ROLACC
مجلة مركز حكم القانون ومكافحة الفساد
RULE OF LAW AND ANTI-CORRUPTION CENTER JOURNAL

RESEARCH ARTICLE

Initial Coin Offerings – Technology and the Rule of Law

G. A. Walker*

Centre for Commercial Law Studies,
Queen Mary University, London, UK
* Email: g.a.walker@qmul.ac.uk

Submitted : 09 October 2019
Accepted : 11 November 2019
Published: 31 December 2019
https://doi.org/10.5339/rolacc.2019.7

Cite this article as: Walker G A. Initial Coin Offerings – Technology and the Rule of Law. Rule of Law and Anti-Corruption Center Journal 2019:2.7
https://doi.org/10.5339/rolacc.2019.7

كيوساينس
QSCIENCE
دار جامعة حمد بن خليفة للنشر
HAMAD BIN KHALIFA UNIVERSITY PRESS

ABSTRACT

Technology and financial technology (FinTech) have had an increasingly significant impact in all areas of business and commerce in recent years. Technology and FinTech can specifically bring substantial benefits in terms of efficiency, stability and security, as well as innovation, growth and prosperity despite corresponding risks and exposures. Difficult issues should also be considered to ensure that all relevant legal rights and entitlements are properly respected and protected. Many commentators have argued that computer code can replace law and supporting court systems over time although this has been questioned by others. It is arguable that technology will only work most effectively where underlying legal rights are fully reflected and properly protected through appropriate code and software design and implementation. The purpose of this paper is to examine the nature of the relationship between computer code and law and technology in the specific area of Initial Coin Offerings (ICOs) which are used to raise funding and investment capital for digital coin and digital token development purposes. A number of different types of ICO can be identified and offer phases can be distinguished. These are priced and examined in the new emerging area of Tokenomics. Countries have developed different regulatory approaches to manage the inherent risks created or further exposures that emerge over time. All the relevant issues that arise are reviewed in this paper and provisional conclusions drawn with regard to the most appropriate legal and regulatory approach to be adopted in this exciting new area of technological, financial and social advance.

Keywords: Rule of law, legal rights, technology, financial technology, financial risk, financial regulation

العنوان: عرض السعر الأولي – التكنولوجيا وحكم القانون

ملخص

في السنوات الأخيرة اصبح تأثير التقنية المالية (فنتك) كبيرا على جميع مجالات الأعمال والتجارة بتحقيق فوائد مجدية كالكفاءة والاستقرار والأمن، فضلاً عن الابتكار والنمو والازدهار على الرغم من المخاطر المصاحبة للعملية. لذلك ينبغي إمعان النظر في هذا النوع من القضايا المستحدثة لضمان احترام وحماية جميع الحقوق والواجبات القانونية ذات الصلة. وفي هذا الصدد جادل العديد من المهتمين بالموضوع مسألة الكود الخاص بالحاسب الآلي «قانون الحاسوب» وإمكانية حلوله محل القانون في دعم أنظمة المحاكم مع مرور الوقت على الرغم من تشكك البعض في صحة هذه المسألة قبل الآخرين. ومع ذلك نستطع القول بان التكنولوجيا محل الدراسة سوف تعمل بشكل أكثر فاعلية عندما تنعكس الحقوق القانونية الأساسية بشكل كامل وتكون محمية من خلال البرامج المصممة خصيصا لهذا الغرض والقوانين المناسبة. ترمي هذه المقالة

إلى دراسة طبيعة العلاقة بين قانون الحاسوب والقانون والتكنولوجيا في مجال معين وهو « عروض السعر الأولي» (*ICOs*) التى تستخدم لجمع التمويل ورأس المال الاستثماري لأغراض تطوير العملات الرقمية والرموز الرقمية. يمكن تحديد عدد من الأنواع المختلفة من *ICO* ويمكن تمييز مراحل العرض، بحيث يتم تسعيرها وفحصها في المنطقة الناشئة الجديدة *Tokenomics* وتقوم البلدان بتبني مناهج تنظيمية مختلفة لإدارة المخاطر التي تظهر مع مرور الوقت. تستعرض المقالة جميع القضايا ذات الصلة وتقدم استنتاجات أولية فيما يتعلق بأنسب نهج قانوني وتنظيمي يتم اعتماده في هذا المجال التكنلوجي الاجتماعي المالي المستحدث.

الكلمات المفتاحية: حكم القانون، الحقوق القانونية، التكنولوجيا، التكنولوجيا المالية، المخاطر المالية، القواعد المالية

1. FINANCIAL TECHNOLOGY

Technology has come to dominate many areas of finance. This has impacted on more traditional as well as many new markets and areas of financial products and service delivery. This raises fundamental issues in terms of the rule of law. Technology can have a significant impact on legal rights and remedy, as well as on the integrity of the legal system and legal protections.

A number of commentators have argued that technology can be used to replace law and court systems.[1]

Many new digital products, platforms and services simply replicate existing financial assets, contracts or instruments with the same general rights and obligations. These new digital items or relations will also be regulated to the extent that they fall within existing legal and regulatory definitions or these definitions are extended by courts, regulatory authorities or legislatures to apply in new products and service fields. Individuals and companies also enjoy a wide range of acquired legal rights, including those based on contract, tort and restitution, and the right to private remedy and judicial resolution. They benefit from a number of other statutory, constitutional or fundamental human rights under public law, as well as the right to judicial review against the actions of public authorities and compensation for liability for misconduct or misfeasance in public office.

All of these private and public law rights cannot simply be removed by computer code or digital direction. Technology can only work within existing legal regimes. It cannot avoid or replace law and will be most effective and of most value where it respects and adheres to existing legal and regulatory parameters and protections. It is accordingly necessary to consider a new positive and constructive relationship between law and technology within the new Digital Information and Data Societies and Economies under construction across the world at this time.

This paper considers a recent example of potential tension and resolution in the digital area in relation to the growth and development of public Initial Coin Offerings (ICOs) in the digital coin or cryptocurrency area. The ICO market has expanded massively in recent years, with the largest ICO raising over $4 billion and other ICOs over $1 billion. ICOs can bring substantial advantage and benefit despite the possibility of significant regulatory concerns. This can support growth and innovation in the financial technology (FinTech) area although relevant investor protection and market disclosure and transparency issues need to be considered. Major problems can arise with regard to pricing and valuation standards within Tokenomics. Regulatory responses vary and are still evolving as countries attempt to balance continued technological advance and product innovation with a necessary degree of market integrity and market stability. This is an important area of future growth and advance.

This paper examines the nature of ICOs and recent market growth. Different ICO structures are reviewed and ICO phases explained. The nature and general content of Tokenomics is considered. Specific risks and exposures are identified with regard to fraud, money laundering and criminal use, as well as custody risk and the risk of cryptographic key and private data loss and identity theft. Emerging regulatory approaches are reviewed. Some general observations and conclusions are drawn and recommendations made for reform.

2. INITIAL COIN OFFERINGS

Initial Coin Offerings (ICOs) are used as a means to raise substantial investment and development funds through new digital coin and token issuance. The area has attracted significant market and regulatory attention in recent years. It has been estimated that almost 6,300 coins and tokens have been issued since the release of Bitcoin in January 2009[2] although not all coins and tokens have used an ICO structure.[3]

ICOs can help raise funds for coin and token development by promoters and provide potentially lucrative opportunities for returns by investors. Many offerings are legitimate, with the projects dedicated to creating new technological solutions and advancing design and innovation. Nevertheless, concerns arise with regard to the legitimacy of many projects and with a number of failing or constituting fraudulent offerings.[4] The Wall Street Journal has stated that approximately 16% of ICO White Papers have engaged in possible fraudulent activity, improbable returns or plagiarism.[5] A significant proportion of ICOs fail, with funds being either returned to investors or lost. This has attracted substantial regulatory attention to protect investors and the integrity of markets.

