competitive Bidding* (Cambridge University Press 1985) p 261.

⁵³ For instance, Polkadot used a Spend-All Second-Price Dutch Auction for their recent ICO (October 2017).

⁵⁴ The reader may for instance consult <icorating.com> or <icobench.com>.

537 cryptocurrency transactions might get assistance through dedicated online
538 forums and chat channels – such as Reddit or Slack – that fundraisers usually
539 open for this specific occasion. Finally, while contributions have mostly been
540 made with bitcoins or ethers so far, a few ICOs also make it possible to
541 contribute in fiat currency (eg through SEPA wires in Europe).⁵⁵

542 (iii) Once the contribution period is over, funds (which are typically escrowed by
543 the blockchain-based system that underpins the ICO) are released to those in
544 charge of pursuing the development of the funded project. In many cases, the
545 fundraising teams will try to get the token “listed” on crypto-exchanges to
546 establish a liquid secondary market, allowing token holders to exchange their
547 newly acquired tokens against other crypto-assets⁵⁶ or other listed tokens.
548 Exchanges may also decide to create futures or other types of derivative
549 contracts on the underlying tokens.⁵⁷ As a result, it is not uncommon for
550 investors eager to maximise their short-term financial gains to engage in “hit-
551 and-run” (aka “flipping coins”) practices, whereby recently acquired tokens
552 are dumped during the first day/minutes/seconds of their listing, thereby
553 significantly decreasing the market value of these tokens. Such risks should
554 be taken into account when considering whether to participate in an ICO, as
555 the high volatility of the token value might significantly increase the financial
556 risk profile of the token sale. In order to prevent these practices, some ICOs
557 introduced a lock-in period, during which investors are unable to transfer their
558 tokens for a particular amount of time after the end of the contribution period.
559 At the same time, lockups on the side of token issuers may also be required to
560 protect token holders. As in the case of IPOs, a lockup over token issuers
561 essentially acts as a “commitment device to alleviate moral hazard
562 problems”⁵⁸ derived from the uncertainty surrounding the actions of the
563 managers (aka token issuers) in the aftermath of the offering – as they may
564 not always be motivated to act in the best interests of shareholders (aka token
565 holders in the case of an ICO). In the context of an IPO, a lockup is intended
566 to reduce the ability of insiders to take advantage of investors, by preventing
567 them from executing an early sale of their stock that would reduce their
568 commitment to the company and ultimately disincentivise them to focus on
569 future share price performance. Similarly, ICO lockups are intended to
570 encourage token issuers to focus on the medium-term success of the project,
571 and to reduce their incentives to engage in short-term “sell and resign”
572 strategies. It is interesting to notice that, while ICOs may use two different
573 forms of lockups (one applied to token issuers to protect investors, and the

⁵⁵ DomRaider, for instance, offered their token buyers the possibility to use SEPA wires during their ICO (September 2017).

⁵⁶ Since the term cryptocurrency has been criticised by various economists, because so-called cryptocurrencies do not meet traditional currency standards, we will use the term crypto-asset which is far less controversial.

⁵⁷ For instance, HitBTC (<hitbtc.com/>) has a specific ICO trading section while BitMex (<www.bitmex.com/>) offers crypto-asset futures trading.

⁵⁸ A Brav and PA Gompers, “The Role of Lockups in Initial Public Offerings” (2003) 16(1) Review of Financial Studies 1.

574 other applied to investors to protect token issuers against “pumps and dumps”
575 schemes), IPOs generally only rely on the former, and do not prohibit
576 investors from selling their newly purchased securities shortly afterwards.
577 Such a restriction would, in fact, be administratively impossible to enforce in
578 the securities post-trade infrastructure, whereas it is relatively easy to achieve
579 on a blockchain-based platform.

581

2. Different token types

582 While each ICO is unique and idiosyncratic in the way the token sale is designed, the
583 proposed project is framed, and potential investors are reached out to, it is
584 nonetheless possible to categorise the tokens issued by these ICOs into a few broad
585 categories. Indeed, any blockchain-based token is designed to give its holder the
586 option to exercise specific digital rights. The nature of these rights ultimately depends
587 on the infrastructural design of the blockchain-based system on which these tokens
588 have been issued, as well as on the function assigned to (or assumed by) these
589 tokens, ie the various products or services that they provide access to. In addition,
590 insofar as they have been listed on cryptocurrency exchanges,⁵⁹ ICO tokens can be
591 exchanged against fiat currency or other cryptocurrencies.

592 Depending on the underlying scheme and protocol design, the rights granted to token
593 holders can be exercised in a variety of ways. Some blockchain-based systems might
594 require tokens to be (i) held (ie kept in the holder’s account for a particular amount of
595 time); (ii) “staked” (ie locked into the token holder’s or a third-party’s account); (iii)
596 “spent” (ie transferred to a third-party account); or (iv) “burnt” (ie destroyed after
597 use). Different rights can be obtained or exercised as a result of these functions. For
598 instance, holding a token representing an asset at a certain date can give rights to
599 future dividends; staking a token into a particular account can grant token holders
600 decision-making power proportional to their token stake; whereas purchasing a
601 product or accessing a service might require the token holders to either transfer or
602 burn a specific amount of tokens.

603 As a general rule, it is possible to categorise the rights associated to an ICO token into
604 four broad categories: (i) rights of usage; (ii) rights of participation; (iii) rights to profits;
605 and (iv) rights of ownership. These rights are not exclusive to one another, in that the
606 same token could simultaneously grant the holder with the right to use a particular
607 blockchain infrastructure, participate in its governance, and/or receive a share of
608 future dividends.

609 We provide below an example for each of these four categories:

⁵⁹ It would be appropriate to use the term foreign exchange (FX) rate if it was established that crypto-currencies can be indeed considered currencies. This is not the case across all jurisdictions, though in the EU, a landmark judgment was delivered in October 2015 by the Court of Justice of the European Union holding that “transactions to exchange traditional currencies for units of the ‘bitcoin’ virtual currency (and vice versa) [should be] exempt from VAT under the provision concerning transactions relating to “currency, bank notes and coins used as legal tender”, effectively giving Bitcoin a currency status. Source: <curia.europa.eu/jcms/upload/docs/application/pdf/2015-10/cp150128en.pdf>.

- 610 (i) *Right of usage*: eg Filecoin is a utility token that enables token holders to use a
 611 decentralised cloud storage network; the Golem Network enable tokens holders
 612 to access and use a decentralised supercomputer aggregating the processing
 613 power of many network nodes; Ether enables token holders to deploy computer
 614 code on the Ethereum blockchain and/or transact with it; bitcoins – in addition
 615 to being used as a means of payment – also entitle the cryptocurrency holders
 616 to using the Bitcoin network as a decentralised payment system.⁶⁰
- 617 (ii) *Right of participation*: eg DAOstack’s reputation tokens enable token holders to
 618 vote on specific content or governance proposals, where the influence depends on
 619 the number of tokens they hold; whereas holders of the MakerDAO’s governance
 620 tokens (MKR) are entitled to vote for the risk management and business logic of
 621 the MakerDAO system.
- 622 (iii) *Right to profits*: eg Polybius digital bank created the Polybius Dividend Tokens
 623 (PLBT) in order to reward its investors. At the end of each financial year, 20% of
 624 Polybius’ distributable profit is redistributed to the PLBT holders, according to
 625 specific conditions; TheDAO⁶¹ tokens gave holders the right to collect shares of
 626 profits generated by the decentralised investment fund. It should be noted that
 627 TheDAO tokens were also associated with other rights, such as participation
 628 and usage rights.
- 629 (iv) *Right of ownership*: eg the DGX tokens, issued by Digix, act as a certificate of
 630 ownership, which can be redeemed for one gram of gold; Tether (USDT), USD
 631 Coin (USDC), and Paxos (PAX) are stable tokens⁶² which are – allegedly –
 632 backed by an equivalent amount of dollars; the Cryptokitties⁶³ are non-
 633 fungible tokens on the Ethereum blockchain associated with a digital kitty,
 634 owned by whoever holds the corresponding token.

635 Building upon this typology, it is possible to categorise ICO tokens into the following four
 636 main functional categories – taking into account that many tokens are likely to fall within
 637 one or more of these categories: (i) *utility tokens*, giving rights of access to a particular
 638 product or service; (ii) *participation tokens*, giving rights to participate in the
 639 governance of a specific project;⁶⁴ (iii) *investment tokens*, giving rights to dividends or
 640 other financial returns, based on the profits generated by a particular project; and (iv)
 641 *asset-backed tokens* giving rights of ownership over an underlying asset, be it either a
 642 commodity or a specific piece or property. We summarise this typology in Table 1.

643 It has to be noted, however, that some ICO tokens might have a plurality of functions.
 644 For instance, TheDAO token constitutes a governance token (because it provides voting

⁶⁰ It may seem slightly counterintuitive to use BTC as an example of a token giving a right of usage as bitcoins have been identified as a means of payment; however, strictly speaking, spending bitcoins is necessary to use the Bitcoin network. Indeed, even if it is an open and permissionless infrastructure, using the Bitcoin network is not free: today, in order to send bitcoins through the Bitcoin network, one will have to spend a specific amount of bitcoins, as a transaction fee.

⁶¹ See <github.com/TheDAO>.

⁶² A stable token is designed to have a constant value in a given reference currency – eg a token always worth \$1 is a \$-stable token.

⁶³ See <www.cryptokitties.co/>.

⁶⁴ These can also be qualified as “voting tokens”.

Table 1. A functional token typology

Token types	Function	Examples
Utility token	Right to access a specific service provided by a blockchain system	 Filecoin  bitcoin  ethereum  Golem (GNT)
Participation token	Right to vote or participate in the governance of blockchain systems	 DAOstack  MAKER
Investment token	Right to receive profits generated by a particular blockchain project	 polybius  The DAO
Asset-backed token	Ownership right to a physical, digital, or intellectual resource	 DIGIX  tether  USD Coin  CryptoKitties  PAXOS

644 rights to the token holders), a utility token (because it enables token holder to submit
 645 proposals to the decentralised investment fund), and an investment token (in that it
 646 provides some dividends to token holders, based on the profits generated by the
 647 projects that the fund has invested in). At the same time, tokens which have been
 648 designed with a particular function in mind (eg Bitcoin, Polybius or Digix) might end
 649 up assuming a different role in the mind of investors, who might be tempted to
 650 purchase a token not because of its intrinsic value (ie the product or service it
 651 provides access to) but rather because of an expectation of profits resulting from the
 652 speculative dynamics found in the secondary market for that token.

653 With this in mind, it should be clear that it is not possible to reduce any ICO token to a
 654 particular legal category by looking only at the technical implementation of the ICO. One
 655 should also consider the function assigned to these tokens, the actual use that is made of
 656 that token, and the underlying intentions of the investors at the time of purchase. The
 657 regulation of ICOs, and the legal qualification of ICOs tokens, may therefore require
 658 a much more in-depth analysis of the contingencies at play within these systems. In
 659 the following section, we provide an analysis based on the notion of functional
 660 equivalence, in order to determine the extent to which any given ICO may fall within
 661 the scope of existing financial regulations.

662 IV. FUNCTIONAL EQUIVALENCE FOR THE REGULATION OF ICOs

663 Blockchain technologies provide new opportunities for experimenting with new ways of
 664 raising money. Yet, given the specificities of blockchain technologies, it is difficult to
 665 establish in which of the existing regulatory frameworks (if any) they should fall into.

666 Indeed, while these new fundraising mechanisms present significant similarities with
667 existing fundraising processes, they nonetheless distinguish themselves on a variety
668 of aspects, making it difficult to understand precisely how these new practices should
669 be regulated. Is the issuance of blockchain-based tokens to be considered the same as
670 the issuance of securities? Does a token sale qualify as the execution of an
671 investment contract? Can it benefit from the crowdfunding exemption provided by
672 many jurisdictions around the world? This section relies on the doctrine of *functional*
673 *equivalence* to analyse whether token sales and ICOs shall be assimilated to existing
674 fundraising practices – and therefore subject to a similar regulatory framework – or
675 whether they are sufficiently different to justify a separate set of rules and regulations.

676 **1. The concept of “functional equivalence”**

677 In the late 1990s, the advent of e-commerce posed several challenges to the existing
678 regulatory framework. The digital environment brought many new opportunities for
679 electronic commerce, enabling users to transfer digital content or other virtual goods
680 through the Internet, and pay for these goods via electronic means. But these new
681 opportunities also came along with many uncertainties as to the way in which
682 existing rules and regulations would apply to these electronic transactions.⁶⁵ First and
683 foremost is the question of the legal classification of these digital goods: Is the sale of
684 a digital music file the same as the sale of a physical disk? Is it possible to rent a
685 digital movie file in the same way as one can rent a VHS in a store? What does it
686 mean to “own” a digital good? etc. Secondly, e-commerce transactions have given
687 rise to many new contract types, such as the Terms of Uses, the so-called “click-
688 wrap” licences, and other flavours of contracts of adhesions. These contractual
689 transactions are no longer signed on paper after a one-to-one negotiation between the
690 parties, but rather are being executed through electronic means. Contractual
691 provisions are made available on a one-to-many basis, via open platforms, and
692 provided “as-is” without any possibility for negotiation.

693 In spite of the tangible differences that subsist between traditional paper transactions
694 and electronic transactions, the essence of what a transaction is has remained the same.
695 Even if the medium through which transactions are being performed has changed, from a
696 physical medium to a digital medium, online contracts are functionally identical to offline
697 contracts, at least in their objectives: both are intended to provide evidence to a common
698 agreement, giving rise to specific rights and obligations, to which both parties have
699 indicated their willingness to be legally bound. It naturally follows that electronic
700 contracts should be subject to the same provisions of traditional contract law, and
701 therefore abide by the same rules in terms of contract formation, performance, and
702 remedies. It does not follow, however, that every electronic contract will always
703 and necessarily qualify as a valid contract. Quite to the contrary, like any other
704 contractual agreement, an electronic contract needs to fulfil certain conditions in order
705 to be considered both valid and enforceable – these include offer and acceptance,
706 consideration, informed consent, writing requirement, etc. Each of these conditions

⁶⁵ EJ Koops et al, “Should ICT Regulation Be Technology-Neutral?” (2006) 9 IT & Law.

707 needs to be met, regardless of whether parties are contracting in the physical or digital
708 world. Far from having become obsolete, contract law therefore came to be regarded as a
709 crucial body of law capable of accommodating these new contracting practices and
710 regrouping them within the same general category of contracting, in spite of their
711 technical differences.

