Decoupling Tokens from Trading: Reaching Beyond Investment Regulation for Regulatory Policy in Initial Coin Offerings

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Introduction

Initial coin offerings (ICOs), a means by which technology entrepreneurs raise finance from members of the public to fund the development of innovative technology projects, has become a growing market. About 50 ICOs have raised over USD$1 billion in the first two months of early 2018, with the top ten ICOs raising between the equivalent of USD$36 to USD$100 million.[1] In the absence of well-accepted institutions of financial markets regulation, it is an astonishing phenomenon to witness the appeal and growth of the unregulated ICO markets.

The innovative structures of 'tokens' or 'coins' offered in ICOs do not fit neatly into existing fund-raising regulatory regimes, and the international/borderless nature of ICO markets defy national enforcement.[2] However, the US SEC issued a report in mid-2017 to classify certain tokens as securities and offers of such tokens would need to comply with securities regulation or exemptions to such regulation.[3] Although the EU and UK have not issued precise clarifications on regulatory treatment, the European Securities and Markets Authority and the UK Financial Conduct Authority have warned that existing regulatory regimes may apply to ICOs depending on how they are structured and that investors should be aware that these are high-risk and unregulated investments.[4]

There is understandably concern over regulatory arbitrage- whether ICOs are merely a means of using technological innovation to obfuscate the true nature of an investment offering, and therefore avoiding regulatory compliance. This regulatory avoidance potentially jeopardises investors by not adhering to standards of investor protection enshrined in securities and financial regulation. On the other hand, ICOs may defy regulatory classification because they could be truly innovative in terms of redefining asset classes and the fund-raising process. This article argues that instead of attempting to fit ICOs within the current definitions of financial instruments that may most resemble the ICO, such as 'securities' or 'collective investment scheme', both of which attract the need for

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[1] https://www.coinschedule.com/stats.html.

[2] Although extra-territorial jurisdiction exercised by the US Securities and Exchange Commission has historically been robust, see affirmation in *SEC v. Traffic Monsoon, LLC* (D. Utah)(28 March 2017).

[3] SEC, *Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO* (25 July 2017) at https://www.sec.gov/litigation/investreport/34-81207.pdf.

[4] 'ESMA Highlights ICO Risks for Investors and Firms' (13 Nov 2017) at https://www.esma.europa.eu/press-news/esma-news/esma-highlights-ico-risks-investors-and-firms; FCA, 'Consumer warning about the risks of Initial Coin Offerings ('ICOs')' (12 Sep 2017) at https://www.fca.org.uk/news/statements/initial-coin-offerings.

regulatory approval and compliance with regulatory requirements, policy-makers should consider more broadly how regulatory policy should be conceived (a) in relation to the development of asset classes in financial innovation and (b) how the balance of investor protection and fund-raising should be achieved.

Section A discusses the development and characteristics of ICO markets in terms of primary markets (where subscription is made directly for ICO tokens as offered by ICO issuers) and secondary markets (where tokens are traded and resold amongst market participants). Section B discusses the potential application of regulatory classification to ICOs, comparing the US SEC's approach to the EU's and UK's potential approaches in securities and collective investment scheme regulation. We argue that there are genuinely distinguishing characteristics in ICOs and that an approach that forces 'coherences' is counterproductive. We suggest that the primary markets should be governed by proportionate buyer protection regulation that adheres to common standards in consumer protection but these are not necessarily at the same level as investor protection.

Section C argues that investor protection issues really only arise in relation to the secondary markets where tokens are traded like derivative financial contracts and a regulatory framework can be considered to achieve the protection of market participants. We sketch the contours of such a framework. We argue that our suggestions form a package of proportionate reforms for policy-makers, addressing key market protection needs while paving the way for asset innovations to take place and access to finance to be facilitated. Section D concludes.

A. The Initial Coin Offering Markets

ICOs fund technological innovation,[5] usually in blockchain-based platforms, to provide a range of services or products. These include: global wireless internet (Iungo), financial services such as banking and wealth management for cypto-assets (Crypterium, European Crypto Bank, Swissborg), energy sharing (Envion, Cryptoslate), technological services such as enhancement of computing power (Golem) and other products and services in sectors including finance, healthcare, data analytics, travel, tourism, gaming and energy/utilities.[6] ICOs fund technological innovation at the very cutting edge for disruptive products and services. The fund-raising is itself innovative as conventional intermediaries, markets and their technologies are not needed. From marketing to the subscription for 'tokens' offered in ICOs, and to secondary trading in tokens, new technologies, systems and actors are involved, by-passing conventional financial infrastructure and regulatory regimes.

Primary Markets

[5] S Adhami et al, 'Why do Businesses Go Crypto? An Empirical Analysis of Initial Coin Offerings' (2017) at http://ssrn.com/abstract=3046209.
[6] Above.

The primary markets for ICOs refers to the direct subscription by purchasers to tokens offered by ICO issuers over the issuer's blockchain platform. Empirical research documents that ICOs are preceded usually by voluntary disclosure on the part of the development team, in the form of a white paper, but their content may be variable. Project information is usually provided, but there is variability in informational content and quality, such as regarding the code to be used[7] or the team developing the project.[8] In comparison with standards for disclosure in securities offerings, ICO disclosures are still relatively incomplete and selective. Weaknesses are particularly found in team and financial information. For example, it is not altogether clear whether an ICO is offered by a corporate form, and in many cases, ICO issuers are incorporated offshore.[9] The ambiguity in such basic information relating to 'identity' has not affected ICO purchasers. Further, financial information, which is the dominant disclosure requirement in securities offerings, is usually lacking in ICO white papers, as projects may be in early and even speculative stages.

ICO 'issuers' conduct the offering over a blockchain platform, issuing 'tokens' in return for investments made in cyptocurrency, such as ethereum or bitcoin.[10] The tokens can be utility tokens, conferring on subscribers a right (in the future) to use or enjoy certain services,[11] 'fun' tokens such as conferring a benefit to the community at large,[12] crypto-asset tokens which confer on subscribers the issuers' 'currency' (eg Clearcoin, Reddcoin by Reddit.com) for their services[13] and investment tokens which confer on subscribers a right to submit investment decisions. An example of an investment token was offered in the Decentralised Autonomous Organisation (DAO) developed on the ethereum blockchain in 2016. Subscribers' votes are submitted to the DAO that is able to execute smart contracts that allocate cryptocurrencies to investments that the majority approve. If conditions for allocation fail, cryptocurrencies are returned to

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[7] Adhami et al, 2017.
[8] Dirk Zetzsche et al,, 'The ICO Gold Rush: It's a Scam, it's a Bubble, it's a Super Challenge for Regulators' (2017) at http://ssrn.com/abstract=3072298.
[9] Such as Trust Company Complex based in the Marshall Islands, named in the Panama Papers.
[10] Wulf A Kaal and Marco Dell'Erba, 'Initial Coin Offerings, Emerging Practices, Risk Factors and Red Flags' in Florain Moslein and Sebastian Omlor (eds), *Fintech Handbook* (CH Beck, 2018).
[11] Philipp Hacker and Chris Thomale, 'Crypto-Securities Regulation: ICOs, Token Sales and Cryptocurrencies under EU Financial Law' (2017) at http://ssrn.com/abstract=3075820; Zetzsche et al, 2017;.Jonathan Rohr and Aaron Wright, 'Blockchain-Based Token Sales, Initial Coin Offerings, and the Democratization of Public Capital Markets' (2017) at http://ssrn.com/abstract=3048104.
[12] Zetasche et al, 2017.
[13] Iris M Barsan, 'Legal Challenges of Initial Coin Offerings (ICO)' (2017) 3 RTDF 54; Yan Chen, 'Blockchain Tokens and the Potential Democratization of Entrepreneurship and Innovation' (2017) at http://ssrn.com/abstract=3059150; and documented by Zetzsche et al, 2017 as the majority of type of tokens issued.

subscribers by the smart contract protocol. The DAO has however been categorised as a securities offering by the US SEC,[14] as Section B will discuss. Compared to conventional financial investments such as in securities or collective investment schemes, as will be analysed in greater detail in Section B, ICOs seem to offer a greater range of consideration for the 'investment', such as services and community benefit. These forms of consideration are innovative and potentially transformative of our conception of an investment asset class. Section B argues that ICOs may rightly not fit within the existing regimes for regulating financially-based investment instruments. Nevertheless, the majority of ICOs issued to date offer crypto-currency for purchasing future services and products developed by the project, or traded in secondary markets like assets,[15] hence purchasers may still be most concerned about the ultimate financial value creation by ICOs, a point we return to in Section B.

Marketing for ICOs is usually carried out by announcements made in crypto-discussion forums, blogs and webzines (such as on Reddit, coindesk.com) and services that maintain upcoming ICO lists (eg Smith and Crown). Services that 'vet' or 'rate' upcoming ICOs have arisen in order to fulfil an information mediation role in the primary markets. ICOBench provides ratings (a numerical figure out of 5) for the ICO profile, team, vision and product. Other competing services include ICOrating.com and ICOmarks.com, each providing their own rating scales and definitions. Platforms have arisen to host the primary market in ICOs, and they reputationally back an ICO in order to mediate information asymmetry (eg CoinList, ICO Engine, BlockEx). Even online crowdfunding platforms such as Indiegogo and Republic have entered the space for ICO primary markets. It is noteworthy that many platforms acting as primary markets and rating services are new businesses, sometimes offering ICOs themselves! The market for information mediation is relatively young and fragmented, and many entities are not necessarily backed by an extensive track record. There is also likely to be a significant amount of 'inside' or selective information that is shared amongst certain groups, or at pre-sales, which some ICOs conduct with selected purchasers. The information environment is unlikely to entail parity among purchasers.

Our examination of primary markets shows that certain key conditions are similar to those of conventional financial markets, such as information transparency on the project to be funded, and the existence of information mediation services. Voluntary efforts to overcome information asymmetry are to an extent supplied by market forces alone. However, the astonishing find is that investor protection in primary markets does not seem to be an important condition for ICO purchasers.