ICOs constitute a form of crowdfunding insofar as they are targeted to generate investments from the general public although many only raise funds privately. A number of different types of funding structures can be identified. These include traditional ICOs, Initial Token Offerings (ITOs), Security Token Offerings (STOs), Initial Exchange Offerings (IEOs), Interactive ICOs (IICOs), Initial Supply Auctions (ISAs), Simple Agreement for Future Tokens (SAFTs) and AirDrops.

1 For general discussion of the issues involved *see, e.g.*,, Lawrence Lessig, Code and Other Laws of Cyberspace (1999); Lawrence Lessig, Code: Version 2.0 (2006). Lessig distinguishes between computer code (and Silicon Valley 'West Coast Code' in the US) and legal code (or 'East Coast Code' in Washington DC). Lessig claims that society is based on law, norms, market and architecture although these can be restated for the purposes of this paper in terms of courts, contract, culture and code.

2 *See, e.g.*, Coinstats https://coinstats.app/ (last visited Aug. 10, 2019.

3 *See, e.g.*, ICO Bench, https://icobench.com (last visited Sept. 24, 2019). ICO Bench defines an ICO as the issuance of a fixed amount of new cryptocurrency unit (token or coin) dedicated to the ICO and blockchain based transactions. *FAQ*, ICO Bench, https://icobench.com/faq (last visited Sept. 24, 2019).

4 940 coins or tokens are declared 'deceased' on deadcoins.com with 584 listed as scams. Dead Coins, https://deadcoins.com (last visited Aug. 10, 2019). 538 coins are also listed as failed on coinopsy.com. Coinopsy, https://www.coinopsy.com/dead-coins/ (last visited Aug. 10, 2019).

5 A Flood of Questionable Cryptocurrency Offerings, Wall Street Journal, Dec. 27, 2018. For comment, Ana Alexandre, *WSJ: Hundreds of Crypto Projects Show Signs of Plagiarism, Fraud and Improbable Returns* Cointelegraph, Dec. 27, 2018.

Different phases of an offering can also be distinguished. These include concept origination, white and yellow paper production, proof of concept, pre-sales, launch, post-sale market development, regulation and compliance, and performance or delivery.[6] The amount of coins and tokens offered and pricing is examined under the new field of 'Tokenomics' although this also includes the study of wider reward and incentive structures within new markets and distribution and the stability of new ecosystems created.[7] All of this has led to increased regulatory attention across the world.

3. ICO MARKET GROWTH

ICOs have grown substantially since the first Mastercoin (MSC) ICO in 2013. The MSC ICO in July and August 2013 offered 100 times the amount of Bitcoin deposited and additional coins as a reward for early adoption with 4,740 BTC received and over 560,000 million MSC generated.[8] ICO issuance peaked during 2017–2018. Overall, 15 ICOs in 2016 had raised $8.3 billion. Later, 50 ICOs were issued per month in 2017, with 537 ICOs in 2018 raising $13.7 billion. Brave raised $35 million in 30 seconds. There was a small decline in ICO issuance after December 2017 although 537 ICOs were able to raise $13.7 billion in the first five months of 2018, which was larger than all the previous ICOs.[9]

ICOs became more mature and stable in 2018 following the substantial growth in 2017.[10] The USA hosted the largest number of ICOs and raised the most funds in 2017. It was the fifth largest in 2018.[11] Singapore was the third largest ICO host in 2017 and 2018.[12] Switzerland was the second largest ICO hub in 2017 although it fell to the sixth place in 2018.[13] The largest ICO hubs in 2018 were the Cayman Islands and British Virgin Islands, with the UK being number five.[14]

The largest number of ICOs has been issued in countries such as the USA, Singapore, the UK, Russia and Estonia.[15] The largest ICOs include EOS, which raised $4.2 billion, and Telegram, which raised $1.7 billion, both in May 2018. Dragon received $320 million in March 2018, Huobi $300 million in January 2018 and Hdac $258 million in December 2017.[16] ICOs cover a wide range of market areas.[17] The majority of coins and tokens are issued on the Ethereum blockchain, which includes a special ERC20 or ECR223 facility[18] although offerings can also use Waves, Stellar and Neo.[19]

4. ICO STRUCTURES

Several different types of offering structure can be distinguished in the digital coin and token area. These are similar to more traditional venture capital (VC) or public equity (PE) financings although they generally have a wider distribution group, with VCs and PEs tending to be more limited to professional and qualified investors. They are similar to crowdfunding although some may have a private pre-sale or be fully private. Coins and tokens can be issued without an ICO (a 'NoICO') although the use of ICOs is now common practice unless it is a small offering or a sufficient number of separate private investors have been identified.

Different structures can be identified despite the variation in market practice and classifications. The main examples include the following:

- Initial Coin Offering (ICO) allows the purchase of the coin or token generally in exchange for one or more of a limited number of other principal cryptocurrencies;
- Security Token Offering (STO) is an investment offering generally in compliance with relevant domestic securities laws, with investors receiving assets backed by platform cash flows or profits;
- Equity Token Offering (ETO) is a more specialist form of STO, with the investor acquiring an equity interest equivalent to a