712 Yet, given that contract law was elaborated before the advent of Internet and digital
713 technology, many provisions refers to specific legal concepts which are inherently
714 bound to a tangible medium. These include the notions of a “document”, an
715 “original”, or even a “signature” or the act of “writing” – none of which had been
716 properly defined in the digital realm. Hence, in order to properly encompass
717 electronic transactions and other online practices, some adaptations to the law were
718 nonetheless required.⁶⁶

719 For the purposes of e-commerce, a preliminary step in that direction was taken through
720 the United Nations Commissions on International Trade Law (UNCITRAL)’s Model
721 Law on Electronic Commerce (MLEC), aiming to establish a series of principles to
722 give electronic transactions the same level of legal recognition as traditional paper-
723 based transactions, without requiring any extensive legal reform. This was done via
724 the introduction of the principle of *functional equivalence*, as a means of
725 incorporating electronic transactions in the context of traditional contract law.⁶⁷

726 Of course, the principle of functional equivalence needs to be applied not only at the
727 level of the contract itself, but also at the level of all of its constitutive elements. Indeed,
728 the MLEC stipulates that the “purposes and functions of paper-based requirements may
729 be satisfied with electronic communications, provided certain criteria are met”.⁶⁸
730 Accordingly, to establish functional equivalence, one must identify the appropriate
731 technical features that are necessary to replicate specific paper-based requirements
732 (such as writing, signature, original, etc). For instance, the requirement for a contract
733 to be in “written form” could be satisfied so long as the electronic transactions
734 remained accessible for future reference. Similarly, a digital signature can be regarded
735 as being functionally equivalent to a paper signature to the extent that it can be
736 attributed to a unique person and that it possesses the properties of authenticity,
737 integrity, and nonrepudiation.

738 Coming back to blockchain technologies, it might be worth investigating whether the
739 same principle of *functional equivalence* could be applied in the context of ICOs, with a
740 view to identifying, on the one hand, whether some blockchain-based tokens could be
741 regarded as being functionally equivalent to traditional financial instruments, such as
742 stocks or securities, and, on the other hand, whether some tokens might qualify as a
743 new asset-class that should therefore be regulated according to a more *sui generis*
744 framework.

⁶⁶ C Reed, “Online and offline equivalence: aspiration and achievement” (2010) 18(3) International Journal of Law and Information Technology 248.

⁶⁷ PP Polanski, “Convention on E-Contracting: The Rise of International Law of Electronic Commerce?” BLED 2006 Proceedings, 20.

⁶⁸ L Castellani, “The contribution of UNCITRAL texts to paperless trade”, United Nations Commissions on International Trade Law.

745 In a large majority of jurisdictions – with the exception of the US perhaps, whose
746 common law doctrines are sufficiently flexible to cover many of these new
747 fundraising practices⁶⁹ – most of the tokens issued during an ICO do not qualify,
748 strictly speaking, as any existing asset class, and therefore do not fall within the
749 scope of any existing regulatory framework. This is especially true in the case of civil
750 law countries, like France, Germany, or other European countries, which provide a
751 very clear and precise definition of every asset class, along with all of its constitutive
752 elements.⁷⁰

753 Just like electronic contracts have been deemed to be functionally equivalent to
754 traditional paper-based contracts – not just because they share the same purpose, but
755 because they present elements which are themselves equivalent to the constitutive
756 elements of a contract – it is worth investigating whether we could rely on the same
757 concept of functional equivalence in order to get some of the ICO tokens to qualify
758 for instance as securities, shares, stocks or other financial instruments. When
759 analysing the legal aspects of an ICO, it is therefore useful to identify what are the
760 distinctive features of a token, which – in specific circumstances, depending on the
761 technical design and practical use of that token – might qualify as being functionally
762 equivalent to a particular asset class.⁷¹

763 As in the case of e-commerce, where electronic transactions were brought into the
764 realm of traditional contract law without bringing any changes to the law, also in the
765 case of blockchain-based financial instruments, provided that all constitutive elements
766 are met – albeit in a different format than what was originally envisioned under the
767 law – it might be unnecessary to reform existing regulations, or even create new
768 regulations, and rely instead of the principle of functional equivalence in order to
769 ensure that these tokenised assets are brought within the scope of an existing
770 regulatory framework and therefore remain under the purview of the law.

771 It is, of course, unlikely that all tokens will qualify as an existing asset class, as
772 Sontakke and Ghaisas have pointed out.⁷² Some tokens might ultimately not fit into
773 any existing categories because they are actually different both in their nature and
774 function, or simply because they lack some of the core constitutive elements of that
775 class. Other tokens may be regarded as hybrid entities, with regard to existing
776 categories – just as convertible bonds exhibit both equity-like and fixed income features.

777 In that regard, drawing from the functional classification of token types presented
778 above, it appears that, while asset-based tokens and participation tokens – in their
779 purest form – do not seem to raise any specific issues with regard to securities laws,
780 the situation is much more blurry when an ICO entails the sale of investment tokens
781 and utility tokens, which could to a large extent fall under the umbrella of IPO or

⁶⁹ See eg the *Howey* test, according to which the sale of a large variety of ICO tokens might be held to qualify as an investment contract.

⁷⁰ For an in-depth overview of the distinction between civil law and common law approaches to securities regulation, see P De Filippi et al, “Regulatory Framework for Token Sales: An Overview of Relevant Laws and Regulations in Different Jurisdictions” (2018) COALA & Blockchain Research Institute Big Idea Whitepaper.

⁷¹ F Wang et al, “Financing Open Blockchain Ecosystems: Towards Compliance and Innovation in Initial Coin Offerings” (2018) COALA & Blockchain Research Institute Big Idea Whitepaper.

⁷² KA Sontakke and A Ghaisas, “Cryptocurrencies: A Developing Asset Class” (2017) 10(2) International Journal of Business Insights & Transformation 10.

782 crowdfunding regulations. The following analysis will thus focus specifically on the
783 latter two categories of tokens.

784

2. Investment tokens

785 The objectives of an IPO are relatively simple: the issuing company is looking to raise
786 capital in public markets. The decision to go public is often many-sided, but it usually
787 reflects two core motivations: (i) access to funding, ie the will of management/existing
788 shareholders to tap into a larger pool of investors and raise substantial amounts of capital
789 that would be difficult to find with private placements; and (ii) liquidity, ie the desire to
790 provide existing shareholders (seed investors, business angels, venture capitalists and so
791 forth) with an easy exit for their investment. It would be an oversimplification to state that
792 IPO investors are essentially buying into IPOs because of the pursuit of financial profit.
793 Yet, if we look at the large institutional investors that usually partake in IPOs, it is clear
794 that they are constrained by fiduciary duties, and that their primary objective is to achieve
795 the best possible financial returns for their shareholders.

796 As the name suggests, an ICO shares many similarities with an IPO. Both are used as a
797 means to raise public funds for the development of a project or initiative through the sale
798 of a particular asset, and both represent an important opportunity for previous
799 shareholders (or token holders in the case of an ICO) to close their position to
800 achieve a return on investment.

801 Sometimes, the tokens issued through an ICO might actually represent an equity share
802 or a company stock (*investment token*). For instance, shares of a company can be
803 “tokenised” and stored on a blockchain-based network, in order to facilitate the
804 trading thereof via a secure, authenticated and immutable ledger. These ICOs are
805 sometimes referred to as Securities Token Offering (STOs), because they are
806 essentially focused on the issuance of securities through a blockchain-based
807 infrastructure. This is precisely what the tZERO platform is intended to achieve,
808 providing a platform that integrates blockchain-based technologies with existing
809 market processes “to reduce settlement time and costs, increase transparency,
810 efficiency and auditability” in capital markets.⁷³ As opposed to most ICOs thus far,
811 which generally have tried to avoid their tokens being qualified as a security, the
812 tZERO ICO has actually been characterised by its own team as a “security token
813 sale” – thereby explicitly trying to bring the tZERO token into the realm of securities.
814 What’s more, the platform provides a generalised way for companies to issue their
815 own stocks on a blockchain in order to create a secure and decentralised marketplace
816 for private equity. Although they rely on an entirely new technology, these tokenised
817 shares are, for every practical purpose, equivalent to traditional shares.

818 Accordingly, whenever a token constitutes a blockchain-based representation of an
819 equity share or stock, it is possible to rely on the doctrine of functional equivalence
820 to argue that the issuance of these tokens should be regulated in exactly the same
821 way as the issuance of traditional securities. Indeed, whether a stock is represented

⁷³ See <tzero.com>.

822 via a piece of paper or via a blockchain-based token does not at all modify the function of
823 that asset.

824 There are both benefits and drawbacks to such an approach. On the one hand, the
825 inclusion of an ICO within the umbrella of securities law means that token issuers
826 will need to comply with a series of obligations and constraints that they would not
827 have to account for otherwise. On the other hand, falling into regulated waters also
828 provides an additional degree of protection, to the extent that token issuers might be
829 exempted from any additional liability risk, provided that they fulfilled the
830 requirements of all relevant laws and regulations.

831 In many cases, however, these benefits do not outweigh the costs, and token issuers
832 will therefore try to frame their ICO in such a way as to bring it outside of the scope of
833 securities law. In fact, while the objectives and operations of an IPO are clear and
834 established, those of an ICO are generally more varied and difficult to reduce into a
835 single category.

836 First of all, while both IPOs and ICOs are both intended to acquire resources for the
837 development of a specific project or initiative, as opposed to IPOs (which are generally
838 done after a company has achieved a sufficient level of maturity), ICOs are generally
839 done at a much earlier stage, to facilitate the bootstrapping of a particular project or
840 initiative. As such, an ICO shares several similarities with traditional crowdfunding
841 practices, since, when it comes to fundraising, both contribute to lowering the costs of
842 acquiring external funds. New startups typically struggle to attract externally-sourced
843 working capital early on in their corporate histories – be it venture capital equity or
844 bank loans, as the work of various scholars has shown.⁷⁴ ICOs and other crowdfunding
845 practices enable entrepreneurs and communities to finance new and experimental
846 projects that would otherwise be unable to rely on classical financing channels.

847 Moreover, in the context of many ICOs, although raising funds is the primary
848 objective, they are often other non-financial considerations that can also be found in
849 crowdfunding. IPOs typically allow corporates that have acquired a certain size and
850 stability of revenues to raise funds from various institutional investors, who will, for
851 the most part, remain passive investors. In contrast, drawing a precise line between
852 investors, consumers or supporters is not always easy – or even feasible – in the
853 context of both ICOs and crowdfunding, where those who provide the funds are also
854 those who want to access the service or use the product they are funding. Although
855 many ICO investors are motivated by the expectations of financial gains and do not
856 bother to engage in the governance of the projects they funded, in many other cases,
857 ICOs participants, just like the many backers of a crowdfunded project, are not just
858 seeking the pursuit of financial profits. They want to have a “say” in the project (not
859 just a “stake”) and are thus more likely to actively contribute to the success of the
860 project, all the more if they “enjoy community benefits that increase their utility”.⁷⁵

⁷⁴ On this topic, see P Belleflamme et al, “Crowdfunding: Tapping the right crowd” (2012) 29(5) SSRN Electronic Journal; A Berger and G Udell, “Relationship lending and lines of credit in small firm finance” (1995) 68(3) Journal of Business 351; G Cassar, “The Financing of business start-ups” (2004) 19(2) Journal of Business Venturing 261; A Cosh et al, “Outside entrepreneurial capital” (2009) 119 Economic Journal 1494.

⁷⁵ This last point is in fact assumed in Belleflamme et al, *supra*, note 74.

861 As such, network effects also play a more crucial role in the context of ICOs than they
862 do in the context of traditional IPOs. Not only do they allow for a small community to
863 potentially grow larger at a very fast pace, they also bring together a community of testers
864 and early adopters who can help the initial project go “viral”. Once the ICO is completed,
865 the token value will grow in line with the size of the community of users. Hence, similarly
866 to crowdfunding, an ICO puts in place a virtuous circle, whereby token holders also
867 become clients or consumers of the products or services they have funded.

868 Accordingly, although some ICOs can be assimilated to an IPO, the objectives and
869 operation of a majority of them are much closer to that of equity crowdfunding. In
870 line with the doctrine of functional equivalence, it is thus fair to assume that – to the
871 extent that they can comply with the regulatory constraints imposed by crowdfunding
872 regulations – an ICO could benefit from the crowdfunding exemptions that have been
873 introduced both in Europe and in the US, along with many other jurisdictions.

874 Yet, in order to benefit from these exemptions, token issuers need to comply with the
875 stringent conditions required by crowdfunding regulations, with regard to the limits on
876 the amount of funds that can be raised or invested, on the one hand, and the necessity to
877 operate through a registered intermediary, on the other hand. Indeed, while crowdfunding
878 is usually performed over a centralised digital platform (eg Kickstarter or Indiegogo), in
879 charge of curating, monitoring and, to some extent, managing the projects for which
880 funds are being sought, an ICO is typically done over a decentralised infrastructure
881 enabled by blockchain technology, and does not therefore involve any trusted
882 authority responsible for the curation and supervision of projects.

883 In light of these constraints, many token issuers have chosen not to confine themselves
884 in the realm of crowdfunding, and have been trying instead to escape from the scope of
885 regulation by highlighting the fact that – despite the functional equivalence between these
886 different fundraising practices (with regard to both IPOs and crowdfunding) – there are
887 also important differences that may place ICOs outside of regulated waters.

888 Perhaps the most important difference between ICOs and equity crowdfunding or IPOs
889 is that, because a blockchain-based infrastructure makes it possible to raise funds for
890 projects that do not have a corporate structure,⁷⁶ in many cases, the type of assets that
891 are being offered to the public through an ICO are significantly different from those
892 of an IPO. An IPO is concerned with the issuance of a company’s stock that will
893 dilute the overall ownership of the company. It typically implies a dilution of
894 shareholding rights (and hence of corporate control) for existing shareholders – unless
895 they are able to acquire newly issued shares in proportion to their existing stakes.
896 Because the bearer of a company’s shares usually gets both economic and voting
897 rights, by diluting existing shareholders, an IPO dilutes the existing shareholders’
898 control over the company, as well as their economic rights over the dividends to come.

899 An ICO, instead, generally refers to the issuance of blockchain-based tokens that do
900 not necessarily have a direct connection with a company – except where the tokens
901 represent actual shares in a company (eg in the case of an STO). As a general rule,
902 while there is often a company involved with the project or initiative that will be

⁷⁶ In all fairness, this is also true of many crowdfunded projects, although in the context of crowdfunding there is always a centralised platform (eg Kickstarter or Indiegogo) acting as the referent.

903 funded through the ICO, the tokens are issued through a foundation that will be in charge
904 of collecting the proceedings. In the most extreme cases, funds are sent directly to a
905 cryptocurrency account controlled by a handful of people, without any legal entity.
906 Hence, regardless of whether or not there is a corporate entity backing the project,
907 token issuance does not actually dilute the ownership of a legal structure. There is
908 generally no dilutive effect in terms both economic and voting rights, because the
909 tokens issued are independent from the actual shares of a company (except in the
910 case of security tokens).

911 However, although there is no formal or corporate dilution, it should be noted that, in
912 practice, an ICO might also lead to a redistribution of both voting and economic power
913 among investors, to the extent that tokens are used as a proxy to an economic interest
914 and decision-making power. Hence, even though the form changes, the function –
915 once again – remains the same.