The relegation of informational importance in ICO markets may be attributed to novelty-chasing, hype and an optimism bias, a form of 'uninformed' participation that has already been observed in crypto-currency exchange markets that

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[14] SEC report, above.
[15] Zetzsche et al, 2017.

predate ICO markets.[16] Such 'uninformed' but positive sentiment, albeit in fragmented information environments, explains why ICO purchasers flock to ICOs that conduct pre-sales with selected investors before a public sale, even though one would expect pre-sale purchasers to be informationally advantaged.[17] Such uninformed participation also seems to be resilient to bad news, although it remains highly uncertain whether this phenomenon will continue. For example, ICO purchasers seem undeterred by ICO scams (which, as documented by Chohan,[18] comprise of about 10% of ICOs); or the possibility of crypto-currency flaws (mooted by Walch[19]); or the significant failure rate of projects, which is documented at 46% at the end of 2017,[20] or the failure of markets, such as Mt Gox in 2014 and the heist at Coincheck in 2018.

We suggest that this is because ICO purchasers place reliance on exit rights in the secondary market as the key means for managing their risk, therefore relegating the importance of real engagement with the project's promises and prospects. In this way, ICO purchasers are not necessarily 'investing' in the value creation by the project, a point we return to in Section B. This phenomenon brings about some advantages as well as drawbacks. It may be argued that disengagement by ICO purchasers with the project may be 'mutually insulating' for both the project developers and ICO purchasers, and mutually beneficial. The project can be 'left in peace' from market noises so that project developers do not have to be concerned with market pressures. The drawback of such insulation is that the development team lacks accountability to the ICO purchasers. Further, as will be discussed, secondary trading in relation to the tokens seems not affected even if the project fails, as tokens themselves can carry on independent life as assets whose value can be determined relative to their exchange power, for other cryptocurrencies or state-backed currencies.[21]

Although tokens often do not confer the equivalent of governance rights such as in securities, ICO purchasers can conceivably be affected by problems such as subsequent dilution. ICO issuers have the discretion to clarify (or otherwise) plans to issue tokens in the future as the initial round of funding is used up. Many ICOs do not provide such clarification and new rounds of token issuing could

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[16] Christopher Fink and Thomas Johann,'Bitcoin Markets' (2014) at http://ssrn.com/abstract=2408396.
[17] Adhami et al, 2017.
[18] UW Chohan, 'Initial Coin Offerings (ICOs): Risks, Regulation, and Accountability' (2017) at http://ssrn.com/abstract=3080098.
[19] Angela Walch, 'The Bitcoin Blockchain as Financial Market Infrastructure: A Consideration of Operational Risk' (2015) 18 Legislation and Public Policy 837.
[20] Fortune reports that about 46% of ICO projects in 2017 have failed, i.e. halted, become silent or stopped development, see 'Nearly Half of 2017's Cryptocurrency 'ICO' Projects Have Already Died' *Fortune.com* (25 Feb 2018) at http://fortune.com/2018/02/25/cryptocurrency-ico-collapse/.
[21] 'ICO bankruptcy: what happens with tokens of failed projects' at https://bitnewstoday.com/market/ico/ico-bankruptcy-what-happens-with-tokens-of-failed-projects/.

diminish the value of tokens held by the initial purchasers.[22] ICO purchasers often have no protection against this, and this risk reinforces the primary means of investor protection as exit rights in secondary markets.

There is little evidence of market developments for enforcement mechanisms such as in private dispute resolution or arbitration in the primary market for complaints relating to project or team disclosure. This is a curious absence as commentators have generally supported the existence of strong investor protection in private securities litigation as being crucial for the success of securities markets.[23] Indeed, even if general law such as the law on misrepresentations and mis-selling may be invoked by ICO purchasers, enforcement would be dogged by questions of what laws apply and which jurisdiction is appropriate for enforcement. ICO purchasers are likely deterred by the cross-border nature of such disputes or the uncertainty in determining preliminary issues (which would be costly) in formal litigation. The unfavourable environment in investor protection, whether in terms of the *ex ante* information environment or the *ex post* enforcement environment, seems not to have affected sentiment and hype in ICO primary markets. We suggest this is because many ICO purchasers are disengaged from the ultimate projects, and treat tokens as secondary market trading objects, or assets in themselves.

Secondary Markets

Secondary markets in ICOs are a key condition for their success. Whether or not ICOs confer future rights over utility services, or cryptocurrency such as the issuer's own 'coin', the tokens conferred in return are themselves treated as 'assets' that can be traded immediately. The existence of secondary markets provide ICO purchasers with the freedom to decide whether they would hold the tokens in anticipation of the project's realisation, or to liquidate them at opportune times in order to realise trading gains.

There are many secondary markets for trading ICO tokens. The existence of this bottom-up infrastructure can be attributed to the rise of exchanges that first started to facilitate trading in cryptocurrencies such as bitcoin and ether, dating back to 2011. These exchanges facilitate exchange between different cryptocurrencies, and between cryptocurrencies and state-backed currencies such as the US dollar. They are based in different parts of the world, such as Kraken in the US, Canada, Europe and Japan; Bitstamp in Slovenia, Coinbase in San Francisco, USA, BTC in China and Bulgaria. Established cryptocurrency exchanges such as Coinbase (founded in 2012) as well as new exchanges that have arisen (Poloniex, BlockEx, Digital Asset Exchange) now facilitate trading in tokens. ICO purchasers are able to trade tokens for more established cryptocurrencies or for state-backed currencies such as the US dollar or euro.

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[22] Kaal and Dell'Erba, 2017.

[23] R La Porta et al, 'Law and Finance' (1998) 106 Journal of Political Economy 1113; 2006.

Trading markets in both cryptocurrencies and tokens utilise blockchain-enabled clearing and settlement, and do not need to rely on existing infrastructure in conventional financial markets. These markets may be regarded as disruptive of conventional financial markets as they are disintermediated from mainstream financial intermediaries such as brokers and dealers. They can be directly accessed by users, and users do not need to subject themselves to well-documented principal-agent problems with conventional financial intermediaries such as bundled fees and charges,[24] intermediaries' conflicts of interest[25] and poor practices in intermediaries' custodial functions and conduct of business.[26] However, these markets with their new technologies pose a different form of opacity and power inequality with users, and also expose users to new principal-agent problems relating to the conduct of new technological/financial intermediaries. These issues are addressed in Section C.

Market infrastructure is governed completely by exchanges' own technologies and policies, such as Ripple's own trading, clearing and settlement systems, or BlockEx's own 'entire lifecycle' system for managing digital assets. Exchanges offer different transaction fee structures and custodial policies for cryptocurrencies and assets. Crypto-assets or currencies are stored in digital wallets maintained by the exchanges, with different exchanges adopting different measures of protection from cybersecurity risks.[27] Market participants are left to exchanges' voluntary efforts in addressing losses- many remain stranded after the failure of Mt Gox though Coincheck's users have been repaid. It may be argued that competition among exchanges may provide the solution for customer protection. Exchanges can compete on various qualities such as cost, ease of use and reputation,[28] and user choice can deselect markets that do not serve users' needs adequately. However, information asymmetry abounds in the market for secondary markets, as many of these are young businesses with

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[24] See CESR, *Inducements: Good and Poor Practices* (2010) documenting financial intermediaries' less than optimal treatment of clients in imposing charges and fees, and this paved the way ultimately for new and restrictive rules on charging customers for research expenses in connection with dealing, MiFID Commission Directive 2017/593.

[25] Discussion in Iris H-Y Chiu, 'Is there Scope for Reforming the Emaciated Concept of Fiduciary Law in Finance? Critically Discussing the Potential Achievements of Reform in Special Issue: Liber Amicorum- Mads Andenas' (2017) 27 European Business Law Review 937.

[26] Eg problems revealed in poor custody of client moneys and assets in Lehman Brothers International (Europe) (in administration) v CRC Credit Fund Ltd and others [2010] EWCA Civ 917; In the matter of Lehman Brothers International (Europe) (In Administration) and In the matter of the Insolvency Act 1986, UK Supreme Court, 29 Feb 2012.

[27] A 'hot' wallet which can be accessed over the internet is more risky, and resulted in the hack at Coincheck, causing a loss of the equivalent of USD$500 million in digital tokens. A 'cold' wallet which is stored on computers not connected to the internet are regarded as more robust to cybersecurity risks.

[28] Thomas Dimpfl, 'Bitcoin Market Microstructure' (2017) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2949807.

limited track records.[29] The quick failure rate of exchanges as unviable businesses[30] also reflects a highly transient and unpredictable landscape for users, even if the forces of competition are at work.

Although the landscape for secondary markets is fragmented, unpredictable and completely self-regulatory,[31] a landscape different from that discussed in Lee[32] in terms of the regulatory institutions that underpin the governance, infrastructure and running of conventional financial markets, market participants seem unfazed. This is because liquidity conditions remain attractive. Large exchanges seem cointegrated and lead price formation,[33] and most exchanges are liquid although different markets have different levels of depth.[34]

It is observed by both media and academic commentators that cryptocurrency and token prices are highly volatile, capable of significant changes within the day.[35] Although cryptocurrencies and tokens are structured and purposed as 'currency' or a means of exchange,[36] they have become more like 'assets' than currency,[37] as there is a lack of underpinning factors (such as the role of a central bank whose commitment is to maintain the value of a state-backed currency) to provide stability for currency value and their use. The markets treat cryptocurrencies and tokens as tradeable assets for value arbitrage. The volatility of prices reflects a market that is steered completely by speculative and short-termist trading sentiment, amidst great uncertainty as to the potential of the technological innovations that are touted.[38] ICO purchasers may quickly

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[29] It is reported that exchanges have to limit subscribers due to a surge in the volume of demand, and new exchanges arise to fill the gap for unmet demand, see 'Latest Digital Asset Exchange BITPACTION Slotted To Get Rolled Out Soon' (17 Jan 2018) at http://www.nasdaq.com/press-release/latest-digital-asset-exchange-bitpaction-slotted-to-get-rolled-out-soon-20180117-01294.
[30] '36 bitcoin exchanges that are no longer with us' at https://bravenewcoin.com/news/36-bitcoin-exchanges-that-are-no-longer-with-us/; 'Melotic shits digital asset exchange' , *Coindesk.com* (2015) at https://www.coindesk.com/melotic-shuts-down-digital-asset-exchange/.
[31] These markets may however require registration with the SEC if investment tokens, thus securities, are traded.
[32] Ruben Lee, *Running the World's Markets* (NJ: Princeton University Press, 2011).
[33] Fink and Johann, 2014.
[34] Dimpfl, 2017.
[35] Fink and Johann, 2014; Olivier Scailliet et al, 'High-Frequency Jump Analysis of the Bitcoin Market' (2017) at https://ssrn.com/abstract=2982298.
[36] Some retailers such as overstock.com and Dell accept these as means of exchange i.e. for payment, or they are extensively used in dark markets, i.e. illegal online marketplaces for drugs, see Tsukerman, 2015.
[37] Octavian Nica et al, 'Cryptocurrencies: Economic Benefits and Risks' (2017) at http://ssrn.com/abstract=3059856.
[38] Carlotta Perez, *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages* (Cheltenham: Edward Elgar 2002); 'The Advance of Technology and Major Bubble Collapses: Historical Regularities and Lessons for

dispose of their tokens in the immediate aftermarket to enjoy initial trading gains and move on to something else. To an extent, the volatility can also be attributed to there being no institutions in secondary markets to provide the equivalent of market-making functions, which can smooth out the liquidity conditions.