6 *Infra* Section 4.
7 *Infra* Section 5.
8 A 'Bitcoin Exodus' address was created to receive the Bitcoin. Iftikhar Alam, *Beginner's Guide: What is Mastercoin (Omni)? The First Altcoin*, 101 Blockchains (Jul. 8, 2018), https://101blockchains.com/what-is-mastercoin-the-first-altcoin/.
9 PWC & Crypto Valley, Initial Coin Offerings – A Strategic Perspective 1 (2018) 1. 2013 2 ICOs raised $800,000; 2014 8 ICOs raised $30.5 million; 2015 10 ICOs raised $9.9 million; 2016 49 ICOs raised $252 million; 2017 552 ICOs raised $7.0433 billion; 2018 Q1 and Q2 537 ICOs raised $13.7128 billion. *Id.* at 2.
10 More structured funding was used with caps and higher transparency, combined funding models with less and improved quality promotion. Jurisdictions were selected more carefully with stronger governance and compliance with pre-registering conditions including in relation to know your customer (KYC) and anti-money laundering checks. Valuation and allocation practices became clearer using interactive protocols with lock-up periods and improved transparency. There was a staggered release of funds to development teams with improved cyber security and the construction of communities and support ecosystems. *Id.* at 9.
11 2017 87 closed ICOs raising $1.722 billion with 40 unclosed ICOs. 2018 56 closed ICOs raising $1.092 billion with 50 planned ICOs. *Id.* at 4.
12 2017 35 closed ICOs raising $641 million with 13 unclosed ICOs. 2018 53 closed ICOs raising $1.12 billion with 52 planned ICOs. *Id.*
13 2017 35 ICOs raised $641 million with 13 unclosed ICOs. 2018 28 ICOs raised $456 million with 36 planned ICOs. *Id.*
14 Cayman Islands 10 ICOs raising $4.254 billion with 16 planned ICOs. British Virgin Islands 16 ICOs raising $2.227 billion with 2 planned ICOs. UK 48 ICOs raising $507 million with 51 planned ICOs. *Id.*
15 USA (741); Singapore (552); UK (488); Russia (328); and Estonia (274). *See Stats*, ICO Bench, https://icobench.com/stats (last visited Aug. 10, 2019).
16 The largest ICOs include: (1) EOS $4.2 billion (Cayman Islands) infrastructure; (2) Telegram $1.7 billion British Virgin Islands social media; (3) Dragon $320 million British Virgin Islands gambling; (4) Huobi token £300 million Singapore FinTech; (5) Hdac $258 million Switzerland Internet of Things; (6) Filecoin $257 million US data storage; (7) Tezos $232 million Switzerland infrastructure; (8) Sirin Labs $159.9 million Switzerland consumer electronics; (9) Bancor $153 million Switzerland FinTech; (10) Bancera $150.9 million Lithuania FinTech; (11) Polkadot $145.2 million Switzerland infrastructure; (12) The DAO $142.5 million Switzerland venture capital; (13) Polymath $139.4 million Barbados FinTech; (14) Basis $133 million USA FinTech; and (15) Orbs $118 million Israel infrastructure. *The 15 Biggest ICOs So Far*, FinTech News (Jul. 4, 2018), https://www.fintechnews.ch/blockchain_bitcoin/the-fifteen-biggest-icos/19735/. Petro also raised $735 million and TaTaTu $575 million in 2018. *The 10 Biggest ICOs*, Coin Offering, https://thecoinoffering.com/learn/the-10-biggest-icos/ (last visited Aug. 10, 2019).
17 These include: platforms (2,997); cryptocurrencies (2,186); business services (1,243); investment (982); smart contracts (803); software (798); internet (617); infrastructure (580); entertainment (568); banking (545); artificial intelligence (489); big data (442); communication (442); media (380); retail (326); health (275); real estate (235); education (215); tourism (179); energy (165); manufacturing (164); casino & gambling (157); sports (152); virtual reality (128); charity (120); electronics (114); legal (101); art (87); other. *See* ICO Bench, *supra* note 15.
18 The majority of tokens are issued in the form of Ethereum ERC20 and ERC223 tokens. ERC (Ethereum Request for Comment) 20 is a technical standard on the Ethereum blockchain that allows the use of smart contracts to make a token offering. Fabian Vogelsteller, Etherium Request for Comment 20 (Nov. 19, 2015). Six sets of rules are specified for ERC20 use with six functions relating to total supply, token receipt, token transfer, token amounts, withdrawals and residual returns. Ether cannot be used with ERC20 with Ether having to be converted into a 'wrapped' token (WETH). *See ERC20 Token Standard*, Ethereum Wiki, https://theethereum. wiki/w/index.php/erc20_token_standard (last visited Nov. 19, 2015). ERC223 corrected a critical bug within ERC20 and allows the token to be used with Ethereum Ether. ERC223 allows more complex functions to be carried out. Dexaran, *ERC223 Token Standard* (Mar. 5, 2017), https://github.com/ethereum/eips/issues/223. ERC777 is a fungible token standard using an Ethereum ERC820 registry with a wider range of transaction handling functions. *ERC777 Token Standard* (Nov. 20, 2017), https://github.com/ethereum /eips/issues/777. Over 185,387 ERC20 compatible tokens were issued on the Ethereum website by May 2019. This includes EOS, Bancor, VChain, Tronix, BNP and Bankex.
19 The number of ICOs based on other platforms include: (1) Ethereum (4,809 ICOs); (2) Waves (132 ICOs); (3) Stellar (77 ICOs); (4) Neo (44 ICOs); (5) separate blockchain (52 ICOs); and (6) other (374). *See* ICO Bench, *supra* note 15.

corporate share with the issuance again being carried out in compliance with local securities laws;
- Utility Token Offering (UTO) is a specialist form of token offering, with the investor receiving an entitlement to purchase goods or services through the platform on completion or delivery;
- Initial Supply Auction (ISA) is a descending price auction used to determine the property market price, with purchasers acquiring assets at the price considered to be fair;
- Interactive ICO (IICO) is a smart contract to manage the allocation using fund withdrawal, withdrawal locks and inflation ramps over a specific period such as with a 30-day crowd sale;[20]
- Simple Agreement for Future Token (SAFT) allows investors to receive a discounted utility token at a subsequent date;[21]
- AirDrop (token offering) is a free distribution of coins or tokens to a defined group, usually early coin adopters, over a specified limited time event that is used for customer loyalty, marketing or awareness practices;[22]
- Bounty is another free token offering as a reward for carrying out a specific requirement provided on either a pre-ICO or post-ICO basis;
- Other types of offerings may be described, including statics, variables and dynamics;[23]
- Reference is also made to organics, artificials, synthetics and 'LOLs';[24]
- ICOs may also use hard caps, which is the maximum target amount to be raised, and soft caps, which is the minimum target amount to be raised.[25]

An important area of development has been associated with the increased use of STOs, especially in the USA. These are structured as public security offerings and comply with all relevant domestic laws and regulations. This can be more costly and burdensome although more substantial funds can be raised in such active markets as in the USA without the threat of subsequent regulatory intervention. Other issuances that comply with the specific sets of domestic regulatory provisions, whether in relation to securities or other areas, can be referred to as more general Regulatory Coin Offerings (RCOs) or Regulatory Token Offerings (RTOs). These may become more common as countries clarify and strengthen their ICO regulations.[26]

ICOs constitute a specific form of crowdfunding or crowd sourcing, as noted earlier, which generally raises small amounts of money from across a large public contributor base. Six specific types of crowdfunding can be identified: equity,[27] debt[28] (peer-to-peer lending), reward,[29] donation,[30] litigation[31] and software value token or ICOs.

The Financial Conduct Authority (FCA) in the UK recognises loan and investment-based crowdfunding, as well as donation and rewards (or pre-payment) based crowdfunding.[32] Loan and investment-based crowdfunding is regulated by the FCA, with payments being subject to regulation in relation to donation and rewards-based crowdfunding.[33]

A security is defined in the UK under the RAO as consisting of shares, bonds, debentures, certificates of deposit and instruments creating or acknowledging indebtedness, warrants, certificates representing securities, units in a CIS, rights under a stakeholder or personal pension scheme and greenhouse gas and other emission allowances, as well as any rights or interests in any of these investments.[34] A coin of token will only be regulated in the UK to the extent that it falls within these definitions. The US SEC issued a new regulation on crowdfunding under the SA1933 and SEA1934 in 2015, which came into effect on 16 May 2016.[35]

5. ICO PHASES

A number of separate stages or phases can be identified within a typical ICO. These are similar to the stages within other finance offerings adjusted for the blockchain and distributed ledger technology (DLT) market. The principal phases include the following:
- Concept origination;
- White paper and technical yellow paper production;

20 Buyers bid during each stage (block epoch) with offers being withdrawn and refunds provided. Voluntary withdrawals are no longer permitted after a specified period with early bidders receiving a discount up to a maximum amount. IICOs were developed by Jason Teutsch of the TrueBit Foundation and Vitalik Buterin from the Ethereum Foundation. Jason Teutsch & Vitalik Buterin, *Interactive Coin Offerings*, Block Chain Daily News (Sept. 24, 2017), https://www.blockchaindailynews.com/attachment/910509.