916 TheDAO⁷⁷ represents perhaps the most notorious example of how a blockchain-based
917 initiative without any corporate entity ultimately operates like a traditional corporation.
918 TheDAO was a decentralised organisation acting as an investor-directed venture capital
919 fund, which initiated its token sale in May 2016. Even though it had no legal entity,
920 TheDAO was designed from the start to mimic – and allegedly improve – corporate
921 governance. Participants who acquired TheDAO’s tokens automatically acquired the
922 ability to vote on the projects that TheDAO would fund (proportional to each
923 participant’s stake), and the right to collect a portion of the profits generated by
924 previously funded projects.⁷⁸ Thus, despite TheDAO not being directly backed by
925 any corporate structure, participants in TheDAO’s ICO had similar expectations to
926 standard IPO investors: acquiring some degree of control over the direction of the
927 project and TheDAO’s investment decisions (*decision-making power*) and obtaining a
928 share of its future profits (*economic interest*).

929 The similarity of TheDAO tokens with traditional securities did not pass unobserved.
930 On 25 July 2017, the US SEC issued an investigative report stipulating that digital assets
931 offered and sold by “virtual organisations” are subject to the requirements of the federal
932 securities laws to the extent that they *de facto* operate as securities.⁷⁹ While, in the end, the
933 agency decided not to bring retroactive charges in this instance (because TheDAO had
934 already come to an end due to a technical glitch), the report sent a clear warning to current
935 and future tokens issuers that their activities might fall within the scope of SEC
936 regulations.

937

3. Utility tokens

938 While many ICOs have been framed or perceived as a form of investment by both token
939 issuers and token holders, and are therefore likely to qualify as securities issuances, many

⁷⁷ For further details, we recommend reading the introductory section of TheDAO’s white paper available at <download.slock.it/public/DAO/WhitePaper.pdf>.

⁷⁸ The DAO had an objective to provide a new decentralised business model for organising both commercial and non-profit endeavours.

⁷⁹ The press release can be found at <www.sec.gov/news/press-release/2017-131>, while the report itself, dubbed the “21(a) Report” by Chairman Clayton, as it refers to s 21(a) of the 1934 Securities Exchange Act, is available at <www.sec.gov/litigation/investreport/34-81207.pdf>.

940 people (especially token issuers) believe that, regardless of the amount of funds to be
941 raised, ICOs should remain outside the regulatory framework of IPOs – whose
942 expensive formalities and draconian regulations might stifle innovation in the
943 blockchain space.

944 Hence, in order to escape from the doctrine of functional equivalence, token issuers
945 have been experimenting with alternative ways of framing their tokens as something
946 that is functionally not equivalent to a security. This is what motivated the narrative
947 towards the issuance of “utility tokens” – ie tokens that represent mere access to a
948 particular product or service, rather than a speculative investment. Inspired by the
949 different types of crowdfunding, token issuers argue that because of the intrinsic
950 functionality of these tokens, the issuance of utility tokens to the public at large
951 should merely be regarded as a standard “pre-sale” contract (as opposed to an
952 investment contract), which should therefore not fall under the umbrella of securities
953 regulations.

954 As described in the previous section, traditional crowdfunding typically takes the form
955 of an equity stake, a loan, a donation, or a reward-based pre-order⁸⁰ but only the former
956 two are regarded as regulated activities under financial regulations.

957 Blockchain-based tokens might acquire a different legal status depending on the token
958 design and the intended or perceived function of these tokens. At its core, any ICO that
959 does not entail the sale of an equity share or a company stock (as in the case of STOs)
960 leverages the opportunities of blockchain technology to collect public funds for the
961 development of a particular project or initiative, and could therefore be regarded as a
962 new form of reward-based crowdfunding. Indeed, although not formally presented as
963 such, the tokens issued through an ICO generally represent a variety of rights (present
964 or future) that can be assimilated to those traditionally granted via reward-based
965 crowdfunding.

966 Yet, regardless of the narrative used by token issuers, it is important to assess whether
967 utility tokens – in spite of their distinct functionality – could nonetheless qualify as a
968 security, to the extent that they fall within the broader category of an investment
969 contract. Token issuers might well try to design their ICO in such a way that their
970 token falls outside of any existing regulated category, but they cannot run afoul of
971 security regulations so easily.

972 For instance, in the US jurisdiction, many token issuers have intentionally sought to
973 fail the *Howey* test, by making sure that at least one of the four conditions is not met.⁸¹
974 However, since the US SEC has endorsed the principle of “substance over form”,⁸² it has
975 become clear that one cannot run afoul of SEC regulations by simply stepping aside from

⁸⁰ Pazowski and Czudec, *supra*, note 37.

⁸¹ In the *Howey* test, the US Supreme Court defined an “investment contract” as any “contract, transaction or scheme whereby (1) a person invests his money (2) in a common enterprise and is (3) led to expect profits (4) solely from the efforts of the promoter or a third party”.

⁸² On 11 December 2017, SEC Chairman Clayton made a statement on cryptocurrencies and ICOs, warning token issuers not to “highlight utility characteristics of their proposed initial coin offerings in an effort to claim that their proposed tokens or coins are not securities”. He further reminded that “many of these assertions appear to elevate form over substance” in an effort to dodge existing securities regulation. See <www.sec.gov/news/public-statement/statement-clayton-2017-12-11>.

976 a formal requirement: a token will be regarded as a regulated security if the substantive
977 function of that token remains that of an investment contract.

978 The only way to assess the substantive function of a token is to investigate the
979 intentions of the people purchasing these tokens. While the backers of a reward-based
980 crowdfunding project are mostly interested in the practical implementation of the
981 projects they are funding – in order to directly benefit from them, as opposed to make
982 money out of it – investors in an ICO have more ambivalent motivations: in addition
983 to their interests in seeing the project come to life, they are also (or mostly) interested
984 in acquiring a particular set of tokens, whose value might fluctuate over time – with a
985 view to generate financial gains by trading these tokens on a secondary market.

986 This issue was clearly illustrated by the Munchee case, which represents an important
987 precedent for all token issuers claiming that their tokens are primarily designed as a utility
988 token when, in fact, investors had “reasonable belief that their investment in tokens could
989 generate a return on their investment”.⁸³ Munchee Inc was a California-based company
990 that intended to launch an ICO to fund its blockchain-based food review service.
991 However the SEC found that – despite the utility ascribed to its tokens – public
992 issuance of these tokens would constitute “unregistered securities offers and sales”;⁸⁴
993 the company had to terminate the ICO and refund investors before any tokens were
994 issued.

995 Moreover, it has been shown that, even if blockchain-based tokens do not qualify as a
996 security at the time of issuance, their qualification can always be re-evaluated *ex post* by
997 the SEC, who might declare that these tokens have eventually become a security.⁸⁵ As a
998 result, many token issuers – by fear of falling within the scope of the *Howey* test – have
999 excluded US operations and US persons as potential participants to their ICOs.

1000 With this in mind, it becomes clear that any attempt by token holders to escape from a
1001 particular regulatory framework (and securities laws in particular) by simply describing
1002 the token as a “utility token” and assigning a specific utility value to it (eg a right of usage
1003 or a right of participation) will not be sufficient to justify a regulatory exemption. Indeed,
1004 the doctrine of functional equivalence – which requires looking at the policy objectives
1005 that motivated the creations of specific rules and regulations, to understand whether these
1006 rules have reason to apply into this new context – is sufficiently broad to catch not only
1007 investment tokens, but also utility tokens that ultimately assume the same function as a
1008 security.

⁸³ *ibid.*

⁸⁴ See <www.sec.gov/news/press-release/2017-227>.

⁸⁵ This ability that regulators have to act retrospectively was exercised by the SEC in the case of TheDAO as it published on 25 July 2017 (slightly over a year after TheDAO ICO took place) a Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934. This investigation reiterated the “fundamental principles of the US federal securities laws and [described] their applicability to a new paradigm – virtual organisations or capital raising entities that use distributed ledger or blockchain technology to facilitate capital raising and/or investment and the related offer and sale of securities”. The SEC also made it clear that “the automation of certain functions through this technology [...] does not remove conduct from the purview of the US federal securities laws” (source: <www.sec.gov/litigation/investreport/34-81207.pdf>). The agency decided not to bring “charges in this instance, or make findings of violations in the Report, but rather to caution the industry and market participants” (source: <www.sec.gov/news/press-release/2017-131>).

1009 V. A PRINCIPLE-BASED APPROACH TO REGULATION: FROM “FUNCTIONAL
1010 EQUIVALENCE” TO “RISK EQUIVALENCE”

1011 Traditionally, the doctrine of functional equivalence is regarded as a means to bring new
1012 technological developments under an existing regulatory framework, to the extent that
1013 the activities facilitated by a new technology fulfil the very same functions as the pre-
1014 existing activities relying on previous technologies (eg paper-based contracts and
1015 electronic contracts).

1016 However, regulation is not solely determined by the qualities or functions of a
1017 particular asset class, or by the objectives or purposes of a particular activity, but also
1018 by the risks that such asset or activity entail. In the realm of finance, in particular,
1019 many rules and regulations are motivated, to a large extent, by the need to reduce
1020 risks for investors. Hence, a proper application of the doctrine of functional
1021 equivalence in this field should not be limited to a mere analogy with the
1022 functionalities of different fundraising practices, but should also focus on the
1023 similarities between the risks associated with different types of token sales.

1024 On the one hand, depending on the contextual framework, two identical activities
1025 could be regulated differently, to the extent that they are characterised by different
1026 degrees of risk. For instance, in the case of equity crowdfunding, even though it
1027 fulfils the exact same function as an IPO (ie publicly raising funds for a private
1028 company going public, in exchange for a promise of returns on investment), it is not
1029 regulated in the same manner, because the risks associated with equity crowdfunding
1030 are – by virtue of the smaller amount of funds that can be invested into this type of
1031 endeavour – much lower than the risks associated with an IPO.

1032 On the other hand, two activities that substantially differ from one another (eg the
1033 issuance of a company stock versus the issuance of a token that is not associated with
1034 any company) could be regulated in the exact same manner to the extent that they
1035 give rise to a very similar set of risks. Thus, even if there is no strict functional
1036 equivalence between a security token and a utility token, both could be regulated in a
1037 similar manner insofar as the risks they entail are the same.

1038 The blockchain ecosystem, and in particular the ICO space, is characterised by a wide
1039 range of new business practices that do not have a precise equivalent in the *offchain*
1040 world. As a result, it can be somewhat difficult to rely on a strict interpretation of the
1041 doctrine of “functional equivalence” in order to establish the extent to which a
1042 particular token sale should be regarded as being functionally equivalent to a more
1043 traditional IPO. Indeed, given the ability for token issuers to innovate with these new
1044 technological artefacts and to set up their token sales in ways that will formally
1045 distinguish them from a traditional IPO, such a strict interpretation of functional
1046 equivalence would enable some ICOs to escape from the realm of security
1047 regulations, even if they carry the same functions and risks.

1048 The variety of token classifications that are being put forward (eg utility tokens,
1049 participation tokens, investment tokens, asset-backed tokens) are of limited utility from
1050 a regulatory perspective to the extent that the same token can – regardless of its
1051 intended function – be used in many unintended manners, and therefore *de facto*
1052 qualify both as a payment token and as a security token. This creates specific

1053 challenges for regulators because, when trying to determine the proper level of regulatory
1054 constraints that an ICO should be subject to, not only do they need to assess the original
1055 nature or function of the tokens being issued (whether they are of the utility, payment,
1056 investment or asset-backed type), but also look into the underlying motivations of both
1057 token issuers and investors (why are they issuing the tokens; why and by whom are the
1058 tokens being purchased?), as well as the risks that investors may incur in purchasing
1059 these tokens – which might extend beyond the control (and intentions) of the original
1060 token issuers.

1061 We propose here an alternative approach to functional equivalence, focusing not only
1062 on the underlying functions assumed by these token sales, but also – and most
1063 importantly – on the underlying principles that motivate the regulation of these new
1064 fundraising practices, with regard to both the *risks* and *benefits* they might bring to
1065 investors. It is our belief that such a principle-based approach to the regulation of
1066 ICOs will lead to a more legitimate and efficient type of regulation by moving from
1067 “functional equivalence” to “risk equivalence”. Indeed, if the regulation of IPOs is
1068 intended to protect investors from tangible risks, then analysing the risks created by
1069 ICOs is perhaps the most efficient way to determine the extent to which these new
1070 business practices should qualify as regulated activities, and whether they should be
1071 subject to the regulatory constraints as traditional IPOs.

1072

1. Principle-based regulation

1073 When contemplating if and how to regulate ICOs, it is interesting to look back at the
1074 lessons from the last financial crisis. It seems quite clear, in retrospect, that an
1075 important factor leading to the crisis was an unprecedented degree of complexity in
1076 some financial products that made it difficult for some market participants to clearly
1077 understand the overall degree of systemic risk at the macroeconomic level on the one
1078 hand, and the particular features of the products they were buying into, at the
1079 microeconomic level, on the other hand.

1080 This degree of complexity was essentially achieved by a string of financial
1081 innovations. As Awrey puts it,

1082 “complexity and innovation [...] have combined to generate significant
1083 asymmetries of information and expertise between public regulators and private
1084 (regulated) actors and exacerbated the agency problems that pervade global
1085 financial problems [...] Identifying the optimal policy response to the complexity
1086 and nature and pace of innovation within financial markets is, accordingly, vitally
1087 important in terms of the delivery of effective financial regulation”.⁸⁶

1088 Of course, regulating a complex and rapidly changing technology is not easy; regulations
1089 have to constantly adapt and adjust their rules to the new technological landscape.⁸⁷ Rules

⁸⁶ D Awrey, “Regulating Financial Innovation: A More Principles-Based Proposal?” (2011) 5(2) Brooklyn Journal of Corporate, Financial & Commercial Law 273.

⁸⁷ P De Filippi, “Bitcoin: a regulatory nightmare to a libertarian dream” (2014) 3(2) Internet Policy Review.

1090 that try to be overly specific for the sake of clarity and compliance, will soon have to
1091 change because of technological advances.

1092 This is where principles-based regulatory frameworks come in handy. In a nutshell, a
1093 principles-based regulation (as opposed to a rules-based one) mainly focuses on the
1094 principles that should be followed in any relevant situation, instead of trying to
1095 establish a set of rules that should address all possible scenarios. This approach to
1096 regulation has the advantage of flexibility, while the drawback is that honest or ill-
1097 intentioned individuals may invoke different interpretations of the principles at work
1098 to justify their own courses of action.