Nevertheless, commentators find that there are large block holders of cryptocurrencies and tokens in the markets, and these seem to be a crucial group of 'long-term' holders who are technologically savvy and perhaps early adopters.[39] Their trading can cause major price swings,[40] but they are more likely to trade privately if they do.[41] There is also surprisingly little manipulative activity on crypto-asset markets[42] despite there being no regulatory institutions that maintain standards of market conduct.[43] Despite the price volatility observed, Wang and Vergne[44] argue that crypto-asset values fundamentally correspond to market perceptions of technological achievements.

The ICO secondary markets show us how markets can be attracted to fund projects, and how markets can sustain themselves based on critical masses of crowds even if such crowds are speculative, short-termist and disengaged from underlying projects. This reminds us of Kay's story about enrolling the crowd to guess the weight of a cow and how this has resulted in the development of markets for estimating values without necessarily connecting back to the cow. [45] However, the success in ICO primary markets, despite the lack of institutions of investor protection is largely attributed to ICO purchasers' perception of their ready ability to create private wealth for themselves and to protect themselves through exit rights in liquid secondary markets.

In ICO markets, the creation of 'private wealth' for entrepreneurs and supporters need not be an inter-dependent or correlated phenomenon, as fund-raising by entrepreneurs is not necessarily supported by continued engagement with or accountability to their supporters; and ICO purchasers' private wealth is largely dependent on the trading gains. The success of market-based finance depends on

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Today' (2010) at http://www.carlotaperez.org/downloads/media/PEREZTechnologyandbubblesforEngelsbergseminar.pdf.

[39] Chen, 2017.

[40] Mario Bianchetti et al, 'Are Cryptocurrencies Real Financial Bubbles? Evidence from Quantitative Analyses' (2018) at http://ssrn.com/abstract=3092427.

[41] Fink and Johann, 2014.

[42] Dimpfl, 2017.

[43] This can in part be attributed to the technological underpinnings of the infrastructure that are open and can be inspected by the public.

[44] Sha Wang and Jean-Philippe Vergne, 'Buzz Factor or Innovation Potential: What Explains Cryptocurrencies' Returns?' (2017) 12 PLosOne 1.

[45] John Kay, 'The Parable of the Ox' (24 July 2012) at https://www.ft.com/content/bfb7e6b8-d57b-11e1-af40-00144feabdc0.

the creation of tradeable assets,[46] whose tradeability seems to be maintained by *market, not asset* conditions. Such market-based finance promotes atomisation and individualism in private wealth creation, but is crucially supported by secondary markets that meet the essential conditions of liquidity. If the latter is not maintained or sustained, the primary market could be jeopardised.

Can secondary markets sustain themselves as liquid environments that market participants have confidence in, without formal institutions of regulation? Although such an environment may be likened to Keynes' reference to stock markets as casinos, as long as a critical mass of participation can be achieved, the self-sustaining nature of secondary markets can be maintained. More competitive exchanges may be more successful in maintaining such a critical mass, and they may compete on user friendliness, price, user confidence in their governance, infrastructure, security and policies. However, users face principal-agent problems with new technological/financial intermediaries such as in custodial duties and customer treatment. As users ponder the failure of Mt Gox in 2014, and the heist at Coincheck in 2018, we wonder when we may reach a tipping point of discontent when users may demand regulatory oversight. Perhaps ungoverned markets may remain that way as long as they are not scaled up.[47] Regulatory institutions may be needed to underpin markets with a wider footprint or indeed improve their scalability, which we discuss in detail in Section C.

The success of ICO markets so far reveals to us the essential conditions for the success of market-based finance, when we strip away the support of regulatory institutions. Market-based finance can be successful but it comprises of a large participant base that is essentially fickle, transient and speculative [48] even if what is ultimately funded may be a long-term project that is socially beneficial. The preference for mobility is arguably a rational form of risk management, but it is arguably inherent in the nature of market-based finance to be prone to bubbles and instability. Our insights from ICO markets suggest that it may be more important to look into *markets* instead of *asset* regulation for ICOs as market failures, instability or crises could affect a wide footprint even if policy-makers regard these markets as not posing systemic risk at the moment.[49] We argue that it is not as productive to focus excessively on asset regulation in terms of classifying ICOs to fit with existing financial instruments so as to apply existing regimes over them. This is because there are genuine 'fit' inconsistencies with existing regimes and the application of such regimes may unduly stifle

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[46] Karen Ho, 'Corporate Nostalgia? Managerial Capitalism from a Contemporary Perspective' in Greg Urban (ed), *Corporations and Citizenship* (University of Pennsylvania Press 2014), on this development for corporate securities.
[47] John Flood and Lachlan Robb, 'Trust, Anarcho-Capitalism, Blockchain and Initial Coin Offerings' (2017) at http://ssrn.com/abstract=3074263.
[48] LE Talbot, 'Why Shareholders Shouldn't Vote: A Marxist-Progressive Critique of Shareholder Empowerment' (2013) 76 Modern Law Review 791.
[49] 'Bitcoin is a speculative asset but not yet a systemic risk', *The Economist* (16 Dec 2017).

innovation. Further, it is uncertain to what extent such regimes are relied upon by ICO purchasers in primary markets, as subscribers look to trading and not to project disclosure or prospects for their protection. Extensive primary market regulation on an *asset* basis may be a white elephant for ICO purchasers and highly costly to ICO developers. We turn next to argue that excessive efforts to regulate the 'asset' nature of ICOs may be misplaced, before turning to suggestions for market regulation in Section C.

B. Regulatory Treatment of the 'Asset' Nature of ICOs

Existing regulatory regimes provide for investor protection according to the 'asset' nature of financial instruments, as their 'asset' nature is essentially based on 'credence' goods - i.e. economic goods whose performance cannot be ascertained until after some passage of time. Hence investor protection is designed to equip investors as far as is possible before they make the commitment to certain credence goods.

There are two main categories of 'assets' currently regulated in relation to investor protection that have entailed slightly different regulatory treatment- 'assets' created by an undiversified entity, such as securities issued by corporations or sovereigns, or structured assets issued by a special purpose vehicle, or assets created by diversified entities ie collective investment funds, whether or not such diversification is extensive. In relation to the former, securities regulation has been developed to protect investors while the latter is governed by collective investment scheme regulation. We turn to discuss the tenets of securities regulation and collective investment scheme regulation and whether and how ICOs 'fit' within these categories. We argue that ICOs offer innovative characteristics that do not neatly fit into either category and the perception of them as designed to pursue regulatory arbitrage should not be carried too far. It is arguably more productive not to stick to a 'coherences' approach and consider the room for new policy thinking in relation to what investor protection issues are really at stake.

Tenets of Securities Regulation and ICOs

Securities are defined as 'transferable' and 'negotiable' on capital markets, with the exception of payment instruments, that are capable of giving rights to acquisition or sale by reference to market prices. The EU and UK recognise shares in companies or other equivalent organisational forms, bonds and securitised debt as 'securities'.[50] The fundamental characteristic seems to be that of market tradeability, although Hacker et al argue that securities should also be thought of in terms of instruments that give rise to governance rights for shareholders.[51] In terms of bonds and securitised debt, it is also arguable that such 'securities' gives rise to financial rights whether in the form of repayment rights or covenant rights that are ancillary to the protection of financial rights. In

[50] Art 4, Markets in Financial Instruments Directive 2014/65/EU, and Art 4, Prospectus Regulation 2017.
[51] 2017, above.

the US, the *Howey* test for 'securities' is whether the financial instrument is "a contract, transaction or scheme whereby a person invests his money in a common enterprise and is led to expect profits solely from the efforts of the promoter or a third party." This is slightly different from the EU/UK formulation as the expectations of financial gain are key. In the EU/UK, the *Howey* test is arguably closer to the definition of a collective investment scheme.

As the EU/UK focuses on market transferability as the key characteristic of securities, ICOs may be *prima facie* caught within the scope of the definition, since tokens are tradeable. ICOs may need to seek exemption from the Prospectus Regulation by: being small offers (ie less than 8 million euros in terms of the offering in a year or offered to not more than 150 persons) or being private placements (ie offered only to 'qualified' investors who pass certain thresholds of net worth or sophistication).[52] In the US, in order to avoid being subject to securities regulation, offerings need to be in amounts less than USD$5m in a one-year period (Regulation A), or need to be made only to accredited investors (Regulation D), or foreign investors (Regulation S), or structured as online equity crowdfunding, which is subject to investment limits to mitigate investors' potential losses (JOBS Act).