21 SAFT was based on the original Simple Agreement for Future Equity (SAFE) and was developed by Marco Santori at Cooley LLP. The SAFT constitutes an investment contract with registration with the SEC and initial sale to accredited investors. Functional utility tokens are developed and subsequently delivered to the investors that can then be sold to the general public. As functional tokens, they may not constitute securities under the *Howey* Test. This was based on the decision in *SEC v. W.J. Howey Co.*, 328 U.S. 293 (1946), which confirmed that an 'investment contract' means 'a contract, transaction or scheme whereby a person invests money in a common enterprise and is led to expect profits solely from the efforts of the promoter or other third party, it being immaterial whether the shares in the enterprise are evidenced by formal certificates or by nominal interests in physical assets employed in the enterprise.' Token sales and relevant forms are developed by the SAFT Project. Juan Batiz-Benet et al., The SAFT Project: Toward a Compliant Token Sale Framework (SFT Project White Paper, 2017), https://saftproject.com/static/saft-project-whitepaper.pdf.

22 *See*, e.g., Conair Drops, https://coinairdrops.com.

23 A static ICO has a fixed volume and price. A variable ICO can have an open amount with a fixed price. A dynamic has adjustable amount and price.

24 An organic ICO is an original form of ICO that could not have been offered without the use of blockchain or crypto technology. An artificial ICO is a more traditional round of fundraising using an ICO for marketing purposes. A synthetic ICO allows an established firm to raise funds through the new digital markets. A LOL ('Laugh out Loud') is used to extract an emotional reaction by way of an artistic statement, humour or satire. *See, e.g.*, Noah Jessop, *An Investor's Guide To The Four Kinds of ICOs*, Hacker Noon (Nov. 15, 2017), https://hackernoon.com/an-investors-guide-to-the-four-kinds-of-icos-62ecae8fc85d.

25 *See, e.g.*, *Low Hardcapt ICOs & STOs*, Initial Coin List, https://www.initialcoinlist.com/low-hardcap-icos-stos/ (last visited Dec. 6, 2019); *List of Active ICOs and STOs – Softcap Reached*, Initial Coin List, https://www.initialcoinlist.com/list-active-icos-stos-softcap-reached/ (last visited Dec. 6, 2019)./

26 *See infra* Section 7.

27 Equity crowdfunding rewards donators with shares or equity in the business. Investors may receive dividend payments with the value of the shares also increasing over time.

28 Debt based crowdfunding or crowdlending involves the provision of funds in return for interest payments rather than equity or dividend payments. Investors may place their contributions in a fund that advances loans to borrowers or groups of borrowers. Major UK P2P funds include Zopa which was set up on 2005. Major US firms include Prosper which was set up in 2005 and Lending Club which was set up in 2006.

29 Reward based crowdfunding involves contributors receiving a benefit or entitlement in exchange for their funds.

30 Donation based crowdfunding involves the provision of funds on a charitable or donation only basis.

31 Litigation based crowdfunding raises funds to support civil actions and litigation. This covers legal fees with investors possibly receiving a share of the funds generated. Litigation funds include LexShares which was set up by Jay Greenberg and Max Volsky in Boston, Massachusetts in 2014. LexShares, https://www.lexshares.com.

32 *Crowdfundin*g, FCA (Apr. 18, 2016), https://www.fca.org.uk/consumers/crowdfunding.

33 FCA, The FCA's Regulatory Approach to Crowdfunding over the Internet, and the Promotion of Non-Readily Realisable Securities by Other Media, Policy Statement 14/4 (2014); Payment Services Regulations 2017/752.

34 A security means (except where the context otherwise requires) any investment of the kind specified by arts 76-82 and 89 RAO as amended. RAO art. 3(1) (as amended).

35 Crowdfunding, 17 C.F.R. Parts 200, 227, 232, 239, 240, 249, 269, 274; SEC RIN 3235–AL37.

- Proof of concept and testing;
- Pre-sale to a restricted number of usually private investors;
- Announcement and launch with offering within a closed or open period;
- Post-sale market and product development;
- Legal and regulatory compliance to the necessary extent;
- Project delivery or performance especially, for example, with the delivery of utility tokens under a SAFT.[36]

6. ICO TOKENOMICS

Tokenomics is a portmanteau, or a combination of token and economics, used to describe the principal economic factors relevant to token issuances and management. This can be considered narrowly in terms of the initial issuance procedure, including the auction terms. Tokenomics will thus determine the volume, price and type of auction to be used. The most common auctions are an 'English' auction, with rising bids on either a capped or uncapped basis, and a 'Dutch' auction, with the bid prices dropping from a preset figure.

Tokenomics can be considered to include the valuation of the coin or token assets concerned. This can use more traditional fundamental analysis and technical analysis adjusted for use in the digital and cryptographic environment.[37] Specific difficulties can arise as the value of the token may not be fixed to any external commodity or other reference assets.

Tokenomics can also be considered to include the new forms of rewards and incentive structures created within digital and cryptographic markets. This is principally concerned with the different reward functions used within the consensus or reconciliation models adopted. This may, for example, include Proof of Work (PoW) and token rewards for the first miner able to calculate the Merkle route and close and lock the block.[38]

Tokenomics may more generally be considered to involve the study of new wider markets for the specific coins or tokens issued or wider economies or ecosystems that these create collectively,[39] which would include micro and macro tokenomics.[40] The overall effect is to create new digital coin or token economies that interact with existing domestic and international economic systems.[41] This may, in turn, depend on whether these can develop to a minimum viable economic size over time that allows them to be self-sustaining and self-governing.

7. ICO RISKS

ICOs benefit from the general advantages that arise with the use of blockchain and DLT. These include disintermediation, digitalisation, pseudonymity, cryptographic authentication, automation, replication, reconciliation, modularisation, personalisation, interlinkage, codification and shared governance. Payment tokens can specifically increase competition in payment markets and improve efficiency with lower costs, increased speed and security and improved user access.[42]

ICOs provide an alternative source of funds for platforms that may find it difficult or costly to access more traditional funding channels, with this increasing their possible investor base.[43] ICOs and tokenisation provide new investment opportunities and create new forms of digital assets in the long term to enhance liquidity and support the use of smart contracts and automation.[44] Specific benefits arise with regard to other utility and asset tokens although they need to be considered again against the relevant risks and exposures concerned.[45]

While a number of potential benefits can be identified, they may remain more theoretical or hypothetical at this stage and have not yet been fully realised or materialised.[46] Some advantages have been generated in regulatory sandboxes, including increased speed and reduction of costs in relation to cross-border money remittance using digital currencies, with limited evidence of more general benefits although this may arise in the future.[47]

Corresponding disadvantages arise especially in terms of fragmentation, dislocation, loss of privacy, complexity, displacement, separation, consensus difficulties, concentration, confusion, limited functionality, technological dependence, and dispute and disagreement. A number of potential risks that can arise with regard to the use of cryptocurrencies more generally may also be considered.[48]