1099 Without revisiting the history of the “rules vs principles” dialectic,⁸⁸ it seems fair to say
1100 that, while principles-based regimes were pursued by the UK Financial Services
1101 Authority (FSA), the Australian Securities and Investment Commission (ASIC) and
1102 other jurisdictions (most notably Canada before the 2008 crisis), this approach was
1103 thereafter criticised as having opened the door for various abuses due to its perceived
1104 lack of precision. Awrey (2011) fought back these criticisms, by showing that a
1105 principles-based regulation could be particularly suitable to deal with over-the-counter
1106 (OTC) derivatives markets, where asymmetries of information and agency problems
1107 are pervasive. In Awrey’s words, if “modern financial markets are characterized by
1108 complexity, seemingly perpetual innovation, chronic asymmetries of information and
1109 expertise, and pervasive agency costs”, prescriptive, rules-based approaches toward
1110 financial regulation have thus far “proven inadequate to [the] task” and principle-
1111 based regulation has the potential to “overcome these challenges and, in the process,
1112 generate more nuanced, responsive, durable, and effective regulation”.

1113 Accordingly, despite the acceptable criticism of the leeway that a principles-based
1114 regulatory approach may give to fraudsters, we think it is worth considering this
1115 general paradigm for dealing with ICOs – especially when it comes to risks.⁸⁹ With
1116 this in mind, we now turn to a comparison of the risks raised by both IPOs and ICOs,
1117 as we believe it is particularly relevant to the debate of how to best regulate these
1118 emerging fundraising practices.

1119 **2. Comparing risks between IPOs and ICOs**

1120 Academic literature has already analysed the various risk factors of IPOs and their link to
1121 financial returns and long-term performance. For instance, Abdou and Dicle have found
1122 that “venture capitalists and investment bankers have a significant and economic effect on
1123 the number of risk factors reported in the prospectus”,⁹⁰ while Bhabra and Pettway have
1124 shown that prospectus information is “more useful to predict survival/failure compared to

⁸⁸ See eg J Black et al, “Making a success of principles-based regulation” (2007) 1(3) *Law and Financial Markets Review* 191; J Black, “Forms and paradoxes of principles-based regulation” (2008) 3(4) *Capital Markets Law Journal* 425; C Ford, “Principles-based securities regulation in the wake of the global financial crisis” (2010) 55(2) *McGill Law Journal* 257; JJ Park, “Rules, principles, and the competition to enforce the securities law” (2012) *Cal L Rev* 100 at 115.

⁸⁹ S Arjoon, “Striking a balance between rules and principles-based approaches for effective governance: A risks-based approach” (2006) 68(1) *Journal of Business Ethics* 53.

⁹⁰ K Abdou and MF Dicle, “Do risk factors matter in IPO valuation?” (2007) 15(1) *Journal of Financial Regulation and Compliance* 63.

1125 subsequent equity offerings or acquisitions”.⁹¹ As many of the formalities required by
1126 securities law are driven by the motivation to properly inform potential investors, the
1127 risks entailed by an offering need to be properly accounted for by the quantitative and
1128 qualitative information provided in the offering prospectus.

1129 Given the described parallelism between ICOs and IPOs, it is natural to think that they
1130 should entail common risk factors.⁹² Whether they come from an IPO or an ICO, similar
1131 risks should be treated in a similar manner. Hence, if the risks posed by an ICO are
1132 equivalent, in degree and in kind, to those posed by an IPO, there are good reasons to
1133 believe that the two fundraising practices – albeit different in their objectives and
1134 format – should nonetheless be subject to a similar regulatory framework. Indeed,
1135 from a “risk equivalence” perspective, similar risks shall give rise to similar
1136 regulatory constraints, regardless of format or the declared function of these token sales.

1137 Yet, there are important differences between an ICO and a more traditional fundraising
1138 operation, which might significantly affect the risk-profile of the projects funded via
1139 either of these methods. In order to better understand the differences and similarities,
1140 this section will provide an overview of the common risk factors between IPOs and
1141 ICOs, and then provide a more detailed analysis of the risks that are idiosyncratic to
1142 an ICO.

1143 *a. Common risk factors between ICOs and IPOs*

1144 As we have seen before, the regulation of IPOs is largely intended to reduce the degree of
1145 information asymmetries between securities issuers and investors, in order to ensure a
1146 properly functioning market. The regulation of ICOs face a similar challenge:
1147 information asymmetries between token issuers and investors represents a major risk
1148 for this emerging market. As a result, investor and consumer protection regulations
1149 developed for IPOs could also be relevant in the context of ICOs. In particular,
1150 because of the immature markets for ICOs and the significant information
1151 asymmetries that characterise them, it is especially important to insist on the need for
1152 investor and consumer protection. For instance, a study prepared by ICO advisory
1153 firm Satis Group revealed that “more than 80 percent of initial coin offerings
1154 conducted in 2017 were identified as scams”, though they “received very little
1155 funding when compared with the industry as a whole”.⁹³ Indeed, according to the
1156 same study, if “total funding of coins and tokens in 2017 amounted to \$11.9 billion”,
1157 only “\$1.34 billion (or 11 percent) of ICO funding went to scams” – with the vast
1158 majority of the funds going to three main projects.⁹⁴

⁹¹ HS Bhabra and RH Pettway, “IPO prospectus information and subsequent performance” (2003) 38 Financial Review 369.

⁹² MR Meadows, “The Evolution of Crowdfunding: Reconciling Regulation Crowdfunding with Initial Coin Offerings” (2017) 30 Loy Consumer L Rev 272.

⁹³ See <cointelegraph.com/news/new-study-says-80-percent-of-icos-conducted-in-2017-were-scams>.

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⁹⁴ See p 25 of Satis Group Crypto Research report “Cryptoasset Market Coverage Initiation: Network Creation”, dated 11 July 2018, available at <research.bloomberg.com/pub/res/d28giW28tf6G7T_Wr77aU0gDgFQ>. Though we have not found precise figures in the case of IPOs, these ICO figures are likely to be much higher than their IPO counterparts – whether referring to the percentage of IPOs that would qualify as “scams”, or the funding volume directed to them – as IPOs are typically intermediated by underwriters that are liable for performing thorough “due diligence” on the issuing company and the overall conditions of the offering.

1159 The issue with ICOs is that it is difficult to draw solid conclusions on key metrics, such
1160 as performance or long-term survival rates, as there is not enough distance to perform
1161 such analysis. In addition, structural elements that are clearly defined in the context
1162 of IPOs – such as ownership, board, management and quotation on a centralised
1163 exchange – may be lacking in the case of ICOs, rendering a thorough evaluation
1164 more difficult to perform.⁹⁵

1165 Yet, the similarities that subsist between these two fundraising practices suggest that
1166 many of the factors used to conduct investigations about IPOs could also apply to ICOs.
1167 For instance, the prestige of board members⁹⁶ or the legitimacy of top management⁹⁷ are
1168 often regarded as powerful factors for enticing investors in the context of an IPO. Similar
1169 effects are to be expected in the context of an ICO, where the founding team and its
1170 advisors' reputation hold sway over the success of the token sale. Similarly, as the
1171 persistence of a founder's influence is considered to be an important risk mitigator in
1172 the context of IPOs,⁹⁸ one can expect a somewhat similar effect in the context of
1173 ICOs, which are typically driven by the influence of the founding team over key
1174 programming and implementation decision. Thus, even though the elements of
1175 analysis are somewhat different, much of the research that has been conducted in the
1176 IPO context could potentially be applied to ICOs as well.

1177 Besides the common risk of information asymmetries and the outright scams or
1178 embezzlement they may provoke, there are other risk factors common to both IPOs
1179 and ICOs, applicable to both issuers and investors.

1180 From an investor's perspective, just as happens in the context of an IPO, there is also in
1181 the case of an ICO a clear risk that the invested capital may be lost, or that the expected
1182 returns on investment may not materialise. Dilution risks due to further rounds of capital
1183 raising – a common risk factor for IPOs – also exist in the context of some ICOs, most
1184 notably in the context of Security Token Offerings (STOs) or other token sales where
1185 tokens have voting and ownership rights associated to them. The lack of secondary
1186 market liquidity also exists in the context of both IPOs and ICOs and makes it
1187 difficult for investors to exit their position. Finally, with regard to informational
1188 components, a pricing risk might emerge when lack of, or excessively complex
1189 information makes it particularly challenging to establish the correct price of
1190 securities or tokens. There is also a risk related to the security of the information
1191 collected about investors – though recent regulations, such as GDPR in Europe, exist
1192 precisely to mitigate this risk.

1193 More broadly, in addition to the standard operational risks that may occur either during
1194 the fundraising process or afterwards during the day-to-day operations, both IPOs and
1195 ICOs may encounter a principal-agent type of conflict, or a misalignment of interests

⁹⁵ For instance, as previously discussed, some ICOs are not executed by a company or legal entity, but rather by a small team of individuals which lacks any official management or organisational structure.

⁹⁶ ST Certo, "Influencing initial public offering investors with prestige: signaling with board structures" (2003) 28(3) *Academy of Management Review* 432.

⁹⁷ BD Cohen and TJ Dean, "Information asymmetry and investor valuation of IPOs: Top management team legitimacy as a capital market signal" (2005) 26 *Strategic Management Journal* 683.

⁹⁸ T Nelson, "The persistence of founder influence: Management, ownership, and performance effects at initial public offering" (2003) 24 *Strategic Management Journal* 707.

1196 between issuers and investors. Once the funds are raised, in fact, the individuals in charge
1197 may choose a different path from that which would be in the best interest of shareholders
1198 or contributors.

1199 Lastly, there are various legal risks involved in these fundraising practices, not only
1200 due to the fact that prevailing regulation may evolve over time,⁹⁹ but also related to
1201 the fact that investors might launch a lawsuit against token or securities issuers –
1202 potentially even a class action lawsuit, most notably in the US. If class actions are
1203 known to happen against IPO issuers, ICOs are not exempt from this type of legal
1204 feud – as shown by the Tezos ICO’s class action lawsuit.¹⁰⁰

1205 *b. Risk factors idiosyncratic to ICOs*

1206 Though the ICO process has become more formalised over the years, it nonetheless
1207 remains much less structured than a traditional IPO’s process, which is highly
1208 regulated and has been streamlined over decades of experience. ICOs also entail
1209 additional risks that are not generally found in an IPO. First and foremost, while an
1210 IPO is generally done as part of an “exit” strategy, an ICO represents more of an
1211 “entry” into the market, collecting funds in order to launch a new product or service
1212 that does not yet have any track record. Moreover, the lack of established
1213 intermediaries, and the lack of a clear regulatory framework for the various actors
1214 involved in an ICO, create additional uncertainties with regard to the ability for
1215 investors to cope with the complexity and uncertainty surrounding these new
1216 fundraising practices. At the same time, reliance on a “trustless” blockchain
1217 infrastructure means that, in the case of any problem or complaint, due to either a
1218 technical glitch or human error, there is no trusted authority with the power to
1219 intervene in order to remediate the problem – thereby leaving no delineated
1220 possibility of recourse. Finally, the blockchain ecosystem is subject to new types of
1221 systemic risk, related to the possibility of forking. We analyse each one of these
1222 idiosyncratic risks in the following subsections.

1223 **Different levels of maturity** The maturity of a project is important in the context of
1224 financing as it translates into a particular degree of risk. Indeed, investments made at the
1225 seed or startup stage are usually riskier than investments in mature companies with stable
1226 cash flows. For instance, venture capital investing is “characterized by high variability in
1227 the outcomes of new ventures” whose “investment decisions remain hostage to
1228 unanticipated competitors, market shifts, and financial cycles”.¹⁰¹

1229 In the context of an IPO, it generally takes a few years before a company can go
1230 public.¹⁰² The company typically must demonstrate a proper (and stable) amount of
1231 revenues, which can only be achieved after a company has reached a certain level of

⁹⁹ This is clearly more likely in the case of ICOs, for which regulation is still “in the making”, than in the case of IPOs which are “mature” processes in most jurisdictions. Nonetheless, financial regulation may significantly evolve over time, as regulatory adjustments that took place over the last decade in the wake of the last financial crisis have shown.

¹⁰⁰ Available at <restislaw.com/current-cases-investigations/tezos-initial-coin-offering/>.

¹⁰¹ JC Ruhnka and JE Young, “Some hypotheses about risk in venture capital investing” (1991) 6 *Journal of Business Venturing* 115–133.

¹⁰² For instance, the WilmerHale 2018 IPO report finds the median time to IPO for US companies to be 7.5 years: <www.wilmerhale.com/en/insights/publications/2018-ipo-report>.

1232 maturity. There are hard and soft requirements for an IPO, which might vary with the
1233 listing requirements of the exchange involved and the jurisdiction at hand. For
1234 instance, some jurisdictions might require a minimum number of years of operations
1235 with audited accounts as a prerequisite to an IPO.¹⁰³ In addition, investment banks
1236 acting as underwriters will tend to select IPO candidates that appear solid and likely
1237 to perform well in the future. While investment banks competing for underwriting
1238 business may be tempted to lower their requirements for winning over the leading
1239 role, if they want to be around in the long run, they will have to subject the issuing
1240 companies to a tight scrutiny in order to maintain their reputation. Indeed, an
1241 underwriter associated with a series of poorly performing IPOs will lose its credibility
1242 on the market, and – in the worst case scenario – underwriters may even be sued by
1243 investors.¹⁰⁴

1244 Most ICOs lay at the opposite end of the spectrum. In many cases, the project for which
1245 tokens are offered to the public are just outlined in a white paper and have no practical
1246 implementation. As claimed by some ICO critics, some projects were able to raise
1247 substantial amounts of money (more than US \$100m) with no prototype, just on the
1248 promise of future developments.¹⁰⁵ To some extent, the fact that some ICOs managed
1249 to raise such a large amount of funds almost out of thin air is illustrative of an
1250 irrational exuberance that is reminiscent of the height of the Internet bubble. Though
1251 further research might be needed to substantiate this point, we suggest that this
1252 similarity between today's ICOs and dot-coms IPOs is likely derived from a common
1253 root of: (i) an emerging technology with a promising potential but still too few real-
1254 world applications; and (ii) the perception that first-mover advantage is critical in the
1255 face of rapidly developing markets.

1256 **Risks of disintermediation** The issue of disintermediation is, in our view, one of the
1257 cornerstones of a proper ICO risk analysis. Indeed, one key differentiating factor between
1258 an IPO and an ICO is the level of intermediation – or rather, the lack thereof in the context
1259 of an ICO – and the absence of underwriters that are typically present in the context of an
1260 IPO. Thus, by bypassing many of the specialised intermediaries, blockchain technology
1261 induces the loss of the risk-mitigating functions these intermediaries had been implicitly
1262 fulfilling.

1263 As we have previously seen, public offerings are bound to create information
1264 asymmetries between issuers and investors, because the former have more
1265 information on how the raised funds will be used. Furthermore, even if we assumed
1266 no information asymmetries between issuers and investors, the “limits of human
1267 cognitive capacity for discovering alternatives, computing their consequences under
1268 certainty or uncertainty, and making comparisons among them”, as underlined by

¹⁰³ In the US companies are “generally required to disclose selected financial data for the prior five years” unless it is an “emerging growth company” – this disclosure can be limited to the prior two years – or a “smaller reporting companies” – this requirement is waived. See <www.sec.gov/files/ipo-investorbulletin.pdf>, p 3.