Since 'transferability' is the key characteristic in the EU/UK's definition of 'securities', the tenets of securities regulation are intended to protect the quality of transferability in investors' interests. As securities investments are credence goods, investor protection is achieved by regulatory institutions that facilitate efficient price formation in primary and secondary markets, so that investors are protected in paying the 'right' price for securities. In this way, regulatory institutions focus on optimising the conditions that allow securities transferability to take place. The key regulatory institutions for that objective are as follows:

First, mandatory disclosure by issuers is required in relation to themselves and the nature and rights in their securities.[53] Such disclosure is standardised and made optimal[54] in the primary market so that members of the public would be able to have confidence in having adequate information to evaluate what the market offers. They are further supported by the right to institute private litigation against issuers for mis-disclosures discovered afterwards in order to seek compensation for erroneous investment decisions made.[55] Even information mediation entities such as credit rating agencies are now regulated in order to ensure that they support the overcoming of information asymmetry

[52] Art 2, 3, Prospectus Regulation 2017.
[53] Prospectus Regulation 2017, Art 5.
[54] John C Coffee,'Market Failure and the Economic Case for a Mandatory Disclosure System' (1984) 70 Virginia Law Review 717.
[55] R et al La Porta, 'What Works in Securities Laws?' (2006) 61 Journal of Finance 1. Also supported in the EU Prospectus Regulation 2017 and its predecessor legislation, and UK S90, Financial Services and Markets Act 2000.

in the markets.[56] The mandatory disclosure institution is highly premised upon the rational investor's needs to process all relevant information in order to make an optimal investment choice.[57] Although it is acknowledged that investors, being human, are boundedly rational and may not utilise information in an optimal manner,[58] standardised transparency, the levels of which are demanding, and which is highly policed, remains an essential regulatory institution that fosters trust.[59]

Next, in order to realise the 'transferable' nature of securities, investors are protected by ready exit rights. Exit rights in relation to securities investments are supported by the existence of secondary markets which should ideally be liquid, ie featuring adequate trading at different levels such as in relation to price and volume. Regulation plays an important part in enhancing the liquidity of secondary markets, which refers to the ease of execution of trading at different volumes, at a generally low level of transaction cost. They key tenets of secondary market securities regulation are as follows:

First, periodic and continuous disclosure in secondary markets is mandatory for issuers in order to support price formation in secondary markets. The US and EU require issuers to make periodic disclosure at regular intervals, i.e. yearly under the Regulations made pursuant to the Securities Exchange Act 1934;[60] and in the EU, half-yearly with emphasis placed on the annual report.[61] Securities exchanges may require more frequent periodic disclosures such as quarterly. The EU and the SEC also require issuers to comply with continuing disclosure, which is an obligation to supply the securities markets with price-sensitive information as soon as such arises,[62] making the informational environment for secondary markets a rich and constantly changing context.

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[56] Dodd-Frank Act 2010, section 15E mandating enhanced regulation of nationally recognised statistically important rating organisations; EU Credit Rating Agencies Regulation 1060/2009, amended in 2010, 2013. See Josef Forster, 'The Optimal Regulation of Credit Rating Agencies' (July 2008) Munich Discussion Paper No 2008-14 http://epub.ub.uni-muenchen.de/5169/; Andreas Kruck, *Private Ratings, Public Regulations: Credit Rating Agencies and Global Financial Governance* (Basingstoke: Palgrave Macmillan 2011).

[57] See Niamh Moloney, *How to Protect Investors* (Cambridge: Cambridge University Press, 2010).

[58] Archon Fung et al, *Full Disclosure: The Perils and Promise of Transparency* (Cambridge: Cambridge University Press 2007).

[59] To this end the UK Financial Conduct Authority is introducing measures to ensure the parity of information dissemination between all investors even as issuers book-build their securities offers with institutional investors.

[60] Regulation S-K providing for financial reporting under SEC's Form 10-Q and non-financial reporting under SEC's form 10-K.

[61] EU Transparency Directive 2004/109/EC, Arts 4, 5.

[62] EU Market Abuse Regulation 2015, Art 17; SEC's Form 8-K that requires price-sensitive information known to issuers to be disclosed within 4 days; Daniel C Rowe,'Periodic Reporting in a Continuous World: The Correlating Evolution of

Such mandatory disclosure is based on the 'efficient capital markets hypothesis' which posits that information would be rationally reflected in securities markets prices. Hence, regulation plays the role of supporting efficient price formation by consolidating the types of information relevant to price formation, setting standards that 'objectify' the price formation process.[63] 'Price' becomes an all-encompassing signal to focus investor decision-making.[64] Regulatory transparency aims to facilitate markets that are easy to use and perceived as fair. Although economists agree that completely efficient prices are not attainable as information is never complete due to inadequacies in human perception, or may not be disseminated evenly, or understood or incorporated in the same manner by investors, they differ in their opinion as to what extent prices can tend towards being informationally efficient.[65] Even if complete price efficiency remains aspirational,[66] the regulatory framework arguably provides an environment where trading is encouraged. As market participants are given the opportunity to interpret informational content and implications, they could respond differently and this results in exchange. In other words, trading activity results *because of* the lack of absolute certainty in efficient prices, but the regulatory framework that supports the attainment of such efficiency provides an environment of trust and confidence in the playing field.

Second, regulatory institutions support the maintenance of liquidity on securities markets by a number of different measures. One is to ensure that markets are governed properly and are able to facilitate acceptable and fair conduct, so that market participants will be attracted to the markets and not withdraw.[67] The other regulatory institution is the protection of legitimate market-making.

In his volume Lee argues that the maintenance of markets is akin to a public good, and many jurisdictions have taken broadly similar measures with regard to regulatory institutions that protect the public good nature of well-functioning and orderly markets. These regulatory institutions (a) set standards for market

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Technology and Financial Reporting' (2015) 13 Duke Law and Technology Review 248.

[63] Iris H-Y Chiu, 'Examining the Justifications for Mandatory Ongoing Disclosure in Securities Regulation' (2005) 26(3) Company. Lawyer 67.

[64] Referred to in Kenneth Amaeshi,'Different Markets for Different Folks: Exploring the Challenges of Mainstreaming Responsible Investment Practices' (2010) 92 Journal of Business Ethics 41.

[65] Eugene Fama, "Efficient Capital Markets: A Review of Theory and Empirical Work"(1970) 25 Journal of Finance 383, support in Art Durnev et al, "Law, Share Price Accuracy, and Economic Performance: The New Evidence" (2003) 102 Michigan Law Review 331; but see Robert J Shiller, *Irrational Exuberance* (NJ: Princeton University Press 2000);'Asset Prices' (2014) 104 American Economic Review 1486.

[66] This is due to human trading behaviour, Shiller (2000, 2014).

[67] Ruben Lee, *Running the World's Markets* (NJ: Princeton University Press, 2011).

operators in terms of their governance, roles and accountability; (b) ensure a suitable division of responsibility between securities regulators and market operators in overseeing and enforcing against standards of issuer and market conduct; (c) mitigate any monopolistic tendencies on the part of markets as they tend to become natural monopolies by virtue of their network effects and (d) ensure that robust regulatory enforcement is carried out against market abuse such as insider dealing or market manipulation. Although such regulatory institutions impose obligations and may be seen to be 'controlling' in nature, they are aimed at a facilitative purpose, to ensure markets work well and that participants have confidence in such markets.

Market-making, which refers to the quoting of both buy and sell prices by dealers in financial instruments, ensures smooth trading conditions in markets. Market-makers are crucial to market liquidity [68] and a number of regulatory institutions ensure that their legitimate activities are protected. In both the US and EU, market-makers who support an initial flotation of securities are not treated as engaging in insider dealing or market manipulation.[69] Further, the EU requires traders who use algorithmic trading programs to ensure that they do not adversely affect market conditions, and those who engage in 'nano-second' or high-frequency trading above certain thresholds are to be regarded as market-makers.[70] They are obliged to engage in liquidity provision in markets and to maintain smooth trading conduct, not to suddenly withdraw liquidity and adversely affect market conditions.

These regulatory institutions are focused on attracting and encouraging market participation so that a liquid environment can be maintained. They facilitate the exercise of free will on the part of market participants and do not seek to intervene in transactional freedom or wisdom. However, this also means that regulatory institutions in US or EU markets do not seek to correct asset price bubbles or market volatility that is not brought about any misconduct or regulatory infringement. Economists in behavioural finance have provided insights into trading behaviour driven not by rational internalisation of information, but by behavioural heuristics,[71] by signals such as others' trading behaviour[72] or the momentum of the crowd.[73] Asset price bubbles may arise due

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[68] DE Taranto et al, 'The Adaptive Nature of Liquidity Taking in Limit Order Books' (2016) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2404405.

[69] Rules 100-104 made under the Securities Act 1933 on actions taken by underwriters and market-makers for price stabilisation of securities; Market Abuse Regulation 2014, Art 5.

[70] Markets in Financial Instruments Directive 2014/65/EU, Art 17.

[71] Shiller, 2014.

[72] Jean-Philippe Bouchaud et al, 'Fluctuations and Response in Financial Markets: The Subtle Nature of 'Random' Price Changes' (2003) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id= 507322; Miquel Montero, 'Predator-Prey Model for Stock Market Fluctuations' (2008) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1290728.

to traders' excessive optimism or herding in the direction of others' behaviour[74] or the converse, downward price spirals, could occur due to sentiment and collective action in the opposite direction.[75] Asset price volatility is well-accepted on free financial markets,[76] and such are the characteristics of 'boom and bust' that regulation has only addressed to an extent. The maintenance of 'efficient' and 'liquid' conditions on markets is not necessarily compatible with broader public interest such as maintaining overall financial stability.[77] Regulatory reforms after the global financial crisis 2007-9 have introduced a few stability-protection measures in order to regulate market excesses that prove to be socially harmful, such as the right for securities regulators to intervene and ban short-selling in certain securities during stressed times,[78] macro-prudential measures that can 'cool' markets and discourage pro-cyclical behaviour,[79] stock exchange circuit-breakers that can stop securities prices from rising or falling to abnormal levels. Such interventionist measures are not the norm. Regulators have preferred to maintain the facilitative nature of financial markets regulation where possible, such as by enhancing transparency in markets for financial derivatives,[80] short-term money markets[81] and markets for securitised assets,[82] ultimately allowing investors to exercise choice.