---

36 *See supra* note 20.
37 Chris Burniske & Jack Tatar, Cryptoassets (2018).
38 *Blockchain Guide*, BItcoin.com, https://bitcoin.org/en/blockchain-guide#introduction (last visited Dec. 6, 2019.
39 Sean Au & Thomas Power, Tokenomics – The Crypto Shift of Blockchains, ICOs, and Tokens (2018). Au and Power define Tokenomics as 'the concept of the study, design, and implementation of an economic system to incentivise specific behaviours in a community, using tokens to create a self-sustaining ad hoc mini economy' including 'game theory, mechanism design, and monetary economics.' This includes 'token supply, inflation rate, and …the various incentive schemes' involved. *Id.* at 9.
40 Micro tokenomics is concerned with the 'features that drive the functions of individual participants within a blockchain economy' including mining rewards and token supply, demand and velocity adjustments. Macro tokenomics is concerned with 'the interaction with the wider blockchain economy' including governance, interaction within the ecosystem and external factors such as token growth and volatility with the new token economy. *Id.* at 10.
41 Au and Power define the token economy as 'a system or market where decisions are made driven by economic incentives of digital tokens'. *Id.* at 15.
42 ESMA Securities and Markets Stakeholder Group (SMSG), *Own Initiative Report on Initial Coin Offerings and Crypto-Assets*, ESMA 22-106-1338¶ 30 (2018) [hereinafter SMSG].
43 ESMA, Initial Coin Offerings and Crypto-Assets, ESMA 50-157-1391¶ 70 (2019).
44 *Id.* ¶¶ 71-73.
45 On utility tokens, SMSG, *supra* note 42, at ¶¶ 37-41. On asset tokens, *see id.* 42-45.
46 The EBA refers to advantages in terms of lower transaction costs and high divisibility with faster processing speeds, increased certainty and improved economic growth with enhanced financial inclusion outside the EU. *See* EBA52-58. Individuals benefit from increased personal data security and disintermediation with reduced involvement (interference) by public authorities. *Id.* ¶¶ 59-61.
47 FCA, Guidance on Cryptoassets, CP19/3¶ 2.19 (2019).
48 The EBA identifies 70 types of risks classified in terms of: (1) users (general risks (A1-18) (including fraud, exchange rate fluctuation, tax charge, mining misallocation, computer abuse, code changes, risk uncertainty, law and regulatory breach, e-wallet theft or hacking, identification theft, illegality or unenforceability, delay or freezing, contractual failure, custody failure or information inequality), payments (A21-28) (payment or settlement failure, fraud or loss, merchant refusal, false debiting, fiat exchange, password loss, exchange instability and exchange loss) and investment (A41-47) (including price manipulation, unregulated assets, unreliable exchange rate data, fraud, price volatility, exchange failure and exploitation such as with a Ponzi scheme)); (2) non-user market participants (exchanges (B11-13) (payment failure, loss of control and abuse), merchants (B21-24) (loss of reimbursement, inability to spend, loss of purchasing power, compensation, wallet data loss, governance failure, civil and criminal liability and compensation claims) and other market participants (B31-34)); (3) financial integrity (money laundering and terrorist financing (C1-5) (money laundering, anti-terrorist financing or criminal control) and financial crime (C11-19) (illegal commodities and abuse, avoidance of seizure, confiscation and sanctions, anonymous extortion, criminal payments, increased criminal activity, hacking, criminal scheme creation and tax evasion)); (4) payment systems (D1-4) (illegality, liquidity failure, reputational loss and market disruption); and (5) regulatory authorities (reputation risks (E1-3) (regulatory failure, institutional contagion and regulatory and supervisory failure through unregulated (shadow) activities), legal (E11) (litigation risk and illegality or unenforceability), competition (E21-23) (uneven playing field, reduced competition and limited market entry) and issuance (E31) (monetary policy damage)). These are graded in terms of being high, medium or low risks. EBA, Opinion on 'Virtual Currencies', EBA/OP/2014/08 E22-23 fig. 1 (2014).

Particular ICO-related issues can arise with regard to fraud, money laundering and criminal use, as well as custody risk and the risk of cryptographic key and private data loss and identity theft.[49] High levels of value risk arise as the tokens are not supported by price volatility and speculative use with possible market manipulation and collusion.[50]

There may be a lack of 'monetary mass' with democracy and governance concentrated and transaction inefficiency, as well as with electricity, computing capacity and environmental waste. Investors may not fully understand the relevant exposures and make decisions inappropriate to their investment needs.[51] Separate issues arise with regard to platform resources and risk management, including ensuring fair and orderly trading, avoidance of conflicts of interest and indiscriminate service provision.[52] Concerns also arise with regard to price discovery, market integrity and business continuity.[53]

Centralised platforms may not properly segregate client assets and cryptocurrency and fiat currency, with separate issues arising in relation to off-chain settlement and possible hacking and theft.[54] Separate issues may arise with regard to the technology and especially in terms of design, cybersecurity, governance, privacy and territoriality, as well as reconciliation issues, data privacy and data fraud.[55] Significant difficulties also arise with regard to legal clarity and certainty.[56] Specific harm may arise to consumers and market integrity.[57]

Financial stability concerns have generally been limited due to the relative size of the digital coin and token markets. Investors also tend to use savings rather than borrowing and leverage with limited evidence of significant liquidity mismatches or maturity transformation.[58] Nevertheless, wider macro potential risks need to be monitored.

ICOs may also be unregulated, lacking proper investor protection, price volatility, fraud potential, inadequate documentation and high risk due to only constituting early-stage development projects.[59] The open-source network improves financial access and inclusion with increased identity and data control through the use of cryptographic controls.[60]

8. ICO REGULATION

A number of different regulatory approaches have been adopted with regard to ICO control across countries.[61] No consistent policy has yet been adopted. This has led to substantial fragmentation and inconsistency in regulatory content and treatment. This is partly due to variations in perceived risk while the overall exposure is considered limited due to the relative size of the market to date. This is also partly concerned with uncertainties in identifying the specific tokens concerned and the application of relevant national definitions. This is also related to the continually evolving and changing nature of the underlying technology involved, with many authorities adopting a 'technology neutral' approach dependent on future developments.

The emerging regulatory models can be described as being US securities driven, European balanced and Asia binary.[62] The different approaches adopted can also be considered in terms of unregulated, warnings based, temporary, restrictive or subject to future evaluation.[63] These may be summarised for the purposes of this paper in terms of permissive, protective, provisional, prohibitive and possible or potential.

8.1. Permissive and unregulated

Several countries are considered to be permissive, if not supportive, of ICO issuance. These include Malta, Gibraltar, Switzerland and Singapore, which have been referred to as the new 'Crypto Harbours', 'Blockchain Islands' and 'Crypto Valley' respectively.[64] Switzerland and Singapore were two of the most important ICO hubs in 2017, with the UK overtaking Switzerland in 2018 and Estonia, Lithuania, Israel and Hong Kong also becoming more important.[65] Liechtenstein, Gibraltar and Malta were reported to be following Switzerland to establish themselves as ICO support hubs.[66] ICOs have increasingly replaced traditional VC funding, particularly in relation to technology and blockchain-related platforms with hybrid models combining VC with PE and ICO funding emerging.[67]

Malta has adopted three laws on digital innovation, technological arrangements and financial assets; these laws