¹⁰⁴ Drake and Vetsuypens examine 93 IPOs by issuers who were subsequently sued under provisions of the 1933 and/ or 1934 Securities Acts in the period 1969 to 1990: P Drake and M Vetsuypens, “IPO Underpricing and Insurance against Legal Liability” (1993) 22 Financial Management 64.

¹⁰⁵ See <www.coindesk.com/ethereum-icos-youre-wrong/>.

1269 Simon's work on bounded rationality and rational choice,¹⁰⁶ highlight how difficult it is
1270 for investors to make accurate predictions as to the future development of the project, let
1271 alone to properly perceive and assess the risks associated with an ICO. Precisely, Simon
1272 reminds us that one of the common responses for dealing with bounded rationality and
1273 "coping with the limits of a man's abilities to comprehend and compute in the face of
1274 complexity and uncertainty"¹⁰⁷ is to "divide up the decision-making task among
1275 many specialists, coordinating their work by means of a structure of communications
1276 and authority relations".¹⁰⁸ This is a task which, in the context of an IPO, is generally
1277 assumed by underwriters and registered broker-dealers – two important types of
1278 intermediaries which have not been transposed in the context of ICOs.

1279 This absence of these intermediaries is understandable given the structural difference
1280 of these two fundraising practices. An IPO is typically done by companies with a certain
1281 level of maturity and established institutional relationships, while an ICO is usually
1282 undertaken by early-stage projects steered by a team of geeks wishing to rally a
1283 community of enthusiastic peers to their cause. If the former has been soaked in a
1284 world of traditional institutions accustomed to hierarchy and trusted third parties, the
1285 latter precisely aims to disrupt traditional financing channels perceived as entangled
1286 in a web of superfluous institutional intermediaries.

1287 In the early days of ICOs, only members of the blockchain community were interested
1288 in participating into a token sale. These early adopters generally had a sufficient level of
1289 knowledge to evaluate the quality of the projects, as people of the same "breed" were
1290 evaluating each other's work. But as more and more followers started to pile in –
1291 sometimes just motivated by greed and expectations of profits – the knowledge gap
1292 between token issuers and ICO subscribers began to broaden. It is precisely in this
1293 transitory phase, characterised by feisty exuberance and herd-like mimetic behaviour,
1294 that the risk of scams and speculative bubbles is at its highest.

1295 As soon as ICOs became more mainstream and started to draw large amounts of
1296 funding, they progressively started to convene similar types of actors as those
1297 involved in IPOs. As popular and institutional interest grows – with institutional
1298 investors searching for new investment opportunities or industrial companies looking
1299 to leverage the technology – a new market for specialised advice emerged, paving the
1300 way for new intermediaries, similar to those we encounter in the context of IPOs. For
1301 instance, since 2017, a series of technology-oriented boutique investment banks or
1302 auditing firms have started to provide ICO advisory services.¹⁰⁹

1303 **Transferring trusted third-party risk to a "trustless" technology** As a starting point
1304 to think about disintermediation in the context of blockchain technology, it is interesting
1305 to look at the principles that have driven the design of the first blockchain, Bitcoin. In the
1306 Bitcoin white paper, Satoshi Nakamoto describes the goal of disintermediating financial
1307 institutions by providing "a purely peer-to-peer version of electronic cash [that] would

¹⁰⁶ HA Simon, "A Behavioral Model of Rational Choice" (1955) 69(1) *The Quarterly Journal of Economics* 99–118.

¹⁰⁷ *ibid.*

¹⁰⁸ See Simon's 1978 Nobel Memorial Lecture titled "Rational Decision-making in Business Organizations", <core.ac.uk/download/pdf/6322096.pdf>.

¹⁰⁹ For instance, PWC in Zurich offers support and advisory services for ICOs. See <www.pwc.ch/en/industry-sectors/financial-services/fs-regulations/fico.html>.

1308 allow online payments to be sent directly from one party to another without going through
1309 a financial institution”.¹¹⁰ As an alternative to traditional payment systems centered
1310 around a trusted authority, Bitcoin offers a protocol whereby “any two willing parties
1311 [can] transact directly with each other without the need for [any] trusted third
1312 party”.¹¹¹ This shift from a centralised paradigm to a distributed peer-to-peer system
1313 is supposed to address some of the security concerns that some computer security
1314 experts, such as Szabo, have had with trusted third parties – described as a “nice
1315 sounding synonym for a wide-open security hole that a designer chooses to overlook”.¹¹²

1316 Thus, a blockchain is meant to shift the reliance on a single trusted authority to a
1317 decentralised network of peers, in order to achieve a higher degree of technological
1318 guarantees.¹¹³ Because all active nodes in the network have a local copy of the
1319 blockchain, it is impossible to tamper with the contents of this decentralised database
1320 without going unnoticed (unlike the case of a centralised database which can be
1321 tampered by a centralised operator, without users noticing). As a result, the risk of
1322 censorship or self-dealing on the part of a trusted third party becomes moot as the
1323 operations of the network depends, only and exclusively, on the rules encoded within
1324 the blockchain protocol – which are collectively enforced by all network participants.
1325 Trust in an institution (eg a bank) or in a certifier (eg a notary) is replaced by
1326 distributed trust in a set of code-based rules, which are deemed impossible to bypass
1327 or circumvent.¹¹⁴

1328 At the same time, however, distributed governance brings about new risks. For
1329 instance, in the case of Bitcoin, there is no possible recourse for reverting a
1330 fraudulent transaction resulting from the theft of a private key (whereas it is always
1331 possible to file a complaint with one’s bank in the case of a fraud). Furthermore, the
1332 consensus mechanism of public and permissionless blockchains like Bitcoin can be
1333 potentially “co-opted” by a few powerful actors with significant computational
1334 power. Indeed, both in the case of Bitcoin and Ethereum, today, a small number of
1335 mining pools control more than 50% of the network’s total hashing power. Hence, if
1336 they were to collude, they would have the opportunity to censor certain transactions,
1337 and potentially even to tamper with the history of transactions.¹¹⁵

1338 **New types of systemic risk** When it comes to traditional finance, systemic risk has
1339 been defined by G-20 finance ministers and central bank governors as a “risk of
1340 disruption to financial services that is (i) caused by an impairment of all or parts of
1341 the financial system and (ii) has the potential to have serious negative consequences

¹¹⁰ S Nakamoto, “Bitcoin: A Peer-to-Peer Electronic Cash System” (2008) <bitcoin.org/bitcoin.pdf> (last accessed 3 July 2019).

¹¹¹ *ibid.*

¹¹² N Szabo, “Proplets – Devices for Controlling Property” (2001) <www.fon.hum.uva.nl/rob/Courses/InformationInSpeech/CDROM/Literature/LOTwinterschool2006/szabo.best.vwh.net/proplets.html> (last accessed 4 July 2019).

¹¹³ A Wright and P De Filippi, “Decentralized blockchain technology and the rise of lex cryptographia” <papers.ssrn.com/sol3/papers.cfm?abstract_id=2580664> (last accessed 4 July 2019).

¹¹⁴ P De Filippi and R Mauro, “Ethereum: the decentralised platform that might displace today’s institution” (2014) 25(08) Internet Policy Review.

¹¹⁵ These and other issues related to blockchain governance have been analysed more in depth in the following report: P De Filippi and G McMullen, “Governance of blockchain systems: governance of and by the infrastructure” (2019) COALA & Blockchain Research Institute Big Idea Whitepaper.

1342 for the real economy”.¹¹⁶ In that sense, it is clear that unless crypto-assets become so
1343 prevalent that they could cause such a disruption, they currently represent little
1344 systemic risk to the overall financial architecture. In fact, in February 2018, at a time
1345 where the market capitalisation of digital currencies was roughly twice what it is at
1346 the time of writing, the ECB president, Mario Draghi, stated that the ECB was “not
1347 observing a systemically relevant holding of digital currencies by supervised
1348 institutions” but added that the ECB needed to keep an eye on crypto-assets as new
1349 risks could arise, such as those due to the introduction of Bitcoin futures contracts on
1350 US exchanges.¹¹⁷

1351 This being said, a different type of systemic risk may emerge in the context of
1352 blockchain-based systems: the risk of disruption to the overall ecosystem supported
1353 by a given blockchain. One clear instance of this type of risk would be an undetected
1354 flaw in the underlying protocol of a particular blockchain network. An example of
1355 such problem already happened on Ethereum, as a bug in the code (aka a smart
1356 contract) deployed on the blockchain required to patch the Ethereum protocol,
1357 resulting in a “hard fork”¹¹⁸ of the underlying blockchain.¹¹⁹

1358 This highlights the existence of alternative types of systemic risk, such as the risk of
1359 *forking*, which the Bank of International Settlements defined as “symptomatic of a
1360 fundamental shortcoming: the fragility of the decentralised consensus involved in
1361 updating the ledger and, with it, of the underlying trust in the cryptocurrency”.¹²⁰
1362 While, in theory, no one can force network participants to adopt a new blockchain
1363 protocol, given the network effects at play within existing blockchain network, there
1364 is a strong incentive for everyone to agree on a particular version of the protocol.
1365 Hence, even though a blockchain ultimately relies on distributed consensus, in
1366 practice, not all participants are on the same footing: major exchanges and blockchain
1367 explorers, as well as core developers and opinion leaders weigh heavily on how the
1368 protocol of a particular blockchain-based network might evolve over time. If forking
1369 could be compared to company splitting, an important difference between the two is
1370 that company splitting is typically planned and anticipated, while forking usually
1371 results from an unexpected bug that took the overall blockchain community by
1372 surprise – as was the case with TheDAO’s issue in 2016 and the subsequent forking
1373 it triggered on Ethereum.¹²¹

¹¹⁶ Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instruments: Initial Considerations. Report to the G-20 Finance Ministers and Central Bank Governors. Staff of the International Monetary Fund and the Bank for International Settlements, and the Secretariat of the Financial Stability Board (October 2009).

¹¹⁷ See <www.bloomberg.com/news/articles/2018-02-05/draghi-says-ecb-studying-digital-currency-risks-for-banks>.

¹¹⁸ Forking happens whenever a fraction of an existing blockchain community decides to opt out of the existing blockchain protocol and adopt a new set of rules – which, in the case of a “hard fork”, are incompatible with the previous rules.

¹¹⁹ W Reijers et al “Now the Code runs itself: On-chain and Off-chain governance of blockchain technology” (2018) 37(17) TOPOI: International Review of Philosophy.

¹²⁰ See the Bank of International Settlements (BIS) *Annual Report 2018* p 102, <www.bis.org/publ/arpdf/ar2018e.pdf>.

¹²¹ Q DuPont, “Experiments in Algorithmic Governance: A history and ethnography of ‘The DAO,’ a failed Decentralized Autonomous Organization” in *Bitcoin and Beyond* (Routledge).

1374 VI. FUNCTIONAL EQUIVALENCE AS A NEW REGULATORY APPROACH

1375 ICOs provide many new opportunities for blockchain-based projects and initiatives to
1376 raise funds that they may be unable to raise in more traditional capital markets
1377 settings. These new fundraising practices are, however, not devoid of any risks. Just
1378 as crowdfunding did in the past, ICOs raise important questions with respect to
1379 financial regulation. First of all, because the nature of ICOs can vary a great deal, it is
1380 not always easy to pin them down unto an existing framework. Secondly, monitoring
1381 the course of an ICO may require technical knowledge that is not always available to
1382 existing regulatory bodies. Finally, the absence of a strict regulatory framework to
1383 control and supervise these new fundraising practices opens up the door for all sorts
1384 of abuses and scams – potentially posing a serious threat for investors.

1385 Although they rely on a new technological infrastructure, ICOs share many similarities
1386 with the various IPOs and crowdfunding endeavours that have become increasingly
1387 popular after the advent of the Internet. In the US, Rodrigues has shown that many
1388 ICOs are likely to fit within the scope of existing security laws, including the various
1389 exemptions they comprise.¹²² In other jurisdictions, such as the EU, although they
1390 come with a more specific regulatory framework regarding what may or may not
1391 qualify as a security,¹²³ it is important to engage in a careful scrutiny of the
1392 alternatives they provide before trying to “reinvent the wheel”,¹²⁴ to put it in a
1393 metaphorical way.

1394 In particular, given the risks involved with these fundraising practices, especially in the
1395 case of equity and debt-based crowdfunding, a series of regulations were put in place in
1396 order to lower the risk for investors willing to contribute money to such initiatives.
1397 Because IPOs generally involve substantial amounts of money, they give rise to
1398 significant risks for investors, which can only be mitigated by imposing stringent
1399 regulatory constraints both on the security issuers and on the intermediaries through
1400 which these securities are traded. With crowdfunding, risks are reduced by
1401 introducing additional constraints concerning the amount of funds that can be raised,
1402 and the amount that can be contributed by each individual investor. Hence, the degree
1403 of regulatory constraints that fall on both the issuers and intermediaries involved with
1404 these fundraising practices can be significantly lowered as well.

1405 The situation is slightly different in the case of ICOs. Many token issuers are not
1406 satisfied with the limitations imposed by crowdfunding regulations – in particular
1407 with regard to limitations on the amount of funds that can be raised or invested, and
1408 the obligation to operate via a registered intermediary. Because they need (or aspire)
1409 to raise more funds than is permitted under the crowdfunding exemption, token
1410 holders have attempted to design their token sales to be as far removed as possible
1411 from the traditional IPO or equity crowdfunding models, and closer to the model of
1412 reward-based crowdfunding, which is not subject to securities law. In doing so, token

¹²² U Rodrigues, “Semi-Public Offerings? Pushing the Boundaries of Securities Law” (2018) Paper No 2018-30 Research Paper Series. School of Law, University of Georgia.

¹²³ For an overview of relevant laws and regulations across jurisdictions, the reader may consult De Filippi et al, *supra*, note 70.

¹²⁴ Hacker and Thomale, *supra*, note 20.

1413 issuers are trying to dodge any form of securities-like regulation, without providing any
1414 type of remedy to mitigate risks. Therefore, even if they share many similarities in both
1415 their structure and function, investing into an ICO generally represents a riskier
1416 endeavour than investing into a more traditional crowdfunding project, or even a
1417 traditional IPO – whose risks are mitigated via regulatory constraints.

1418 According to a principle-based regulatory approach, to the extent that the risk profile of
1419 an ICO is higher than that of other regulated fundraising activities – because of the
1420 immaturity of the project, and the additional risks related to disintermediation and the
1421 technical specificities of blockchain-based solutions – token issuers will need to abide
1422 by a variety of rules and regulations designed to protect investors by reducing
1423 information asymmetries, promoting market stability, and ultimately decreasing the
1424 likelihood of market manipulation and systemic risk. Indeed, if the risks are actually
1425 higher, one might even be tempted to claim that an ICO should actually be regulated
1426 in a more stringent way than traditional IPOs, in order to compensate for the higher
1427 risks it entails.