Although the definition of 'securities' centers on transferability, governance rights attached to shares has always been regarded as quasi-proprietary in

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[73] Stavros Stavroyiannis and Vassilis Babalos, 'On the Time Varying Nature of Herding Behavior: Evidence from Major European Indices' (2013) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2281097.
[74] Oliver J Blanchard and Mark W Watson, 'Bubbles, Rational Expectations and Financial Markets' (NBER Working Paper 945, 1982).
[75] Rama Cont and Lakshithe Wagalath, 'Running for the Exit: Distressed Selling and Endogenous Correlation in Financial Markets' (2011) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1722508; Robert Hockett, 'Recursive Collective Action Problems: The Structure of Procyclicality in Financial And Monetary Markets, Macroeconomies And Formally Similar Contexts' (2015) 3 Journal of Financial Perspectives 1.
[76] Roger EA Farmer et al, 'The Inefficient Markets Hypothesis: Why Financial Markets Do Not Work Well in the Real World' (NBER Working Paper 2012) at http://www.nber.org/papers/w18647.
[77] Katsuhito Iwai,'The Second End of Laissez-Faire: The Bootstrapping Nature of Money and the Inherent Instability of Capitalism' in Heiner Granssmann ed., *New Approaches to Monetary Theory: Interdisciplinary Perspectives* (London: Routledge 2011).
[78] EU Short-selling Regulation 236/2012.
[79] Such as the work of the European Systemic Risk Board, https://www.esrb.europa.eu/mppa/html/index.en.html; and the UK's Financial Policy Committee's powers such as to curb lending in buy-to-let housing markets to prevent excessive house price bubbles.
[80] Markets in Financial Instruments Regulation 600/2014.
[81] Securities Financing Transactions Regulation 2015/2365.
[82] Securitisation Regulation, above.

nature, as flowing from investors' financial interests.[83] Governance rights for securities holders are regarded as a form of investor protection, and in the wake of corporate scandals in the last two decades, policy makers are increasingly boosting governance rights[84] as part and parcel of investors' financially-based rights in securities regulation.[85] This is because governance rights can be seen as crucial for investors to take actions to 'defend' their financial interests in their investments,[86] if not to 'maximise' their financial interests.[87] In boosting investors' rights and the legitimacy of shareholder engagement, regulators also expect investors to play a constructive part in monitoring corporations,[88] to an extent mitigating their readiness to exit. However, governance rights, which encourage the exercise of 'voice' is often in a conflicting paradigm with 'exit rights', and their exercise is supported by research and transaction cost. Although institutional investors in corporate equity have responded to becoming more engaged, it is observed[89] that governance rights are used instrumentally to further investors' own financial interests, and it is inconclusive whether investors have become more 'committed' to their investments.

In sum, securities are investment assets whose price formation is dependent on the expected financial value creation or income streams the assets generate. Hence regulatory institutions revolve around protecting such financial value creation, by corporate governance rights and duties, reporting obligations with

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[83] *Her Majesty's Commissioners of Inland Revenue v Laird Group plc* [2002] EWCA Civ 576.

[84] Such as the BCCI and Polly Peck scandals in the 1990s giving rise to the UK's Cadbury Code of Corporate Governance to facilitate increased accountability to shareholders, to increasing shareholder rights over pay, from the mandatory report on directors' remuneration in 2002 to the binding vote on pay, s439A, UK Companies Act 2006 which is consonant with the US Dodd-Frank Act's provision for a 3-yearly shareholder vote on pay, and to the UK's and EU's endorsement of shareholder engagement in companies as best practice, the UK Stewardship Code 2010; EU Shareholder Rights Directive 2017 at art 3g.

[85] see Roger M Barker and Iris H-Y Chiu, 'Protecting Minority Shareholders in Blockholder-Controlled Companies – Evaluating the UK's Enhanced Listing Regime in Comparison with Investor Protection Regimes in New York and Hong Kong' (2015) 10 Capital Markets Law Journal 98.

[86] In the vein of 'defensive' shareholder engagement or activism that has been championed by American pension fund CalPERS since the 1990s, see chs 1 and 2, Iris H-Y Chiu, *The Foundations and Anatomy of Shareholder Activism* (Oxford: Hart 2010).

[87] The modern form of 'offensive' shareholder activism that sees institutional investors deliberately taking stakes in under-performing or under-valued companies in order to engage with them to improve performance so that such activism can pay off in enhanced investment returns. Hedge fund activism is very much in this vein, see chapter 3, Chiu, 2010 above; Roger M Barker and Iris H-Y Chiu, *Corporate Governance and Investment Management* (Cheltenham: Edward Elgar 2017) at chs 3, 6.

[88] EU Shareholders Rights Directive 2017, Art 3g.

[89]Barker and Chiu, 2017, ch3.

regard to financial value creation according to mandatory standards and continuous transparency obligations, ensuring that markets facilitate the reflection of such financial value creation into price and providing environments for trading orderliness and confidence. To what extent are ICOs similar and are aspects of securities regulation relevant?

An Argument for ICOs not as Securities

It can be argued that as transferability of tokens offered by ICOs is an essential characterisic, regulatory institutions that support optimal and efficient price formation should logically be extended to the ICO markets unless the markets provide equivalent self-regulatory institutions that can be recognised with safe harbour provisions. Even then equivalent institutions may have to be subject to regulators' continuous assessment to ensure that they are fit for purpose. However, it can be argued that ICOs are not susceptible to being securities in the EU/UK definition as ICOs are transferable as wholly different assets from securities (which are investment assets). Securities are transferable on the basis of the investment value in the asset (eg the corporation that is creating productivity and wealth) that is being priced in markets. We argue that ICOs are transferable not on the same basis.

The tokens offered in ICOs often do not bear a clear relationship to the financial performance of the undiversified project as a whole. Utility tokens that confer rights to use future services do not relate to the financial value creation of the project and neither do fun tokens. Currency tokens for purchase of future services or products developed by the project could arguably be tied to the financial value creation of the project as the purchasing power of the tokens may relate to the project's financial success. However, as such tokens are confined to purchasing future products or services developed by the technology entrepreneur offering the ICO, they can be regarded as 'rights to buy' or options in relation to products or services rather than an option to participate in future financial value creation or income streams. Of course if a token is structured as an investment token such as a future right or option to equity in the project, then this could be regarded as more closely resembling a security.

Further, the increasing focus on governance rights in relation to securities also lends support for distinguishing tokens from securities as tokens do not usually confer such rights. Indeed, it may be intentional on the part of ICO issuers that such rights do not form part of tokens in order to insulate projects, that are early development initiatives, from market pressures.

It can however be argued that even if tokens confer a different type if rights from securities, their transferability is referenced with respect to future value of the project, and this makes them no different from securities. However, as discussed in Section A, ICO secondary markets show token trading not necessarily as based on references to the future value creation of the project. There is some empirical evidence to show that the anticipated future value of the project influences

trading prices,[90] but there is also significant evidence to show that trading prices are based largely on exchange value, which can be volatile on the secondary markets, having little reference back to the project. This is particular shown in the case of continued token trading for projects that have already failed.[91] We argue that ICOs facilitate the decoupling of the primary market ie the purchase of tokens which embody future rights, from the secondary market, which allows tokens to be traded like derivative contracts, whose financial value bears little relation to the underlying contract in the primary market, that can be non-financial in nature.[92]

If tokens do not fall within the scope of securities, this does not mean that we argue or support their unregulated nature. In essence, what we argue is that where existing asset regulation does not capture the essential characteristics of the asset innovation, it may be counterproductive to force such fit as it is futile for regulation to attempt to turn the tide back on innovation, [93] and ill-fitting regulation could damage genuinely beneficial innovation. It would be more productive to consider how regulation should cope with innovation and in the particular case of ICOs, how the interests in facilitating innovation and purchaser's protection should be balanced.

Since the majority of tokens either confer 'utility' ie future rights to use products or services, such as cloud computing space, or 'currency' tied to purchasing products or services, such as the Clearcoin that is to be used exclusively to purchase buy or sell media rights on the internet, tokens are tied much more to the ultimate realisation of products or services.[94] We suggest that the protection of purchasers should be in relation to what they are ultimately purchasing, i.e the regime for governing tokens and their issuers should be in relation to the rights conferred by tokens, and not in relation to the secondary market trading in tokens, which we deal with separately under Section C.

We regard tokens as conferring non-financial rights, hence we develop a consumer protection regime for token holders in relation to issuers with respect to such non-financial rights. However, secondary market trading facilitates the exchange of tokens for cryptocurrency or fiat currency, hence the commoditisation of tokens. In relation to such commoditisation, we suggest that the providers of secondary markets ie exchanges should be governed in terms of the environment they provide and manage for such commoditisation to take place. This bifurcated approach deals with issuers and exchanges separately and differently, and may conveniently be regarded as an approach that distinguishes

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[90] Wang and Vergne, 2017.
[91] Bianchetti et al, 2018; Nica et al, 2017.
[92] *Lomas & Ors (joint administrators of Lehman Brothers International (Europe)) v JFB Firth Rixson Inc & Ors* [2012] EWCA Civ 419, and definition of derivatives in Simon Firth, *Firth on Derivatives Law and Practice* (Sweet & Maxwell 2003) at para 1-004.
[93] Andrew Lo, 'Moore's Law vs. Murphy's Law in the Financial System: Who's Winning?' (BIS Working Papers 2016) at http://ssrn.com/abstract=2789737.
[94] Adhami et al, 2017.

between primary and secondary markets. However we argue that holders of tokens, even if purchased from secondary markets should have the same non-financial rights vis a vis the *issuers,* so the delineation between primary and secondary markets is not strictly accurate. In sum, we propose a regime of non-financial/investment based regulation over token issuers but a regime of financial markets regulation over intermediation platforms that facilitate commoditisation and trading.

We develop our approach in more detail shortly, but will turn first to argue why ICOs also do not fit neatly into the definition of 'collective investment scheme' and the *Howey* test.

Tenets of Collective Investment Regulation and ICOs

In the UK, a collective investment scheme is defined as an arrangement over property of any description which enables participants taking part in the arrangement to receive profits or income from the management of the property as a whole, such expectations of receiving profit or income being related to the contributions made by participants in the arrangement.[95] This is similar to the *Howey* test which is based on financial expectations of participants, though not necessarily in a centrally managed arrangement or scheme, as the *Howey* test applies to securities as undiversified assets. A collective investment scheme is broadly speaking diversified in one of two ways. The diversification can be seen from the perspective of the 'supply side' ie the 'arrangement' concerned may pool together participants contributions to invest in a portfolio of different assets in order to create financial value for investors' expectations to receive profits or income. Portfolio diversification in a collective investment scheme is regarded as best practice in order to manage the risks in financial value creation. The diversification can also be seen from the demand side, that participants in the arrangements purchase a 'unit' or units of interest in the collective investment scheme as part of their own portfolios, which can be diversified and invested in other assets or arrangements.

As collective investment schemes involve an intermediary managing for the objective of financial value creation on behalf of a group of participants, collective investment scheme regulation focuses on the duties owed by the intermediary to the investors in order to address principal-agent problems. In the UK, all collective investment schemes also need to be authorised by the regulator, and this limitation of commercial freedom to solicit and manage pooled investor contributions serves to protect the gullible from being mis-sold or scammed.