49 SMSG, *supra* note 42, ¶¶ 32-33.
50 *Id.* ¶ 33.
51 ESMA, *supra* note 43, ¶¶ 46-49.
52 *Id.* ¶ 50.
53 *Id.* ¶¶ 51-52.
54 *Id.* Transaction and fiat conversion problems also arise with regard to decentralised platforms. *Id.* paras. 56-57. Token holders may lack experience in using the relevant hardware and software with loss of asset control or with wallet providers not segregating and safeguarding keys and assets with roles possibly being confused. *Id.* paras 58-60.
55 *Id.* ¶¶ 61-67. *See also* ESMA, The Distributed Ledger Technology Applied to Securities Markets (2017).
56 ESMA, *supra* note 43, ¶ 75.
57 Substantial risks arise to consumers purchasing unsuitable products with inadequate information and defective advertising. Consumers may experience unexpected or large loss especially through fraudulent activity and immature or defective market infrastructure and services. Leveraged derivatives, including Contracts for Differences (CFDs) and futures, can create higher loss through volatility and financing costs and spreads. FCA, *supra* note 47, ¶¶ 2.21-2.29. Consumers are exposed to cyber security and financial crime. *Id.* at ¶¶ 2.30-31. Market integrity may be undermined through market manipulation and insider dealing on exchanges and trading platforms especially due to immature markets, identity risks and abusive new behaviours not covered by regulation and market monitoring and surveillance. *Id.* ¶¶ 2.32-33.
58 ESMA, *supra* note 43, ¶¶ 68-69.
59 FCA, Statement on Initial Coin Offerings (Sept. 12, 2017), https://www.fca.org.uk/news/statements/initial-coin-offerings.
60 SMSG, *supra* note 42, at §§ 30-31.
61 *See generally* Peter Chapman & Laura Douglas, *United Kingdom*, *in* The Virtual Currency Regulation Review (Michael S. Sackheim &Nathan H. Howell eds., 2018); *see also* Library of Congress, Regulation of Cryptocurrency Around the World (2018), https://www.loc.gov/law/help/cryptocurrency/crytocurrency-world-survey.pdf.
62 PWC & Crypto Valley, *supra* note 9, at 1.
63 For a general review of 'Regulation of Cryptocurrency Around the World' in 130 countries, *see Cryptocurrency World Survey*, Library of Congress, https://www.loc.gov/law/help/cryptocurrency/world-survey.php)last visited Dec. 6, 2019).
64 For comment, Michael Knip, *The Most ICO-friendly Jurisdictions – the Switzerland, Malta and Gibraltar Edition (Part 3)*, Medium.com (Aug. 22, 2018), https://medium.com/&knipmichael/the-most-ico-friendly-jurisdictions-part-3-the-switzerland-malta-and-gibralta-edition-c1233c467a3e.
65 PWC & Crypto Valley, *supra* note 9, at 4.
66 *Id.* at 7.
67 *Id.* at 1, 8.

provide a clear regulatory framework for new technology, including DLT and ICOs.[68] The Malta Financial Services Authority (MFSA) has a dedicated FinTech section on its website, which is directed at harnessing innovation and bringing regulatory certainty.[69] The MFSA published a consultation document on its FinTech Strategy based on six pillars, which include regulations, ecosystem, architecture, international links, knowledge and security.[70] A 'Financial Instrument Test' was adopted to determine whether a DLT asset fell within the existing EU or national legislation, the Virtual Financial Asset Act or was otherwise exempt.[71]

The Gibraltar Financial Services Commission (GFSC) established a Distributed Ledger Technology Regulatory Framework in October 2017, which came into effect at the beginning of January 2018.[72] This creates a flexible and adaptive approach to support new rapidly evolving technology based on nine core principles that are similar to the UK FCA eleven Principles for Business (PRIN) and eight PRA Fundamental Rules (FRs).[73] A non-statutory advisory panel of experts has been established to assist the GFSC in DLT developments and guidance.

A large number of ICOs have been organised by the canton of Zug in Switzerland, such as the Ethereum Foundation launch in 2014 with the Swiss Financial Market Supervisory Authority (FINMA) conducting an investigation into ICO procedures in September 2017.[74] Guidance on the regulatory treatment of ICOs was issued in September 2017,[75] with additional guidance on the treatment of ICO enquiries in February 2018.[76] The 2018 Guidelines were considered necessary following the substantial increase in ICO projects that had occurred with the need to allow the FINMA to respond quickly and precisely to questions on the applicability of financial market regulation to ICOs. The Swiss Economic Minister confirmed in January 2018 that the Swiss Government continued to support the country's position as a 'crypto nation'.[77]

Singapore has also emerged as a leading financial centre in ICO issuance. The Monetary Authority of Singapore (MAS) confirmed in August 2017 that it would regulate offers or issuance of digital tokens if they are considered to constitute regulated products under the Securities and Futures Act (SFA) following a substantial increase in the number of ICOs in Singapore.[78] Revised guidance was issued in November 2018[79] in anticipation of the Payment Services Act 2019.[80]

Securities laws in Singapore include the Securities and Futures Act (SFA) and the Financial Advisors Act (FAA). A digital token may also constitute a securities-based derivatives contract, with the underlying being a share, debenture or unit in a business trust other than an excluded derivatives contract.[81] Standard exemptions apply with regard to prospective offering requirements.[82] Any person overseas who engages in any activity or conduct intended to or likely to induce the public (or section of the public) in Singapore in order to use any financial advisory service is deemed to be acting as a financial advisor within Singapore under the FAA.[83] Persons operating a primary platform or trading platform may be subject to the extraterritoriality provision set out by the SFA.[84]