1428 Yet, our claim is that there is an alternative approach, that might contribute to reducing
1429 the risks surrounding an ICO, without stifling the opportunities for innovation in the
1430 blockchain space due to stringent regulatory constraints. We contend that it is
1431 possible to introduce additional measures to mitigate the risk factors of an ICO, not
1432 only by means of a regulatory intervention but also (or rather) by means of
1433 technological design.

1434 This brings us to yet another application of the doctrine of functional equivalence,
1435 related to the extent to which a particular technological arrangement could be held to
1436 be functionally equivalent to a regulatory provision – ie the extent to which it can act
1437 as a regulatory technology that contributes to achieving a particular policy or
1438 regulatory objective.¹²⁵

1439 **1. Blockchain technology as regulatory technology**

1440 Just as in the case of e-commerce, establishing functional equivalence in the context of an
1441 ICO also requires understanding the underlying reasons and regulatory objectives of
1442 specific legal provisions, in order to assess whether they can be fulfilled by technical
1443 means. In other words, the question is whether specific technological features,
1444 enabled by blockchain technology, could satisfy some of the requirements of existing
1445 securities law by reducing some of the risks that the regulations are meant to address.

1446 The particularity of blockchain technologies is that, as opposed to traditional means of
1447 security issuance, which are ultimately based on contractual agreements and paper-based
1448 formalities, ICOs are done via a technical infrastructure which is inherently
1449 “programmable” and can therefore incorporate a variety of technical features that
1450 could help achieve some of the regulatory objectives enshrined in specific provisions
1451 of security laws.¹²⁶ Blockchain technology can thus provide an automated means of

¹²⁵ P De Filippi and S Hassan “Blockchain technology as a regulatory technology: From code is law to law is code” (2018) arXiv preprint <arXiv:1801.02507>.

¹²⁶ P De Filippi and A Wright, *Blockchain and the Law: The Rule of Code* (Harvard University Press 2018).

1452 making sure that the public offering process complies with the principles described
1453 above, and that the process incorporates all features and functionalities required in
1454 existing regulations to protect token issuers and investors from potential risks.¹²⁷

1455 Blockchains and smart contracts make it possible to implement, at reasonable costs,
1456 technical features that were difficult to implement in a traditional centralised setting.
1457 For instance, in order to protect investors, the smart contract governing an ICO could
1458 incorporate a series of “technical guarantees” through a series of technological
1459 constraints designed to reduce the degree of risk that would otherwise need to be
1460 incurred by investors.

1461 In such case, it would seem fair to assume that this particular token sale could benefit
1462 from a lower regulatory burden, because risk has been mitigated by technological (rather
1463 than regulatory) constraints. Even in the case of an STO, the issuance of security tokens
1464 via a blockchain-based infrastructure that would provide additional guarantees to
1465 investors, particularly as to the way in which raised funds can be used, could benefit
1466 from a more lenient regulatory framework than traditional IPOs, because – in spite of
1467 their functional equivalence – they do not raise the same typology of risks.

1468 Thanks to smart contracts, ICOs bear the potential of providing more refined control
1469 mechanisms over the collected funds, while lowering compliance costs and decreasing
1470 investors’ risks. For instance, if a public company with quarterly filings were to announce
1471 bad results, individual investors would typically have to bear the full impact of this bad
1472 news. A properly designed ICO smart contract could mitigate some of these risks. Instead
1473 of giving a blank cheque to the company, and seeing later what comes out of it at every
1474 public filing, the ICO smart contract could lock funds into an escrow smart contract and
1475 gradually make the investors’ funds available to the fundraising according to a predefined
1476 roadmap, controlled by the achievement of sequential milestones. This would make it
1477 possible for investors who purchased tokens during the token sale to redeem these
1478 tokens in order to recoup all or part of their investment, at specific time intervals, if
1479 they considered that the project did not meet some of the milestones that it had
1480 committed to,¹²⁸ or if they collectively believed the funds were not properly used, but
1481 not simply because they no longer wanted to support the project. In this way, both
1482 the fundraising team and the investors can rest assured that they will not be
1483 disappointed: if the team does not achieve its deliverables, investors will be able to
1484 retract their investment, but, as long as the milestones are achieved, the team will be
1485 able to rely on a steady stream of payments, without having to engage in additional
1486 fundraising rounds.¹²⁹

1487 Indeed, it was already possible to do this before with managed escrow accounts
1488 (a concept that precedes the digital age), and corporate entities raising public money
1489 in an IPO have always been held accountable for how they use the proceeds (for

¹²⁷ Some of these solutions have been highlighted in a previous report written by the same authors: Wang et al, *supra*, note 71.

¹²⁸ Note, however, that the fact of keeping the money on behalf of the investors, at least until the relevant milestones have been fulfilled, might require the token issuers to acquire a banking licence.

¹²⁹ Of course, these safeguard measures comes at a cost. Locking funds into a smart contract means that neither the fundraising team, nor the investors, will be able to collect rent from the escrowed funds, unless a new intermediary is introduced into the picture, with a view to manage these funds.

1490 instance, through the investigations of research analysts). Yet, smart contracts can
1491 provide greater granularity to this oversight process, by both automating and
1492 simplifying it. For example, in order to protect token issuers, ICOs could temporarily
1493 disable the “send function” associated with the tokens being sold, thereby locking
1494 these tokens for a specific period of time, in order to ensure that the management
1495 team and the investors who purchase these tokens are actually aligned with the long-
1496 term success of the projects, and will be unable to engage into speculative practices
1497 such as “pump and dump”. This seemingly innocuous feature goes a long way and
1498 may have profound implications on financial markets and their regulation in the
1499 long term.

1500 In the longer term, one could also imagine that a multi-featured token will act as a *smart*
1501 *security*,¹³⁰ eg one where the decision to convert a debt-like feature into an equity-like
1502 feature can be done automatically (ie this would be equivalent to having convertible
1503 bonds with automated conversion features, or American options with embedded
1504 automated exercise patterns). Although the idea of a *smart security* is still prospective
1505 and has no real incarnation yet in financial markets, we suspect that ICOs, smart
1506 contracts, and smart securities, are likely to have a deep impact on securities laws in
1507 the future.

1508 Finally, while securities law requires extensive formalities and reporting obligations,
1509 as a means of ensuring that the money that has been invested in the project is being used
1510 properly, the transparency inherent in blockchain technology, along with the
1511 programmability of the underlying technological infrastructure, makes it possible to
1512 achieve real-time auditing and automatic reporting. This decreases the need for parties
1513 to engage in traditional audits and reporting, which are generally cost prohibitive for
1514 many small players.¹³¹ Alternatively, the management team could be required to
1515 record, on a blockchain, every expense, digital currency transaction or exchange of
1516 digital currency into fiat currency, with the specific line of business that the
1517 transaction is associated with – thereby facilitating the work of auditors and
1518 inspectors through the creation of a transparent, tamper-resistant and non-repudiable
1519 audit trail.

1520 Another possibility is to rely on specific technological arrangements in order to ensure
1521 that the tokens issued through an ICO do not fall within the qualification of an investment
1522 contract, and therefore do not need to comply with securities law. This could be achieved,
1523 for instance, by limiting the ICO tokens’ speculative potential. A smart contract could,
1524 indeed, be designed to offer a constant supply of tokens at a particular price, regardless of
1525 the market price. Hence, if the market price were lower than that of the smart contract,
1526 people would purchase tokens on the secondary market. But if the market price were to
1527 become higher, people would then have the opportunity to purchase tokens directly from
1528 the smart contract – thereby increasing the overall token supply, and thus progressively
1529 reducing the market price.

¹³⁰ De Filippi and Wright, *supra*, note 126.

¹³¹ However, this only applies to the extent that the management team actually relies on the underlying blockchain as a payment system, which is unlikely to be the case, as least for the coming years.

1530 Such a utility token model that does not come with a fixed quantity of tokens would
1531 contribute to drastically reducing the speculative dynamics of the token sale, which
1532 would therefore be more likely to fall within the category of a pre-sale contract
1533 (being functionally equivalent to reward-based crowdfunding), and potentially escape
1534 from the scope of traditional securities regulations. Of course, a corollary drawback
1535 would be that reducing speculative opportunities over the token's value might also
1536 discourage some of the investors in contributing to the ICO.

1537 Ultimately, it is up to the fundraising team to decide what is the most effective strategy
1538 to follow. If the team only needs a few hundred thousand dollars, they can fit within the
1539 crowdfunding exemption. Otherwise, they will have to choose between either complying
1540 with the broad range of formalities and regulatory constraints imposed by IPO
1541 regulations, or rather submit themselves (and the investors) to specific technological
1542 and economic constraints, automatically enforced by the underlying blockchain
1543 infrastructure.

1544 Of course, given the relative immaturity of blockchain technologies, it is still difficult,
1545 for the time being, to understand precisely which technological features could be
1546 regarded as being functionally equivalent to specific provisions of securities law,
1547 especially with regard to systemic risk and investor protection. Market players have
1548 just begun to experiment with these new technologies, and more time is required to
1549 ascertain – from an empirical perspective – whether a particular feature could, indeed,
1550 satisfy the same regulatory objectives enshrined into securities laws.

1551 **2. Private regulation and standardisation**

1552 One of the main issues with the regulation of ICOs is that it is still too early for regulators
1553 to establish rules that require token issuers to abide by certain principles or to implement
1554 specific technical guarantees into their ICOs models. Indeed, given the rapid pace of
1555 technological progress, it has become increasingly difficult for governments and
1556 regulatory authorities to keep pace with these new technological developments. The
1557 lack of expertise with regard to the technical aspects of blockchain technologies
1558 further complicates the task of coming up with proper regulations that may
1559 accommodate these new technologies. As a result, instead of trying to elaborate a top-
1560 down regulatory mechanism for ICOs, it might be more appropriate for governments
1561 to delegate the task to the private sector, eg by devolving some of their regulatory
1562 functions to large international standard-setting organisations.

1563 This growing trend towards private regulation has already been observable for a while.
1564 As described by Tim Büthe and Walter Mattli in their book *The New Global Rulers*,
1565 coregulation via standard-setting organisations is becoming an appealing answer to
1566 governance issues in fast moving and complex technology driven areas.¹³² While it is
1567 still early to think about the establishment of standards for ICOs, we are already
1568 seeing the development of informal practices within the blockchain ecosystem, as

¹³² T Büthe and W Mattli, *The New Global Rulers: The Privatization of Regulation in the World Economy* (Princeton University Press 2011).

1569 many companies proposing ICOs are trying to converge towards a set of best practices
1570 that are more in line with the basic concerns of regulators.

1571 This point was addressed in a recent report by Smith & Crown,¹³³ where it was
1572 suggested that the blockchain community co-develop a set of best practices or
1573 guidelines for token issuers, in order to avoid an excessively strict regulatory
1574 response from regulators – increasingly concerned with the growing amounts of
1575 fraudulent or illegitimate token sales that could be launched every day. Most
1576 importantly, these best practices could contribute to helping regulators understand
1577 how the technical guarantees enabled by blockchain technologies could not only
1578 facilitate these new fundraising practices, but also to a large extent ensure that
1579 investors' interests and consumer protection regulations are respected. This opens the
1580 possibility of translating existing regulatory aspects into technological blocks, making
1581 sure that existing legal requirements are enforced through technological checks and
1582 balances.

1583 As time goes by, and as outcomes can be more clearly and empirically assessed,
1584 standard setting organisations could eventually incorporate these best practices and
1585 technological guarantees into more structured and standardised frameworks. While
1586 most of these standard frameworks merely operate on a voluntary (*opt in*) basis,
1587 governments could nonetheless provide incentives for the industry to adopt these
1588 standards, so as to ensure a broader harmonisation and more widespread adoption of
1589 these practices.

1590 In line with the principle of functional equivalence, governments could, for instance,
1591 recognise some of these technical standards as providing the same functions as existing
1592 laws or regulations. This particular interpretation of “functional equivalence” is
1593 important as it would enable companies eager to engage into an ICO to check with
1594 regulators that their offerings comply with existing regulations. If their technical
1595 solutions qualify as being functionally equivalent to specific rules or regulations,
1596 parties could potentially benefit from a more lenient regulatory framework, in that
1597 they may no longer be required to comply with all of the requirements needed to
1598 register securities. In particular, parties who agree to implement these technical
1599 guarantees into their ICO models could forgo some of the formalities and reporting
1600 obligations required under the law, whose functions can more easily be fulfilled via
1601 technological means. Indeed, so long as the underlying regulatory objectives are
1602 satisfied, it is largely irrelevant whether these are satisfied through technological or
1603 other means. What matters is that, in the end, token sales are done in such a way as
1604 to comply with the law, by reducing the degree of risks that these new fundraising
1605 practices entail. By recognising the functional equivalence of specific technical
1606 guarantees, governments could ultimately strike a balance between the need to protect
1607 investors and enabling many new industries to develop.

¹³³ Smith & Crown, *Overview and Analysis of ICO Regulatory Developments* (20 September 2017), available at www.smithandcrown.com/overview-analysis-ico-regulatory-developments/.

1608

VII. CONCLUSION AND FURTHER RESEARCH

1609 At the time of writing, the ICO wave has settled down and we do not know yet if it will
1610 rise back as a tsunami or completely dry out as a short-lived fountain of enthusiastic
1611 technological exuberance. Indeed, the ICO environment seems to have matured a lot
1612 since the heydays of 2017 – so much so that at the end of 2018, technology pundits
1613 were reflecting over whether the so-called “crypto-winter” was there to stay.¹³⁴
1614 Clearly, the way regulators around the world will tackle this phenomenon will
1615 influence the outcome of this question.

1616 As we have conveyed in this paper, ICO tokens do not always, nor necessarily qualify
1617 as investment contracts or securities. Indeed, more often than not, these tokens assume a
1618 more hybrid nature, where the investment component is generally significant, but not the
1619 only one. Yet, while the motivations that have driven the vast majority of ICOs were not
1620 only financial, the ability that ICOs provide to raise funds in a quick and flexible manner,
1621 even at a very early stage (especially in the years from 2016 to 2018) has been a key driver
1622 of experimentation in the blockchain space.