Over the years, various arrangements that may be perceived as 'borderline' have been held to fall within the scope of collective investment schemes, thus requiring authorisation and oversight. They include purchases of real estate interests by individuals under an understanding that there would be a centrally managed process to secure planning and development permission over the

[95] S235, UK Financial Services and Markets Act 2000.

plot;[96] purchases of sub-lease interests in foreign real estate for the purposes of securing income generated by the land in terms of agricultural or carbon credit income;[97] services organised to place horse-racing bets on behalf of subscribers;[98] collective financing of a film venture;[99] collective financing to acquire patent rights.[100] In other words, most forms of collective financing or financing that is to an extent managed centrally would fall within the definition of collective investment scheme. The Financial Conduct Authority's powers to enforce against unauthorised exotic arrangements have inevitably shaped the market for legitimate products.

In terms of key regulatory duties in the management of collective investment schemes, we raise the 'gold standard' set by the EU UCITs collective investment product[101] as the main example. The Directive's standards for conduct in collective investment management have become more widely adopted than for UCITs, such as for non-UCITs collective investment schemes in the UK. The key regulatory duties include disclosure by intermediaries, investor protection by proper conduct on the part of intermediaries, and the protection of investors' market-based rights in choice and exit. Investors are entitled to pre-sale and continuing disclosure of the financial value creation of the collective investment scheme;[102] conduct duties on the part of the investment manager,[103] whether or not the investment manager has a direct relationship with the participants in the collective investment scheme. These relate to treating the participants fairly, duties of diligence in pursuing participants' ultimate objective in financial value creation, including exercising corporate governance rights in investee companies; duties of care, such as in terms of protecting participants' financial rights in their assets through appropriate custodial arrangements of assets and monies, and duties of best execution and management of conflicts of interest.[104]

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[96] *In re Sky Land Consultants Plc* [2010] EWHC 399 (Ch); *FSA v Asset LI Inc* [2014] EWCA Civ 435, affirmed in the Supreme Court, *Asset Land Investment Plc and another (Appellants) v The Financial Conduct Authority (Respondent)* [2016] UKSC 17.

[97] *FCA v Capital Alternatives Ltd and Ors* [2014] EWHC 144 (Ch); [2015] EWCA Civ 284.

[98] *Financial Services Authority v Fradley* [2005] EWCA Civ 1183 CA.

[99] *Raymond Bieber v Teathers Ltd (in liquidation)* [2012] EWHC 190 (Ch).

[100] *Brown 7 Ors v Innovator One Plc and Ors*[2012] EWHC 1321

[101] EU Directive 2009/65/EU.

[102] for eg in the EU UCITs Directive 2009 that governs the most popular pan-European collective investment product in the EU, Arts 68, 71 deal with mandatory disclosure.

[103] The investment managers is usually delegated by the collective investment fund entity which is structured as a company or trust, and arguably they do not owe duties to the participants in the fund but only contractual duties to the legal person of the fund, see John Morley, 'The Separation of Funds and Managers: A Theory of Investment Fund Structure and Regulation' (2013-14) 123 Yale Law Journal 1228.

[104] Arts 20-24, Commission Directive 2010/43/EU.

Finally, a key tenet of collective investment scheme regulation lies in protecting participants' exit rights. Participants are conferred rights of fair and independent valuation of their financial interests in the collective investment scheme,[105] and regular exit rights at twice a month at the minimum.[106] Many collective investment schemes offer more frequent redemption terms than that, and the rise of exchange-traded funds[107] where participants can trade in and out of a fund on a listed market within the day shows how investors' exit rights are catered for by both regulation and market developments.

ICOs Are Not Collective Investment Schemes?

In relation to whether ICOs fall within the definition of 'collective investment scheme', there are several characteristics of the ICO that do not quite fit the 'collective investment scheme' definition. One can argue that the ICO project is an 'arrangement' to which participants contribute, and the project is the 'property' that project developers are 'managing as a whole' for the benefit of the participants. However, we are sceptical that the project developers should be regarded as 'managing' the project as a whole for the benefit of participants. This implies that there is a common interest shared among participants in relation to the project, such as financial value creation by the collective investment scheme, and we very much doubt that this 'common interest' can be found. Second, we argue that any financial value that ICO purchasers may derive would not come from the management of the project.

Many ICOs offer utility and currency tokens for purchasing future products and services, so the 'common interest' participants may have if any, is in seeing the realisation of such products/services and not the financial value creation of the project, which remains reserved only to the developers. Moreover, each ICO holder of utility or currency tokens will have rights over certain products/services and enjoy their utility in their individual capacity. Their rights and utility are not derived from being part of a larger arrangement. Similarly, if a retail shop supplies a widget that is advertised for pre-order, all customers have a common interest in the shop's procurement of the widgets as a central point of intermediation, but each customer has rights to and derives utility from their own widget. Hence, participants arguably do not have 'common interest' in the sense intended in collective investment schemes, and in any case a participant's interest is not in the nature of expectations of financial return such as in the

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[105] Arts 22, Commission Directive 2010/43/EU; Art 85, UCITs Directive 2009/65/EU.

[106] Art 76, UCITs Directive 2009/65/EU, also art 84 which allows investors to make a request to redeem.

[107] Forbes.com, 'What's the Difference? Mutual Funds and Exchange-traded Funds Explained' (July 2013) at http://www.forbes.com/sites/feeonlyplanner/2013/07/18/whats-the-difference-mutual-funds-and-exchange-traded-funds-explained/; Gary L Gastineau, *The Exchange-Traded Funds Manual* (Chicester: John Wiley & Sons 2010) at ch 1.

Howey terms. ICO purchasers' expectation of profit if any, is completely derived from secondary trading.

We do not think the majority of tokens, ie utility and currency tokens fall within the definition and scope of the 'collective investment scheme' definition or the definition of an investment instrument centred upon financial returns expectations. Nevertheless, as argued earlier, seeking to distinguish ICOs from conventional investment instruments is not equivalent to arguing that they should be unregulated just for being outside of the regulatory perimeter. The regulatory perimeter should not be indiscriminately extended but regulatory policy should be considered in terms of appropriately dealing with the issues arising from the commercial activity at hand.

Although we take the view that the majority of ICO tokens are utility and currency tokens and not securities or collective investment schemes, we propose that it would benefit ICO issuers, market participants and the ICO eco-system to have regulatory clarity that tokens are not securities or collective investment schemes *if* they are structured according to standardised terms that delineate their nature as utility, currency or fun tokens. As commentators[108] have begun to distil the key characteristics of different types of tokens, we propose that the safe harbours for ICOs can be constructed along the lines of meeting a set of standardised terms for utility, currency or fun tokens.

An Appropriate Regulatory Regime for the Non-financial Contracts in ICO Tokens

We see utility, currency and fun tokens as being largely non-financial contracts in relation to future products or services. The utility token is akin to a pre-order as it entitles the holder to future rights over products and services. The currency token is more like an option to buy such products or services in the future. Although Hacker et al[109] liken the currency token to a payment instrument, we are sceptical that the characterisation is correct, given the implications of payment regulations such a characterisation entails. The currency token is confined to buying the developer's specific products or services, hence it functions more like store credit which is not negotiable.

We argue that as utility, fun and currency tokens are non-financial in nature, consumer protection is more relevant to such contracts than investor protection. Although subscribers to tokens may not hold out until the development is complete, empirical findings show that a significant proportion of token holders are willing to hold for the long-term in order to enjoy the new products/services. Hence regulatory policy should secure a level of consumer protection that would be relevant to such holders, vis a vis the issuers.

First we argue that utility, fun and currency tokens should be structured such that their non-financial nature is explicit, i.e. that the consideration conferred on

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[108] Rohr and Wright, 2018; Zetzsche et al, 2017.
[109] 2017.

ICO purchasers is clearly non-financial in nature whether it relates to future products, services or future rights to buy. Any element of referencing to the financial value creation of the project as a whole or governance rights in the project would render such tokens outside of the safe harbours of non-financial tokens. We are of the view that such harbours are useful as clarity is provided and issuers may be incentivised to adhere to the consumer protection regime for non-financial tokens in order to avoid onerous securities regulation. In this way the development of a consumer protection regime for tokens that includes standard terms and consumer rights provides an efficient off-the-rack framework for non-financial tokens and achieves transaction-cost efficiency for token issuers and a reasonable level of protection for ICO purchasers.

Next, we argue that certain standard tenets of consumer protection should govern token-holders' relationships with issuers. We suggest that consumers should be protected from mis-description in products or services, against failure of consideration (ie if the project fails and no products or services are ultimately delivered), against failure of standards in terms where products are digital content (as under the UK Consumer Rights Act 2015) and be provided a reasonable cooling-off period after subscription. The following sketches what we regard as tenets of consumer protection that are relevant across the board.

Most jurisdictions uphold a regime that penalises trade mis-descriptions even if there is no standardised regime for what must be disclosed.[110] Policy-makers should be prepared to extend existing oversight in this area, such as the remit of the Office of Fair Trading in the UK, to protect consumers from ICO sales mis-descriptions. Mis-descriptions can be found in white papers, other promotional literature and advertising. In terms of the enforcement mechanisms, we believe that the ICO blockchain can usefully integrate supervisory and claim aspects, a point to which we return shortly in discussing how policy innovation in enforcement can leverage upon the new technology before us.

Next we propose that purchasers should be entitled to refund rights if the future products or services do not materialise, on the basis of 'failure of consideration'. Under the English common law, where a transfer of benefit has taken place under contract on a basis that subsequently fails, there may be grounds for a restitutionary claim against the recipient of the benefit.[111] The common law claim continues to be saddled with debates as to the jurisprudential basis of the restitutionary claim, whether the refund is based on the failure of the main basis of the contract (which can be an arguable point in itself) or the unjust retention

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[110] Such as the UK Trade Descriptions Act 1968. The lack of a duty of disclosure and harmonisation such as in the EU is discussed in Hans W Micklitz, Jules Stuyck and Evelyn Terryn, *Cases, Materials and Text in Consumer Law* (Oxford, Hart 2010).

[111] Based on the failure of consideration, a doctrine that has been developed over the ages in English contract law but there remain areas of debate and lack of clarity.

of a benefit by a party who could have averted the other's risk or loss.[112] The common law claim is also not fully settled as to the extent of the failure of the basis of contract that would merit the refund.[113] We do not propose to incorporate the common law claim but to design policy drawn from existing legal wisdom in order to determine a suitable basis and amount of refund to the ICO purchaser.