68 Malta Digital Innovation Authority Act: Innovative Technological Arrangement and Services Act; and Virtual Financial Assets Act, CAP 590 (2018).
69 *Fintech*, MFSA, https://www.mfsa.com.nt/fintech/ (last visited Dec. 6, 2019).
70 MFSA, FinTech Strategy (2018) (consultation document).
71 MFSA, Guidance Note to the Financial Instrument Test (2018).
72 Financial Services (Distributed Ledger Technology Providers) Regulations (2017), *available at* https://www.gfsc.gi/dlt.
73 (1) A DLT provider must conduct its business with honesty and integrity; (2) pay due regard to the interests and needs of its customers and communicate in a fair, clear and not misleading manner; (3) maintain adequate financial and non-financial resources; (4) manage and control its business effectively; (5) have effective arrangements to protect client assets and money; (6) have effective corporate governance arrangements; (7) ensure that all systems and security access protocols are maintained to appropriate high standards; (8) have systems in place to prevent, detect and disclose financial crime risks; and (9) be resilient and develop contingency plans for the orderly and solvent wind down of its business. Ibid. Relevant guidance notes are provided on each of the principles. *Id.*
74 Press Release, FINMA, FINMA Is Investigating ICO Procedures (Sept. 29, 2017).
75 FINMA, Regulatory Treatment of Initial Coin Offerings, Guidance 04/2017 (2017).
76 FINMA, Guidelines for Enquiries Regarding the Regulatory Framework for Initial Coin Offerings (ICOs) (2018).
77 Pascal Sprenger, *How FINMA's ICO Guidelines Impact Future ICOs in Switzerland*, KPMG International (Feb. 26, 2018).
78 A digital token was referred to as a cryptographically secured representation of the holder's right to receive a benefit or to perform specified functions with a virtual currency being a particular type of token that acted as a medium of exchange, unit of account or store of value. The MAS noted that digital token function had evolved with tokens representing ownership or security interests over the issuer's assets or property beyond simply acting as a virtual currency with the tokens having to be considered in terms of shares, debentures or units in a collective investment scheme under the SFA. This would require the filing of prospectuses and licensing with trading platforms becoming approved exchanges or recognised market operators. Press Release, MAS, MAS Clarifies Regulatory Position on the Offer of Digital Tokens in Singapore (Aug. 1, 2017).
79 MAS, A Guide to Digital Token Offerings (2018).
80 The Payment Services Act created a single regulatory regime for all payment devices including electronic payment. The Act defines a digital payment token, digital payment token service, e-money, e-money issuance service, money and money-changing service. It also defines payment account, payment order, payment service, payment service provider, payment service user, payment system and payment transaction. A digital payment token means any digital representation of value (other than an excluded digital representation of value prescribed by the MAS) that is expressed as a unit, not denominated in any currency (and not pegged by the issuer to any currency), intended to be a medium of exchange accepted by the public (or section of the public) as payment for goods or services or the discharge of a debt, can be transferred, stored or traded electronically and satisfy such other characteristics as the MAS my prescribe. E-money means any electronically stored monetary value that is denominated in any currency (or pegged by its issuer to any currency), has been paid for in advance to enable the making of payment transactions through the use of a payment account, is accepted by a person other than the issuer and represents a claim on the issuer but does not include a deposit accepted in Singapore. Money includes e-money but excludes any digital payment token and any excluded digital representation of value. Payment account means any account (or any device or facility (whether in physical or electronic form) that is either held in the name (or associated with the unique identifier) of any person and used by that person to initiate a payment order or held in the names (or associated with the unique identifiers) of two or more persons. Payment order means any instruction to a payment service provider requesting the execution of a payment transaction. Payment transaction means the placing, transfer or withdrawal of money, whether for the purpose of paying for goods or services or for any other purpose and regardless of whether the intended recipient of the money is entitled to the money. Payment Services Act § 2(1) (2019).
81 SFA § 2(1).
82 (a) The offer constitutes a small personal offer (not exceeding S$5 million within any 12 month period subject to specified conditions); private placement (to no more than 50 persons within any 12 month period subject to conditions); to institutional investors only; or to accredited investors. MAS, *supra* note 79, ¶ 2.7,
83 FAA § 6(2); MSA, *supra* note 79, ¶ 213,
84 SFA § 339 adopts an 'effects doctrine' with regard to territorial application. This was recognised in the Court of Appeal judgement in *PP v. Taw Cheng Kong* [1998] 2 SLR 410, in which the court recommended that Parliament adopt the effects doctrine in legislation. 'As Singapore becomes increasingly cosmopolitan in the modern age of technology, electronics and communications, it may well be more compelling and effective for Parliament to adopt the effects doctrine as the foundation of our extra-territorial laws in addressing potential mischief…' *Id.* at88. s339(2) provides that, 'Where (a) a person does an act outside Singapore which has a substantial and reasonably foreseeable effect in Singapore; and (b) that act would, if carried out in Singapore, constitute an offence under any provision of Part II, IIa, III, IV, VIII, XII, XIII or XV [of the SFA] that person shall be guilty of that offence as if the act were carried out by that person in Singapore, and may be dealt with as if the offence were committed in Singapore.' s339(1) provides that, 'Where a person does an act partly in and partly outside Singapore which, if done wholly in Singapore, would constitute an offence against any provision of this Act, that person shall be guilty of that offence as if the act were carried out by that person wholly in Singapore, and may be dealt with as if the offence were committed wholly in Singapore.' The meanings of substantial and reasonably foreseeable are considered under the Guidelines provided on the application of s339. SFA § 33; Guidelines of the Application of Section 339 (Extra-territoriality) of the FCA, Guidelines No. SFA 15-GO

8.2. Protective and warnings

The FCA in the UK issued a consumer warning about ICOs in September 2017.[85] It issued earlier papers on DLT[86] with guidance on cryptoassets in January 2019[87] and a consumer survey research report on cryptoasset ownership and attitudes in March 2019.[88] The UK Treasury established a Cryptoassets Taskforce in March 2018, which published a full report in July 2018 and included, inter alia, further warnings against ICOs and digital coin exchanges.[89] The FCA wrote to the Chief Executive Officers (CEOs) in the principal financial institutions warning them of the dangers of cryptoassets and financial crime in June 2018.[90]

The European Supervisory Authorities (ESAs), along with the European Securities and Markets Authority (ESMA), European Banking Authority (EBA) and European Insurance and Occupational Pensions Authority (EIOPA), issued a consumer warning regarding the purchase of virtual currencies in February 2018.[91]

The Financial Action Task Force (FATF) amended its recommendations for anti-money laundering and terrorist financing to clarify their application to virtual assets, including cryptocurrencies, ICOs and digital payment and investment technologies, with further clarification to follow.[92] This included the incorporation of a new definition of virtual asset and virtual asset service provider in Recommendation 15 on new technologies.[93]

8.3. Provisional and temporary

Some territories have adopted interim or temporary measures pending market changes or final regulatory determination. China, for example, banned ICOs and exchanges in early 2018 although it was reported that the prohibitions may be temporary.[94] Other countries may take protective steps to prevent loss or damage until final measures are agreed and adopted.

8.4. Prohibitive and restrictive

US authorities have generally adopted an aggressive approach to ICOs and digital token offerings in addition to issuing warning notices. Substantial powers are provided under the principal financial statutes in the USA, including the Securities Act 1933 and the Securities and Exchange Act 1934, especially with the extended definition of security in both statutes which includes investment contracts under the extensive SEC v. Howey test.[95] The US SEC issued a statement in July 2017 confirming that US securities laws may apply to the offer, sale and trading of interests in virtual organisations following its investigation into the DAO.[96] The SEC issued two warnings with regard to Ponzi schemes and virtual currencies in July 2013 and Bitcoin and other virtual currency-related investments in May 2014.[97]

While ICOs may provide fair and lawful investment opportunities, they may be used to entice investors with the promise of higher returns in a new investment space with the SEC issuing guidance in the form of an Investor Bulletin in July 2017.[98] Other warnings were issued in 2017.[99]

The SEC Chairman, Jay Clayton, issued a statement on cryptocurrencies and ICOs in December 2017 and gave testimony before the US Senate Committee on Banking, Housing and Urban Affairs in February 2018.[100] The SEC has undertaken a number of specific actions in relation to digital assets and ICOs since its enforcement proceedings against Trendon T Shavers and Bitcoin Savings and Trust for operating a Bitcoin-denominated Ponzi scheme in 2013.[101]

(2004 revised 2018); MAS, *supra* note 79, ¶¶ 2.12, 4.4. The extra-territorial provisions will not be triggered where reasonable efforts have been undertaken not to have a substantial and reasonably foreseeable effect in Singapore. This would include: (a) using prominent disclaimers in all advertisements and published information stating that the promotion is directed or targeted at persons outside Singapore; (b) use of reasonable and effective precautions to ensure that the offer or invitation may be acted upon only by persons outside Singapore; (c) absence of any advertisement or published information disseminated by a foreign entity for the purpose of inducing persons in Singapore to engage in the relevant act; (d) or absence of references to such advertisement or published information by the foreign entity in any source that is intended for persons in Singapore. *Id.* ¶¶ 5.1(a)-(d). A number of illustrations are provided on the applicability of s339 in para 6. which cover: (a) foreign entity purchase of services by a holder of a capital markets service licence; (b) regulated person servicing a foreign entity's overseas client; (c) introducing broker arrangements; (d) foreign entity servicing a domestic institutional client with a controlling person residing in Singapore; (e) foreign entity continuing to service a client previously overseas; (f) Singapore persons trading directly through foreign intermediary; (g) custodial services; and (h) secondary market activity.

85 FCA, *supra* note 59.

86 FCA, *Discussion Paper on Distributed Ledger Technology* (Discussion Paper 17/3, 2017); FCA, *Distributed Ledger Technology: Feedback Statement on Discussion Paper 17/03* (Feedback Statement 17/4, 2017).

87 *Guidance on Cryptoassets*, *supra* note n 47; *See also* FCA Consultation Paper 19/3 (2019).