1623 The ICO environment has been evolving rapidly over the last years, and the initial
1624 success of early ICOs quickly drew the attention of a new crowd of opportunistic
1625 entrepreneurs and speculators with little knowledge of blockchain technology. As is
1626 often the case with new technologies, as the technology matures, it draws all sorts of
1627 interests, ranging from individual and commercial experimentation to broad
1628 institutional acceptance and speculation. With regard to the latter, Keynes’ “animal
1629 spirits”¹³⁵ are never far away, lurking around the corner and ready to accelerate a
1630 trend into a thoughtless bubble. This has happened before: with the tulip bulbs in
1631 1637, the stocks of the South Sea Company in 1720, and with the subprime
1632 mortgage-backed securities in 2005–2008. We should be wary – to paraphrase a now
1633 famous formula – of thinking that this time, “it will be different”.¹³⁶

1634 In this respect, ICOs might remind us of one of the key reasons why financial
1635 regulations are needed: to protect consumers from risks derived from irrational
1636 exuberance and unscrupulous scams.¹³⁷ The ICO phenomenon, initially geared only
1637 towards geeks and other technophiles, rapidly spread and turned into a more
1638 pervasive craze.¹³⁸ As this happened, information asymmetries between issuers and
1639 new participants widened, highlighting the role and reinforcing the need for
1640 specialised intermediaries to mitigate this growing information gap.

¹³⁴ See <www.coindesk.com/the-crypto-winter-wasnt-the-real-story-of-2018-and-it-wont-be-for-2019-either>.

¹³⁵ In his 1936 book on *The General Theory of Employment, Interest and Money*, Keynes underlines how “animal spirits” – which he describes as “a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities” – drive and influence human behaviour.

¹³⁶ This expression refers to the best-selling book by C Reinhart and K Rogoff published in 2009, *This Time Is Different – Eight Centuries of Financial Folly* that reminds us that the basics of economics do not really change, no matter what fantasies people come to believe, and that it is surprising anyone ever believed that the subprime-driven housing bubble of 2005–2008 was to be treated any differently than past housing bubbles.

¹³⁷ DA Zetzsche, “The ICO Gold Rush: It’s a Scam, It’s a Bubble, It’s a Super Challenge for Regulators” (2017) University of Luxembourg Law Working Paper (11) pp 17–83.

¹³⁸ Y Chen, “Blockchain tokens and the potential democratization of entrepreneurship and innovation” (2018) 61(4) *Business Horizons* 567.

1641 What should regulators' response be? ICOs raise the same fundamental questions that
1642 have haunted regulators and policy makers for decades when faced with new technological
1643 innovations. In the face of a new technology with a strong potential that is not yet clearly
1644 understood, an appropriate regulatory response should try to mitigate the risks, without
1645 unduly restraining the opportunities for innovation. Indeed, if over-regulation risks
1646 stifling creativity, eventually driving entrepreneurs to a more lenient or
1647 accommodating jurisdiction, under-regulation may foster scams and other setbacks that
1648 may damage the public perception of this new technology, ultimately hurting its potential.

1649 Though it is too early, at the time of writing, to come to a conclusion on the future
1650 developments of ICOs, as the stakes get higher and regulators become more
1651 acquainted with these new fundraising practices, many ICOs might end up being
1652 characterised as a regulated activity falling under the framework of traditional
1653 securities law. ICOs might thus have to restructure themselves, with the introduction
1654 of new intermediaries acting as counsellors or underwriters. There is already
1655 abundant academic literature on the role of underwriters and syndicates in the price
1656 discovery and valuation processes of an IPO,¹³⁹ and we might expect similar analyses
1657 to develop in the case of ICOs.

1658 But ICOs also bring to the forefront other ethical or philosophical questions that
1659 regulators have to deal with. For instance, to what extent should investors/participants
1660 be protected from their own greed and animal instincts? Or, more generally, is a
1661 *laissez-faire* approach based on market forces alone preferable to any kind of
1662 regulatory interference? If the last financial crisis seems to have given a clear answer
1663 to this conundrum, the ICO market is still relatively recent and is not yet considered
1664 to constitute a systemic risk. That is why we consider that a flexible principle-based
1665 regulatory approach, drawing from the concept of *functional equivalence*, should be
1666 more appropriate at this stage. More precisely, by comparing the risks raised by
1667 ICOs, IPOs and equity crowdfunding, we advocate for an interpretation of *functional*
1668 *equivalence* not only based on the function and legal qualification of these new
1669 fundraising practices, but also resting on an in-depth analysis of risks inherent in the
1670 contextual settings within which these practices are undertaken.

1671 In our view, the most interesting aspect of blockchain technology in the context of
1672 financial regulation is precisely how it could be used to improve it. Indeed, if – as we
1673 have described before – the principle of *functional equivalence* was originally
1674 intended as a means to incorporate electronic transactions into the context of
1675 traditional contract law, the same principle could easily be used to incorporate ICOs
1676 into the context of traditional securities law. Yet, as happened with digital
1677 technologies in the context of e-commerce, the technological advances brought about
1678 by blockchain technologies may turn out to be great tools for securing the
1679 enforcement of securities laws and regulations, and, more broadly, for improving the
1680 operations of financial markets.

1681 So far, most of the focus in the financial sector has been on the use of regulatory
1682 technology (“regtech”) to support regulatory reporting and compliance. In our view,

¹³⁹ See for instance SA Corwin and P Schultz, “The role of IPO underwriting syndicates: Pricing, information production, and underwriter competition” (2005) 60(1) *The Journal of Finance* 443–486.

1683 blockchain technology can do more than that. By incorporating technological guarantees
1684 into the very fabric on an ICO, token issuers could reduce the level of risks that these
1685 fundraising practices present for investors, and financial markets more generally –
1686 thereby reducing the need to comply with the stringent rules and regulations that
1687 currently affect the majority of public offerings.

1688 One crucial question that remains an important area of further research is whether
1689 blockchain technology might eventually result in an evolution of existing financial
1690 regulations, or even lead to the creation of new laws. Just as the development of
1691 information technology forced the evolution of privacy and data protection
1692 regulations in the US and Europe (with the General Data Protection Regulation being
1693 the latest example), we might expect securities laws to evolve along with the broader
1694 adoption and integration of blockchain technology and smart contracts into the global
1695 financial fabric. To some degree, we are already seeing the first glimmers of this
1696 trend, as financial regulators around the world are beginning to regulate ICOs.

1697 Yet, ICOs may just be the tip of the iceberg. For instance, if distributed ledger technology
1698 holds the promise of instantaneous settlement – thereby making central counterparty
1699 clearing houses (CCPs) obsolete – they might end up transforming the whole post-trade
1700 regulatory environment, which is intertwined with the existing financial infrastructure.
1701 And if blockchains and smart contracts were to transform the very nature of financial
1702 securities, their potential for disrupting existing securities regulations in the long term
1703 would be further enhanced. Regardless of how the law will evolve, we have no doubt
1704 that the next five years will be particularly interesting for all involved stakeholders.

1705 Appendix: existing regulatory frameworks for ICOs

1706 In this appendix, we reflect upon the basic precepts that have so far guided the establishment of the regulations across
1707 various jurisdictions – keeping a particularly watchful eye on EU and US environments.

1708 Designing a proper regulatory framework is particularly important in the context of ICOs, where the lack of
1709 international harmonisation might result in significant opportunities for regulatory arbitrage. Competition
1710 between jurisdictions to provide the best suited regulatory environment for this promising innovation might lead
1711 some jurisdictions to focus more on creating an efficient, flexible, and accommodating regulatory framework for
1712 innovators, with less attention put on the core objectives of combatting fraud, and protecting the interests of all
1713 parties involved – subscribers and issuers alike.

1714 In light of these regulatory approaches, it appears as though the similarities between ICOs and IPOs have leaned
1715 towards assimilating ICOs to traditional securities offering – although some jurisdictions have established a more
1716 lightweight set of rules for ICOs, in particular circumstances.

1717 Stepping back and looking at the ICO trends since their inception, it is now clear that many ICOs in the 2014–2016
1718 period did not account for securities regulation. While some simply hoped to remain under the regulator’s radar,
1719 others considered that hybrid nature and original status of ICO tokens disqualified them from being regarded as
1720 investment securities.

1721 Although early token sales were done in the shadows of the law, as the amount of investments raised by ICOs started
1722 to grow, reaching several hundreds of millions of dollars for some projects, it eventually caught the attention of
1723 regulators, which eventually intervened. Both TheDAO and Munchee episodes (described in the article)
1724 emphasised the regulatory risk attached to a jurisdiction where the regulator has not yet clarified its stance over
1725 how this innovation should be treated.¹⁴⁰

¹⁴⁰ Hopefully, in both of these instances, the regulatory damage was limited: in the former case, TheDAO had ceased to exist by the time the SEC published its investigative report; in the latter case, Munchee “consented to the SEC’s cease-and-desist order without admitting or denying [its] findings”.

1726 The growing need for regulation was also marked by the fact that, as opposed to the early projects which had a strong
 1727 team and a large community behind them, in 2017 and 2018 more and more projects were launching ICOs with
 1728 nothing more than a website and a white paper. Regardless of the quality of their ideas, these projects were
 1729 generally driven by a small team of people with little to no managerial experience, who were mostly interested
 1730 in exploring new ways to raise money. These teams spent a lot of money in promoting their ICO – ie
 1731 communicating about their upcoming token launch, in order to create hype around the tokens and therefore get a
 1732 maximum number of investors on board – sometimes spending up to several million dollars for their campaign,
 1733 rather than focusing on the development of the project itself.

1734 To complicate things further, there was often little transparency concerning the way in which these projects were
 1735 operated and by whom, what their corporate structure was (if any), who controlled the funds and how these
 1736 funds were to be spent over time. There were also many uncertainties concerning the scope of initial pre-sales,
 1737 in the form of private placements with strategic investors, often with considerable discounts to these early
 1738 investors, whose identities were generally not known to the public.

1739 This led several regulatory authorities across the globe to raise concerns about the need to integrate ICOs within
 1740 existing regulatory frameworks, or perhaps even create new regulations specifically designed to address these
 1741 concerns. Given the strong similarities between ICOs and IPOs or equity crowdfunding – as we hope to have
 1742 shown – most of the reactions thus far came from securities regulators, eager to expand the scope of security
 1743 regulations over these new fundraising practices. Despite the best efforts and claims made by many token
 1744 issuers, who often tried to elaborate novel utility models for their tokens in order to bring them as far as possible
 1745 from securities, it has often been the case that – in practice – these tokens have actually been used and
 1746 purchased as securities (ie investment contracts).

1747 Accordingly, many regulatory authorities from different jurisdictions have been active in trying to figure out the best
 1748 way to regulate these token sales, in order to ensure compliance with security laws (especially the rules concerning
 1749 consumer and investor protection) without unduly hindering innovation. From the delivery of preliminary warnings,
 1750 to the issuance of statements or reports, and, in some cases, the enactment of new rules and regulations, a variety of
 1751 regulatory interventions have taken place around the world, and are still in the making in some parts. These
 1752 interventions have often reflected different – and discrepant – approaches, thereby creating a significant lack of
 1753 harmonisation at the international level. As a result, there exist today a strong heterogeneity of regulatory
 1754 positions with regard to ICOs.¹⁴¹

1755 All in all – as the following summary shows – these cross-border differences and ongoing regulatory reforms suggest
 1756 that ICO issuers, which now have to deal with more savvy and careful investors, should still follow a prudent
 1757 approach and restrict their token sales to jurisdictions where an articulate and stable regulatory environment
 1758 already exists. We provide below a synthetic overview of the various regulatory interventions that have been
 1759 undertaken in different countries.¹⁴²

1760 Summary of regulators' positions¹⁴³

1761 • **USA:** The *Howey* test represents the fundamental test to ascertain whether a blockchain-based token qualifies
 1762 as a security (ie as an investment contract). In July 2017, the SEC issued a statement holding that TheDAO
 1763 tokens should be deemed as securities, because falling within the scope of the *Howey* test. It added that, in order
 1764 to assess whether a token is a security, it is not enough to look at the utility model of the token, but one needs
 1765 also look at the specific circumstances of each token sale. In December 2017, SEC Chairman Jay Clayton
 1766 issued a public statement on cryptocurrencies and ICOs, stressing that the interpretation of securities law
 1767 must focus on “substance over form”. Hence, the fact that a token is a “utility token” does not necessarily
 1768 preclude it from qualifying also as a security. One must look, in particular, at the marketing efforts of the
 1769 team(s) promoting the ICO to see whether they are selling them to investors with an expectation of profits
 1770 based on the entrepreneurial or managerial efforts of others – one of the hallmarks of a security under US
 1771 law. This public statement came alongside a decision from the SEC holding that the token sale undertaken

¹⁴¹ For an overview of the various approaches to the regulation of ICOs in various jurisdictions, see eg Hacker and Thomale, *supra*, note 20; De Filippi et al, *supra*, note 70.

¹⁴² Please note that, as relevant laws and regulations may evolve quickly over time, some of the regulatory positions described at the time of writing might eventually become obsolete.

¹⁴³ A general overview of the regulatory responses to ICOs in 25 jurisdictions can also be found in W Kaal, “Initial Coin Offerings: The top 25 jurisdictions and their comparative regulatory responses” (2018). A more in-depth analysis of the regulatory framework for ICOs in several jurisdictions can be found in De Filippi et al, *supra*, note 70.

1772 by Munchee was in violation of securities law. According to the SEC, “even if MUN tokens had a practical use
 1773 at the time of the offering, it would not preclude the token from being a security”. In particular, SEC underlined
 1774 the fact that Munchee had promoted the ICO as a speculative investment and advertised it mostly in channels
 1775 geared toward Bitcoin and Ethereum investors, rather than to the actual or potential users of the platform. In
 1776 November 2018, the SEC released an enforcement report,¹⁴⁴ revealing dozens of enforcement actions against a
 1777 variety of token issuers, most of which had to pay penalties for failing to register their ICO as a security
 1778 offering. Two of them (Airfox and Paragon) even agreed to refund the investors and register their tokens
 1779 as securities. The SEC also brought charges against the founder of a decentralised exchange (EtherDelta)
 1780 who was fined for running an unregistered securities exchange. Thus far, instead of enacting new laws or
 1781 issuing informal guidance, the SEC is said to have adopted a “guidance by enforcement” approach, going
 1782 after the easy targets in each relevant segment of the blockchain space, in order to establish a precedent
 1783 that will inform the operations of similar initiatives.

1784 • **Singapore:** The Monetary Authority of Singapore (MAS) issued a guidance in August 2017, a few days after
 1785 the SEC’s report on TheDAO, stipulating that certain tokens should be classified as financial securities under
 1786 the Securities and Futures Act and should therefore be subject to the same regulatory requirements as
 1787 traditional securities. It noted that a trading platform facilitating a secondary market for digital tokens
 1788 might also need to be approved or recognised by the MAS as an approved exchange or recognised market
 1789 operator, unless otherwise exempted. On November 2017, the MAS released a guide to Digital Token
 1790 Offerings, delineating the regulatory framework that is currently in place and how it might affect an ICO.
 1791 The Guide showed that the MAS is open to these new fundraising practises but will nonetheless exert its
 1792 regulatory authority if ICOs are done in violation of existing laws. It also underlined that, even in the case
 1793 of an ICO that is not subject to security laws, anti-money laundering and counter-terrorism financing
 1794 regulations may still apply. The risk of investing in cryptocurrency and ICOs were reiterated in a
 1795 statement of February 2018,¹⁴⁵ where the MAS said that it will monitor ICOs more vigilantly, in order to
 1796 report any violation to the relevant authorities.