We suggest that it is reasonable for purchasers' contributions to be used towards the expenses of technological development and we do not advocate full refund rights or else such may be punitive and dis-incentivising for developers. Refund rights can be thought of as 'loss apportionment', provided and calibrated according to a ladder of percentages depending on the extent of failure of the project, cancellation or non-materialisation of products or services. Refund rights perform a useful disciplinary role in incentivising developers to come to market with a reasonably credible project and to maintain diligence in development.

Next, the precise nature of consumer protection may differ according to what future products/services are offered in the ICO. This may however be relevant only when the developer's product/service is ready and tokens can be used in exchange or purchase. In sum, the product or service that comes into being should be subject to the equivalent existing regimes of consumer protection for equivalent products or services such as product approval, quality or product liability, whatever is relevant. For example where 'digital content' under the UK Consumer Rights Act 2015[114] is offered, i.e. the supply of data as digital content 'goods', the consumer protection afforded under the Act should apply to govern the quality of the digital content ie to be as described, fit for purpose and of satisfactory quality.

Finally we propose that ICO purchasers should be provided with cooling-off rights consistent with the Distance-Selling Directive[115] for consumers. Consumers should be offered a reasonable period of cooling off period after initial subscription as this protects them against pressure selling.

As the issuers of ICOs develop blockchain platforms and use smart contracts to execute subscriptions for tokens and allocation of tokens, they present an intermediation interface with ICO purchasers through technology. In addition to the consumer protection standards we propose above, we also submit that regulatory standards that mitigate principal-agent problems may be necessary, such as standards in relation to fair dealing, appropriate disclosure of

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[112] Andrew Burrows, *The Law of Restitution* (Oxord: OUP 2011) at chs 14, 15; ch13, Graham Virgo, *Principles of the Law of Restitution* (Oxford: OUP 2006); Duncan Sheehan, 'Mistake, Failure of Consideration and the Planning Theory of Intention' (2015) 28 Canadian Journal of Law and Jurisprudence 155-181
[113] Burrows, 2011; Virgo, 2006.
[114] S34-47.
[115] 7/97/EC, see provisions in s10-14, The Consumer Protection (Distance Selling) Regulations 2000.

technological capabilities that affect purchasers' rights, and appropriate consumer protection in relation to technological or cybersecurity risks.

We suggest that the standard terms of tokens as non-financial contracts and the consumer rights in their governance regime should be written in code as law.[116] The embedment of terms and rights within code holds transformative effects for the carrying out of the transaction and the framing of law itself, as was first proposed by Lessig.[117] As ICOs are conducted over blockchain platforms and smart contracts effect subscriptions and the conferment of tokens, code in tokens can be required to embed the standard terms of non-financial quality and consumer rights in relation to the above. Further, terms of choice of dispute resolution and the choice of law, mechanisms for the initiation of claims and subjection to regulatory supervision for the relevant products or services should be included. This ensures that the same mechanisms of efficiency govern both commercial and legal aspects, and that legal aspects are not left 'stranded' from the transactional framework.[118] In order to ensure that consumers' refund or claim rights can be realised, it should also be required that the blockchain platforms for ICOs provide an escrow function for retention of certain subscription amounts so as to facilitate ease of payout for claims or refunds.[119] We envisage that smart contracts can be used in many steps of claim or dispute resolution processes, and are relevant for compensation and refund.[120]

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[116] Randolph Robinson, 'The New Digital Wild West: Regulating the Explosion of Initial Coin Offerings' (2018) at http://ssrn.com/abstract=3087541.The inter-translation of law into code and the operation of code to achieve legal effects is explored in W Li et al, 'Law is Code: A Software Engineering Approach to Analyzing the United States Code' (2014) at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2511947.

[117] Lawrence Lessig, *Code and Other Laws of Cyberspace* (NY: Basic Books 1999).

[118] Cf new thinking on smart contracts and how they can be deployed, such as in abrogating the need for civil procedure, see Max Raskin, 'The Law and Legality of Smart Contracts' (2017) 1 Georgetown Law Technology Review 304; Martin Fries, 'Law and Autonomous Systems Series: Smart consumer contracts - The end of civil procedure?', Oxford Business Law Blog at https://www.law.ox.ac.uk/business-law-blog/blog/2018/03/smart-consumer-contracts-end-civil-procedure; Andreas Hacke, 'Law and Autonomous Systems Series: Micro-Justice and New Law? "Swarm Arbitration" as a Means of Dispute Resolution in Blockchain-Based Smart Contracts', Oxford Business Law Blog at https://www.law.ox.ac.uk/business-law-blog/blog/2018/03/micro-justice-and-new-law-swarm-arbitration-means-dispute-resolution. However see critique in relation to how such smart contracts may not be able to cope with incomplete contracting or uncertainty, see Jeremy Sklaroff, 'Smart Contracts and the Cost of Inflexibility' (2017) 166 University of Pennsylvania Law Review 263.

[119] Similar to the escrow system used by Alibaba.com to protect consumers in e-commerce on its site.

[120] Gabrielle Patrick and Anurag Bana, 'Rule of Law Versus Rule of Code: A Blockchain-Driven Legal World' (IBA Legal Research Paper, Dec 2017) at https://www.ibanet.org/Document/Default.aspx?DocumentUid=73B6073F-520D-45FA-A29B-EF019A7D7FC9.

Regulators need to keep up with the technological developments in order to effectively supervise and enforce the embedment of law as code.[121] These may unlikely be achieved by voluntary self-regulation, as the history of consumer protection shows how important regulatory policy has been to achieve consumer protection.[122]

C. Regulatory Focus on 'Market Aspects' in relation to ICOs

Where it may be relevant to consider the extension of financial regulation over ICOs, we think it is most appropriate to do so in governing the secondary trading of tokens. Secondary trading of tokens can be regarded as a financial activity even if the underlying token contract is not characterised as financial (see above). This is not unusual as the commoditisation of tokens is similar to financial derivative contracts,[123] which can be based on non-financial underlying contracts, such as the sale of goods, but are themselves financial transactions as they relate to risk and value arbitrage. We propose to extend financial markets regulation to those entities that facilitate the commoditisation of tokens.

Contrary to securities regulation, we do not propose to impose regulation in order to facilitate price formation based on asset conditions. As discussed earlier, ICOs support the decoupling of the primary (non-financial) contract for tokens from secondary trading activity, and insulate the underlying project from market pressures. Further, securities transparency relating to 'asset conditions' has largely reinforced trading behaviour that is disengaged from the issuer anyway.[124]

In securities markets, corporations are traded like short-term commodities[125] even though Stout regards them as 'time machines' of long-term wealth creation for society.[126] This is because investors such as institutions take small stakes and diversify their portfolios, and are prepared to exit as a means of managing their investment risks. Such investors look to generating near-term profit by

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[121] Although conceptually key tenets of contract law would not be displaced but embedded in smart contracts, see Kevin D Werbach and Nicolas Cornell, 'Contracts Ex Machina' (2017) 67 Duke Law Journal forthcoming.
[122] John TD Wood, 'Consumer Protection: A Case of Successful Regulation' in Peter Drahos (ed), *Regulatory Theory* (Canberra: ANU Press 2017).
[123] *Lomas & Ors (joint administrators of Lehman Brothers International (Europe)) v JFB Firth Rixson Inc & Ors* [2012] EWCA Civ 419, and definition of derivatives in Simon Firth, *Firth on Derivatives Law and Practice* (Sweet & Maxwell 2003) at para 1-004.
[124] KK Cetina and U Bruegger, 'Global Microstructures: The Virtual Societies of Financial Markets' (2002) 107 American Journal of Sociology 905.
[125] Karen Ho, 'Corporate Nostalgia? Managerial Capitalism from a Contemporary Perspective' in Greg Urban (ed), *Corporations and Citizenship* (University of Pennsylvania Press 2014).
[126] Lynn Stout, 'The Corporation as Time Machine: Intergenerational Equity, Intergenerational Efficiency, and the Corporate Form' (2015) at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2556883.

exploiting market inefficiencies to make trading gains,[127] and are less concerned with the outworking of the corporation's future.[128] Their intolerance of short-term snags in the corporation's performance also causes them to exert short-termist pressures on issuers' strategic directions. [129] The extension of market transparency requirements in relation to ICO project development is arguably counterproductive for ICO projects and is exactly the hazard ICO developers wish to avoid.

The focus of our proposal is on the secondary trading environments for tokens as 'commodities'. First we argue that market regulation should deal with intermediation interfaces as market participants may be vulnerable to intermediary misconduct or failure, and other principal-agent problems. Our proposal would apply to secondary markets such as the platforms for token exchange and trading, and also collective investments in crypto-assets, such as the mooted crypto-asset exchange traded fund by the Winklevoss twins rejected by the SEC. Second we propose that market regulation should relate to the provision of collective goods in relation to the trading environment, such as an environment of fairness, orderliness and continuity.

Regulatory Policy based on Intermediation Responsibilities

Although the development of blockchain platforms suggests that disintermediation has occurred in financial transactions, putting users back in power in allocating resources, new intermediaries have actually arisen and give rise to new principal-agent issues between users and them.

Secondary market providers should be treated as new technological/financial intermediaries *vis a vis* users. Users submit to the platforms' rules written in code and suffer from both information asymmetry and inequality in bargaining power. Walch[130] moots the possibility of imposing fiduciary duties on blockchain developers and key miners towards all users. There is arguably a case for imposing regulatory duties in relation to incorporating fair dealing, management

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[127] See Commandment 10 in Massimiliano Caporin and Michael McAleer, 'The Ten Commandments for Managing Investments' (2009) at http://ssrn.com/abstract=1342265 which emphasises market timing.
[128] Simone Pollilo, 'From Industrial Money to Generalized Capitalization' in Nina Bandelj, Frederick F. Wherry, Viviana A. Zelizer(eds), *Money Talks: Explaining How Money Really Works* (NJ: Princeton University Press 2017).
[129] Caitlin Helms et al, 'Corporate Short-Termism: Causes and Remedies' (2012) 23 International and Comparative Company Law Review 45; Emeka Duruigbo, 'Tackling Shareholder Short-Termism and Managerial Myopia' (2011-12) 100 Kentucky Law Journal 531. Contrary opinion see David Marginson and Laurie McAulay, 'Exploring the Debate on Short-Termism: A Theoretical and Empirical Analysis' (2008) 29 Strategic Management 273.
[130] 'The Fiduciaries of Public Blockchains' (2016) at http://blockchain.cs.ucl.ac.uk/wp-content/uploads/2016/11/paper_20.pdf.

of conflicts of interest, care and good faith, perhaps through code[131] for such trading platforms.

In terms of care, there should be the equivalent of duties in relation to proper handling of customer orders, non-preferential treatment among customers, the maintenance of orderly conduct such as surveillance against market abuse, and robust custodial duties.[132] This is an area of particular concern as exchanges' policies and practices of keeping customers' crypto-assets safe vary and we have seen the use of 'hot wallets' such as by Coincheck that succumbed to cyber-hacking. As exchanges are themselves for-profit organisations, and can raise funds by conducting ICOs, special duties in mitigating conflicts of interest and treating users fairly and in good faith need to be imposed.

In this light we also argue that exchanges must maintain a robust dispute resolution mechanism with users, and policies of such mechanism must be made transparent and fair. Such policies could be subject to regulatory intervention if they do not meet a general standard of 'treating customers fairly'.[133]

Regulatory Policy in relation to Collective Goods in the Trading Environment

At the moment regulators seem tentative on introducing regulatory policy for financial stability concerns, as central banks doubt that crypto-currency is trading at a sufficient scale to bring about monetary disruption. Empirical observation also shows that crypto-assets are treated and traded like assets,[134] and users fundamentally measure them in accordance with state-backed currencies to determine their value. Hence there may be some time yet before such crypto-assets actually gain 'currency' profiles. There is however a need to keep an eye on the developing depth of markets and consider if there is a need to require secondary markets to maintain orderly conditions and to protect users in situations of stress or business continuity.

We propose that there is a case for requiring trading platforms to adhere to duties to ensure that their trading environments are managed in a way that is fair, orderly and supports continuity. These can be regarded as collective goods for users' benefit[135] and are not inconsistent with and will likely be less prescriptive than financial markets regulation as discussed in Section B. Exchanges should maintain the collective goods of market orderliness, such as certain levels of transparency of order books and post-trade information, and to

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[131] Robinson, 2018.
[132] We recognize that we draw extensively from the Markets in Financial Instruments Directive 2014/65/EU in terms of the prevailing standards for intermediary conduct on the part of investment firms and markets, see generally D Busch and G Ferranini (eds), *Regulation of Financial Markets: MiFID II and MiFIR* (Oxford: OUP 2017).
[133] FCA Handbook PRIN2.
[134] Nica et al, 2017.
[135] Lee, 2011.

maintain an environment against manipulative and anti-social conduct.[136] Exchanges should be mindful of trading innovations and the advantages that some try to gain over other users, and implement policies that treat all users fairly. Exchanges should also have appropriate policies for conducting block trades as these can cause major price swings and support market-making that is beneficial and accountable.

It may not be appropriate to impose on exchanges interventionist measures in relation to market stability such as has been introduced for financial markets after the global financial crisis (see Section B), but it may be good practice for exchanges to have powers in order to manage episodes of severe volatility or instability. We do not go as far as to suggest interventions into price volatility, as such volatility is attributed to supply and demand forces, but perhaps exchanges should moderate abnormal and highly volatile situations such as liquidity flooding or withdrawal by high frequency trading and have in place policies to moderate the conduct of such trading.

Exchanges should implement policies in relation to business continuity so that users can be protected from the sudden onset of exchange insolvency. Mt Gox is the most often cited example of an exchange that became insolvent after cyber-hacking emptied it of the cryptocurrencies it held as custodian for its users. However exchange insolvencies can also occur due to business failure, where exchanges fail to garner the necessary network effects among users to be viable markets.[137]

There are a few options for regulators to consider. In terms of *ex ante* risk management, a capital adequacy regime could be considered for exchanges. Capital adequacy relates to risk constraint more than *ex post* crisis-management. Capital adequacy requirements could compel exchanges to limit the tokens they list for trading and the volumes of trading if exchanges have to maintain risk levels according to their levels of capital. Such a measure could prevent exchanges from becoming 'too big to fail', but may restrain the network effects they can enjoy.[138]

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[136] Caroline Bradley, 'Disorderly Conduct: Day Traders and the Ideology of "Fair and Orderly Markets"' (2000) 26 J. Corp. L. 63 at 83-88

[137] '36 bitcoin exchanges that are no longer with us' at https://bravenewcoin.com/news/36-bitcoin-exchanges-that-are-no-longer-with-us/; 'Melotic shits digital asset exchange' , *Coindesk.com* (2015) at https://www.coindesk.com/melotic-shuts-down-digital-asset-exchange/.

[138] Whether capital adequacy constrains risk depends on the level it is set. The levels set for banks before the global financial crisis are regarded as too low, and for banks a bifurcated approach is taken. First, systemically important financial institutions need to adhere to much higher levels of capital adequacy which will also be used to absorb losses in stressed times, while other parts of the financial sector adhere to capital adequacy at higher levels than pre-crisis levels. See chapters 8 and 9, Iris H-Y Chiu and Joanna Wilson, *Banking Law and Regulation* (Oxford: OUP 2018) forthcoming; and the international standards for capital

Second, exchanges should maintain business continuity policies in order to ensure the orderly transition of customer service if an exchange should become embroiled in crisis. These are likely to be less complex, but in the same spirit as 'living wills' that important financial institutions are required to maintain.[139] These plans could provide for how exchanges may ensure business continuity by securing other providers' commitments to provide services to their users, meet their liabilities and recover from stressful situations. Just as 'living wills' need to be considered and approved by regulators, it is proposed that regulatory dialogue and approval be required in relation to business continuity planning by exchanges.

One must however be prepared that exchanges can fail and provision for the best possible *ex post* management systems that entail orderliness as far as is possible. We propose a number of policy alternatives that can be considered. One is that exchanges could submit to a tailor-made 'reserves' regime. In terms of a reserves requirement, exchanges can be made to deposit the equivalent in fiat currency of a certain proportion of crypto-assets held in their custody so as to be able to meet liabilities if a stressful event occurs to the exchange. The proportion can be prescribed according to the level of cybersecurity risks faced and managed by the exchange, its management of operational risks in general and the level of market participants' assets held. Such reserve deposits could be placed with approved financial institutions that are not part of the exchange's group. However as crypto-assets are highly volatile in price, a reserves requirement may need to be calculated daily and would fluctuate daily. In addition, an exchange could provide for a compensation fund that all users contribute to on an *ex ante* basis that can be used to compensate users pro rata where liabilities cannot all be met. Finally, exchanges can provide for loss mutualisation, ie a mechanism to spread losses amongst all participants so as to limit each participant's loss. This is adopted by many exchanges for derivative contracts that are also central counterparties.[140]

Ultimately, in order to extend the regulatory proposals in this Section over token exchanges, regulators need to be able to exercise supervisory and enforcement powers over them. Hence, we propose that token exchanges need to be approved by the regulator and should be subject to regulators' inspection, supervisory and enforcement powers, as well as regular duties of accountability where appropriate.[141] One should also consider extending exchange liability, both

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adequacy in the form of the Basel II and III Accords are discussed in Simon Gleeson, *International Regulation of Banking* (Oxford: OUP 2012).

[139] See Bank Recovery and Resolution Directive 2014/59/EU, Section 2.

[140] The importance of loss mutualisation is discussed in Adam J Levitin, 'Prioritization and Mutualization: Clearinghouses and the Redundancy of the Bankruptcy Safe Harbors' (2015) 10 Brooklyn Journal of Corporate, Financial, and Commercial Law 155.

[141] This is not dissimilar to the MiFID 2014 standards requiring market operators to be approved by regulators.

regulatory and civil liability, to all natural persons responsible for the conduct of the exchange jointly and severally, as a means of incentivising the proper conduct of market environments.[142]

D. Conclusion

Faced with innovation in ICOs that challenge the boundaries of asset classes and regulatory treatment for investment assets, regulators such as the SEC may be inclined to extend existing regimes over them in order to address regulatory arbitrage. However, we suggest that ICOs do not neatly fit into the investment nature of securities or collective investment assets although they are intended to fund the future realisation of a project. Although the extension of securities or investment regulation could put a brake on the heady activities in ICO primary markets in terms of the level of fund-raising, and in secondary markets in terms of the volume of trading, the objective of regulatory policy should not merely be to limit these activities but to consider how these are to be governed appropriately.

We argue that regulatory policy for ICOs should be drawn from a range of disciplines, from consumer protection to financial regulation. We are of the view that unlike the close coupling between securities primary and secondary markets, ICOs are structured to decouple the primary contract for tokens from secondary trading activity, and for reasons that are warranted. Hence securities regulation is unsuitable for both ICO primary and secondary markets. Instead, we advocate clarifying safe harbours for ICOs that confer non-financial tokens and propose that issuers and the primary contract for tokens be governed by tenets of consumer protection. This regime protects token holders who are genuinely looking to realise their utility rights or to purchase future products or services with the developer's currency tokens.

For the majority of token holders who are merely looking to trade in the secondary markets, we propose the extension of financial markets infrastructural and conduct regulation so that users can be protected from principal-agent problems and the lack of collective goods that remain unaddressed in an unregulated trading environment. We are of the view that

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[142] Exchanges are often regarded as marketplaces that perform both business and regulative functions as the regulative functions are necessary to providing the collective goods users need. Although most exchanges in conventional financial markets are not self-regulatory and regulators provide the standards for exchanges to adhere to as well as supervision and enforcement, the semi-public interest nature of the exchange can best be maintained by exchanges in cooperation with regulators, and exchange management could be incentivized towards this objective. The individual responsibility regime introduced by the UK for much of the financial sector can provide wisdom in designing a regime for management responsibility, see Iris H-Y Chiu, 'Regulatory Duties for Directors in the Financial Services Sector and Directors' Duties in Company Law: Bifurcation and Interfaces' (2016) Journal of Business Law 465.

secondary markets commoditise tokens and create an environment for financial contracting that they should assume responsibilities for. We propose that token exchanges be subject to regulatory approval and be appropriately supervised and enforced against by regulators, so as to protect users from problems that have already surfaced, such as loss of tokens by exchanges, exchange failure and insolvency.

In proposing an appropriate and proportionate extension of financial regulation to ICOs, we move away from a 'coherences' approach that seeks to fit innovation into existing regimes indiscriminately, which is also unimaginative and restrictive. Instead, innovation should pave the way for new policy considerations and an inter-disciplinary development in the law so that meaningful objectives can be achieved.