1797 • **UK:** The UK Financial Conduct Authority (FCA) joined the SEC and the MAS with a statement issued on 12
 1798 September 2017, warning investors of the risks inherent in ICOs. The FCA stated that, while some ICO
 1799 tokens might qualify as investment products depending on the rights and expectations they provide to
 1800 token holders, whether or not they qualify as securities is a question that must be assessed on a case-by-
 1801 case basis. Hence, while some ICOs might fall within the scope of FCA regulations, it is unlikely that
 1802 the FCA will regulate all ICOs, especially if they are based overseas. However, the FCA also indicated,
 1803 in a statement from April 2018,¹⁴⁶ that any firm offering cryptocurrency derivatives would require an
 1804 express authorisation.

1805 • **Canada:** The CSA Notice 46-307 (issued on 24 August 2017) discusses the applicability of Canadian
 1806 securities laws to ICO. It first highlights that, thus far, most of the ICOs that the CSA has been consulted
 1807 with qualify as the sale of securities, and should therefore be subject to the prospectus requirement, or file
 1808 for an exemption. The notice also stipulates, however, that each ICO is unique and must be assessed on a
 1809 case-by-case basis: while some tokens could be considered as financial securities, securities laws will not
 1810 necessarily apply to all of them. It also specifies that, even if they do not qualify as securities, some of
 1811 these tokens could, in certain cases, be considered as securities derivatives. Finally, recognising that the
 1812 existing regulatory framework might not be appropriate for these new investment practices, the CSA
 1813 encourages businesses to rely on the CSA Regulatory Sandbox to obtain temporary exemptive relief from
 1814 securities law requirements. On September 2017, the Administrative Financial Markets Court, under a
 1815 request from Quebec’s Autorité des Marchés Financiers, held that the team behind the PlexCorp ICO was
 1816 engaging in an unregistered security offering. As the team continued to solicit investors for their token
 1817 sale, the Superior Court of Quebec found them guilty for contempt of court and sentenced them to jail.
 1818 Conversely, on October 2017, the Ontario Securities Commission approved the ICO of Token Funder,
 1819 demonstrating its willingness to play with ICO issuers that are willing to abide by the rules. While no law

¹⁴⁴ US Securities and Exchange Commission, “Annual Report 2018, Division of Enforcement”, available at <www.sec.gov/files/enforcement-annual-report-2018.pdf>.

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¹⁴⁵ Monetary Agency of Singapore, “Reply to Parliamentary Question on banning the trading of bitcoin currency or cryptocurrency” (2018), available at <www.mas.gov.sg/News-and-Publications/Parliamentary-Replies/2018/Reply-to-Parliamentary-Question-on-banning-the-trading-of-bitcoin-currency-or-cryptocurrency.aspx>.

¹⁴⁶ See <www.fca.org.uk/news/statements/cryptocurrency-derivatives>.

- 1820 has been enacted in this regard, the OSC's 2018 Statement of Priorities¹⁴⁷ indicates the regulation of ICO and
 1821 similar offerings as an important priority in the coming years.
- 1822 • **Israel:** Currently, token sales are not regulated in Israel under any body of law. However, the Israel Securities
 1823 Authority (ISA) announced in late August 2017 that it will put into place a national committee to rule on
 1824 whether tokens should be considered financial securities and to recommend a regulatory policy for ICOs.
 1825 Thus far, the committee has taken a favourable position for ICOs with a view to becoming an "ICO hub".
 1826 In March 2018, the Committee declared that Bitcoin would not be regarded as a security.
 - 1827 • **China:** The central bank of China issued a notice¹⁴⁸ in September 2017 stating that ICOs were responsible for
 1828 seriously disrupting the economic and financial order of the country and should be strictly forbidden. Token
 1829 issuers are obliged to return all money raised through an ICO back to the investors. A further notice was issued
 1830 to all China-based digital tokens exchanges, which were required to stop their operations. China prohibited the
 1831 trading of cryptocurrency and the conversion from legal tender into cryptocurrencies, or vice versa. As of
 1832 today, the government has stopped any ICO activity in mainland China and is expected to start blocking
 1833 any website and online platform related to the trading of cryptocurrency or ICO tokens.¹⁴⁹
 - 1834 • **Hong Kong:** The Securities and Future Commissions (SFC) of Hong Kong released a notice on September
 1835 2017, essentially reiterating the same findings as Singapore's MAS. It stated that the sale of digital tokens
 1836 falling under the definition of securities might constitute a regulated activity and should therefore be
 1837 licensed or registered with the SFC. In February 2018, the SFC released an announcement¹⁵⁰ disclosing
 1838 the various enforcement actions that it had taken against a series of token issuers, reminding exchanges
 1839 that they should not trade tokens that qualify as securities without a licence to do so. A recent speech¹⁵¹
 1840 from the head of the SFC, Julia Leung, warned investors that many of these token offerings are "dubious,
 1841 if not downright frauds".
 - 1842 • **Malaysia:** The Security Commission of Malaysia issued a statement in September 2017 warning investors of
 1843 the various risks posed by ICOs, and the high number of frauds that come along with them. Because these
 1844 practices are currently unregulated, the Commission warned investors about carrying out due diligence on
 1845 the issuers and their operations. In December 2018, the Securities Commission of Malaysia issued a
 1846 statement,¹⁵² describing its plans for early 2019 to regulate the issuance of digital tokens via ICOs and the
 1847 trading of these tokens on exchanges, with a view to bring both activities under the umbrella of securities
 1848 laws in order to ensure investor protection.
 - 1849 • **South Korea:** The Financial Services Commission (FSC) of South Korea created a working group in
 1850 September 2017 aimed at exploring ways to improve KYC and combat terrorism financing. On 29
 1851 September 2017, the FSC declared all ICOs to be illegal on the ground that there are an increasing
 1852 number of fraudulent ICOs being launched in the country. In May 2018, South Korea's National
 1853 Assembly released a proposal to lift the ban, which has yet to be approved. In August 2018, the governor
 1854 of Jeju Island proposed to make the island a "special zone" where token offerings would not be
 1855 prohibited. In spite of these calls to legalise ICOs, the chairman of FSC has retained a firm position on
 1856 the ban.
 - 1857 • **Switzerland:** For several years, the Swiss government has deliberately established a favourable regulatory
 1858 environment for blockchain-related companies. Following the Ethereum crowdsale in 2014, the canton of
 1859 Zug has attracted lots of ICOs, with many teams setting up a foundation as the legal vehicle to issue
 1860 tokens and manage the raised funds. Yet, given the recent boom of ICOs incorporated in Switzerland, the
 1861 FINMA has recently made an announcement, in September 2017, stating that various ICOs are currently

¹⁴⁷ See <www.osc.gov.on.ca/documents/en/Securities-Category1/sn_20180329_11-780_rfc-sop-end-2019.pdf>.

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¹⁴⁸ PBOC, CAC, MIIT, SAIC, CBRC, CSRC, and CIRC, "Announcement on Preventing Financial Risks from Initial Coin Offerings" (4 September 2017), available at <www.pbc.gov.cn/goutongjiaoliu/113456/113469/3374222/index.html> (in Chinese).

¹⁴⁹ Y Xie, "China to Stamp Out Cryptocurrency Trading Completely with Ban on Foreign Platforms", *South China Morning Post* (7 February 2018), available at <www.scmp.com/business/banking-finance/article/2132009/china-stamp-out-cryptocurrency-trading-completely-ban>.

¹⁵⁰ See <www.sfc.hk/edistributionWeb/gateway/EN/news-and-announcements/news/corporate-news/doc?refNo=18PR13>.

¹⁵¹ See <www.sfc.hk/web/EN/files/ER/PDF/Speeches/Julia_20180413.pdf>.

¹⁵² See <www.bnm.gov.my/index.php?ch=en_press&pg=en_press&ac=4783&lang=en>.

- 1862 being investigated for regulatory compliance, and that enforcement actions should be brought against the
1863 projects in violation of financial market regulations. Guide 04/2017, released in the same month, expressly
1864 specifies that, depending on their structure, many ICOs should be regulated under existing bodies of law,
1865 including money laundering, banking, securities and collective investment laws. On February 2018, the
1866 FINMA has published a new set of guidelines describing how it intends to apply financial market
1867 regulations to ICOs. The FINMA distinguishes between: (a) payment tokens, which are not treated as
1868 securities but must comply with anti-money laundering regulations; (b) utility tokens that provide access
1869 to a particular application or service, which do not qualify as securities only if they are already functional
1870 at the point of issue, but only provided that there are no additional features that have an investment
1871 purpose; (c) asset tokens that represent participations in physical assets, companies or other revenue
1872 streams, and which clearly qualify as securities under Swiss law.
- 1873 • **Estonia:** In November 2017, the Estonian Financial Sector Authority (EFSA) issued a statement on the
1874 regulatory framework of ICOs, stating that – depending on their nature and functions – tokens issued
1875 through an ICO might be regarded as securities. The EFSA reiterated the opinion of the SEC’s Chairman,
1876 stipulating that, in assessing the legal qualification of these tokens, one should always consider “substance
1877 over form”. Estonia is the first country that is considering launching its own ICO (Estcoin), an investment
1878 token that would be accessible to all e-Residents. Yet, while Estonia has shown itself to be quite open to
1879 these new fundraising practices, as an EU member state, it is unlikely that Estonia will be able to
1880 implement ad hoc legislation without a broader European consensus.
- 1881 • **France:** In October 2017, the French Financial Markets Authority (AMF) published a public consultation on
1882 the application of existing regulatory framework to ICOs, and potential regulatory reforms to better
1883 accommodate these new fundraising practices. It provided three regulatory options for discussion: (1)
1884 maintaining the regulatory framework, whose scope is generally too narrow to encompass ICOs; (2)
1885 expanding the existing prospectus requirements to ICOs; (3) adopting (a) a mandatory; or (b) an optional
1886 registration and authorisation regime applicable to all ICOs in France, which would be more lightweight
1887 than the existing prospectus requirements. In the meantime, France has set up the Universal Node to ICO
1888 Research & Network (UNICORN) with a view to exploring possible ways to reform the existing
1889 regulatory framework. More recently, France has taken steps to provide an actual regulatory framework
1890 for ICOs within its national jurisdiction. The Business Growth and Transformation bill¹⁵³ (*loi PACTE*)
1891 that is currently being discussed is intended to promote innovation in the French economy. The bill
1892 comprises a whole section dedicated to ICOs (Art 26), stipulating that the issuers of security tokens will
1893 be subject to the standard regulation of security offering, whereas the issuers of tokens that do not qualify
1894 as security could be granted a licence from the AMF insofar as they comply with specific criteria.¹⁵⁴
1895 While obtaining a licence is not mandatory for the latter type of token, it is intended to provide visibility
1896 and greater legitimacy to the token offering.
- 1897 • **Germany:** German national laws comprises a very narrow definition of what might qualify as a security,
1898 bringing most ICOs outside of the scope of German security laws. Other laws may apply, such as the
1899 Banking Act, Investment Code, Payment Service Supervision Act and the Insurance Supervision Act. It
1900 noted, however, that in order for German law to apply, the ICO must be specifically marketed to the
1901 German population. In November 2017, the German Federal Financial Supervisory Authority (BaFin)
1902 issued a statement warning investors of the potential risks involved with ICOs. In December 2017, the
1903 BaFin also published a translation of the European Securities Markets Authority (ESMA) publications
1904 concerning the risks to ICO issuers and investors.
- 1905 • **Italy:** In December 2017, the Italian Security Commission (CONSOB) issued a warning, summarising the
1906 ESMA warnings regarding ICO issuers and investors. The warning was followed by two decisions. One
1907 was a resolution by the CONSOB concerning the trading platform CryptTrade, whose sale of
1908 “cryptocurrencies’ extraction kits” preloaded with a fixed amount of cryptocurrency was held to constitute
1909 an offer to the public of a financial product that is subject to the prospectus requirements. The other was a
1910 decision by the Italian Antitrust Authority, which suspended the activities and fined the companies
1911 involved in the promotion of the Onecoin cryptocurrency, which was considered to fall under the category
1912 of a Ponzi scheme.

¹⁵³ See <www.assemblee-nationale.fr/15/projets/pl1088.asp>.

¹⁵⁴ Note that this solution is akin to option 3(b) from the public consultation.

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- **Gibraltar:** As a leading offshore financial centre, Gibraltar is opening up to cryptocurrency and ICOs as an attempt to position itself a crypto-hub. According to the Gibraltar Financial Service Commission (GFSC), tokens issued through an ICO will only be regarded as securities if they represent a share in a company. Hence, most ICOs thus far fall outside of security laws because tokens do not represent equity in a company. After issuing a preliminary consultation in January 2016, the government of Gibraltar has announced that it is considering putting in place regulations for the transfer of cryptocurrencies, and is exploring ways to accommodate blockchain-related companies, including those engaging in ICOs, within a more favourable regulatory framework. In March 2018, the Gibraltar Government released a white paper on token regulation¹⁵⁵ describing how the government intends to regulate the promotion, sale and distribution of tokens, as well as the secondary market operators. The document reinstates the fact that most tokens will not qualify as securities under the law, but rather should be regarded as commercial products. The document highlights, however, that every token issuer might be required to appoint an “authorised sponsor” responsible to ensure that the token sale is done in compliance with disclosure and financial crimes laws. Specific regulations are expected to follow in early 2019.
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- **Liechtenstein:** In September 2017, the Financial Market Authority of Lichtenstein published a fact sheet on ICOs, stating that the application of securities laws will depend on specific rights attached to the tokens issued through an ICO. The country also established a fast track fintech department in charge of responding to specific inquiries concerning the regulation of ICOs.
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- **Russia:** In September 2017, the Central Bank of Russia issued a warning about the risks posed by cryptocurrencies and ICOs. In October 2017, President Putin issued a statement ordering the government and the central bank to develop a regulatory framework for the regulation of cryptocurrencies and ICOs. The Russian Ministry of Finance has been leading the drafting of a new bill on “digital financial assets”, whereas the Russian central bank has been in charge of drafting the regulation alternative methods of fundraising, which specifically touches on crowdfunding and ICOs. The current version of this new regulatory framework stipulates that cryptocurrencies and tokens are to be regulated as financial assets, whose trading can only be achieved on authorised exchanges. It also imposes stringent KYC requirements for token issuances, and a limitation on the amount of funds that each individual can invest into an ICO. Because of disagreement between the Ministry of Finance and the Russian central bank as to the best way to regulate ICOs, the passing of these bills has been delayed.
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¹⁵⁵ See <gibraltarfinance.gi/20180309-token-regulation—policy-document-v2.1-final.pdf>.