88 FCA, Cryptoassets: Ownership and Attitudes in the UK (2019).

89 HM Treasury, FCA & Bank of England, Cryptoassets Taskforce: Final Report (2018).

90 FCA, Cryptoassets and Financial Crime (2018).

91 Warning, ESMA, EBA & EIOPA, ESMA, EBA and EIOPA Warned Consumers on the Risks of Virtual Currencies' (Feb. 12, 2018).

92 FATF, International Standards on Combating Money Laundering and the Financing of Terrorism & Proliferation – the FATF Recommendations (2018) (as revised); FATF, Regulation of Virtual Assets (2018).

93 Countries and financial institutions had to identify and asses the money laundering or terrorist financing risks that may arise in relation to: (a) the development of new products and new business practices, including new delivery mechanisms; and (b) the use of new or developing technologies for both new and pre-existing products. To manage and mitigate the risks arising from virtual assets, countries had to ensure that virtual asset service providers were regulated for AML/CFT purposes and subject to effective systems for monitoring and ensuring compliance with the relevant measures required under the FATF Recommendations. *See* FATF Recommendation 15.

94 Kenneth Repoza, *What China Ban? Cryptocurrency Market Cap Rebounding*, Forbes (Sept. 28, 2017).

95 *See supra* note 21.

96 Press Release, SEC, SEC Issues Investigative Report Concluding DAO Tokens, A Digital Asset, Were Securities, Press Release 2017-131 (Jul. 27, 2015); SEC, Report of Investigation Pursuant to Section 21(a) of the Securities Exchange Act of 1934: The DAO, No. 81207 (2017).

97 SEC, Investor Alert, Ponzi Schemes Using Virtual Currencies' (23 July 2013) Investor Alert; and SEC, 'Bitcoin and Other Virtual Currency-Related Investments (May 7, 2014).

98 SEC, Investor Bulletinm, Initial Coin Offerings (Jul. 25, 2017).

99 SEC, Investor Alert, Public Companies Making ICO-Related Claims (Aug. 28, 2017): SEC, SEC Statement Urging Caution Around Celebrity Backed ICOs (Nov. 1, 2017); SEC, Investor Alert, Celebrity Endorsements (Nov. 1, 2017).

100 SEC Chairman, Statement on Cryptocurrencies and Initial Coin Offerings (Dec. 11, 2017); SEC, Chairman's Testimony on Virtual Currencies: The Rules of the SEC and CFTC before the Committee on Banking, Housing, and Urban Affairs, United States Senate (Feb. 6, 2018).

101 Information on the following illustrative cases can be accessed at https://www.sec.gov/spotlight/cibersecurity-enforcement-actions: SEC v. Trendon T. Shavers and Bitcoin Savings & Trust (Jul. 23, 2013); *In Re* Erik T. Voorhees (Jun. 3, 2014); *In Re* BTC Trading, Corp & Ethan Burnside (Dec. 8, 2014); *In Re* Sand Hill Exchange et al. (Jun. 17, 2015); SEC v. Homero Joshua Garza GAW Miners, LLC et al. (Dec. 1, 2015); *In Re* Bitcoin Investment Trust & SecondMarket Inc. (Jul. 11, 2016); SEC v. Renwick Haddow et al. (Jul. 25, 2017); SEC v. ReCoin Group Foundation LLC et al. (Sept. 29, 2017); SEC v. Plex Corps et al. (Dec. 1, 2017); *In Re* Munchee Inc (Dec. 11, 2017); SEC v. AriseBank et al. (Jan, 21, 2018); SEC v. Jared Rice Sr. & Stanley Ford (Dec. 11, 2018); SEC v. John E. Montroll & Bitfunder (Feb. 21, 2018); CentraTech Inc. (Apr. 2, 2018); SEC v. Longfin Corp et al. (Apr. 6, 2018); SEC v. CentraTech Inc. (Apr. 20, 2018); Titanium Blockchain Infrastructure Services Inc. (May 22, 2018); SEC v. Jesky & DeStefano (Jul. 2, 2018); Tomahawk Exploration LLC & David T. Laurance (Aug. 14, 2018); Crypto Asset Mgmt. LP &

The US states generally retain and apply their own regulations on security issuance. FinCEN requires exchanges to be registered.[102] While the USA remains important in terms of domestic issuance and especially in relation to SAFT and STO programmes,[103] international issues tend to use the UK or Switzerland within Europe and Singapore or Hong Kong in Asia, with Malta, Gibraltar, the Cayman Islands and British Virgin Islands also being important and with increased use of Estonia, Lithuania and Israel.

Seven regulatory authorities in China stated in September 2017 that they considered ICOs to be illegal under domestic law.[104] This applied to the activity of raising virtual currencies, which was considered to be non-approved, illegal, open fund-raising behaviour with relevant activities to cease immediately.[105] Funds were returned to investors and trading platform activity was prohibited.[106] Almost a billion dollars were returned to Chinese investors, with over 40 ICOs being closed on the mainland following the investigation of 60 ICOs.[107]

The Supervision and Control of Financial Institution Division at Qatar's Central Bank has issued a circular to banks operating in Qatar warning against trading in Bitcoin. The circular states that Bitcoin is illegal and unsupported by any central bank or government. Cryptocurrencies may suffer from high volatility and may be used for criminal purposes. Banks operating in Qatar are prohibited from dealing in cryptocurrencies which are subject to penalty.[108]

The Financial Services Commission in South Korea also banned the raising of funds through ICOs on 29 September 2017.[109] The authorities confirmed that the ban would remain in place in February 2019.[110]

8.5. Potential or possible

No official bans were issued in the EU although ICOs and cryptoassets were investigated by the Securities and Markets Stakeholder Group (SMSG) of the ESMA in October 2018.[111] A separate report was issued by the ESMA on ICOs and cryptoassets in January 2019.[112] It considered the extent to which ICOs and digital assets were covered by existing EU definitions and regulations, with a number of recommendations being made for further clarification. The EBA issued an earlier opinion on virtual currencies in July 2014.[113] European authorities issued a consumer warning in February 2018. The ESMA recommended that a proportionate approach was adopted to clarify the application of relevant EU provisions, with all cryptoasset-related activities being subject to proper AML control. An appropriate EU-wide approach had to be adopted to ensure a level playing field within the new cryptoasset area.[114]

The EBA conducted further investigation in relation to virtual currencies, in particular, following the request by the European Commission Vice President Dombrovskis to the ESAs to investigate the applicability of EU law to cryptoassets. This also followed the FinTech Roadmap published by the EBA in March 2018.[115] The EBA advised the European Commission to conduct a comprehensive cost–benefit analysis to determine whether any further action was required and to consider the latest recommendations of the FATF in this area.[116]

The Organisation for Economic Cooperation and Development (OECD) recommended that greater clarity should be obtained in the regulatory and supervisory treatment of ICOs, with international cooperation being promoted to prevent regulatory arbitrage while allowing ICOs to deliver their potential advantages in the financing of blockchain-based small and medium-sized enterprises (SMEs).[117]

The Securities and Futures Commission in Hong Kong has confirmed that an ICO and digital tokens may be subject to securities laws depending on the particular facts and circumstances.[118] The Australian Securities & Investments Commission has warned of the potential risks and stated that ICO regulation depended on the circumstances of the particular case.[119] The Canadian Securities Administrators (CSA) stated that a digital coin or token could constitute a security under the securities regulation in Canada in August 2017.[120] Canada may adopt an increasingly strict approach over time, in particular, as it adopted the equivalent of the US *Howey* test in *Pacific Coast Coin Exchange*.[121]

No prohibitions have been imposed in New Zealand although

Timothy Enneking (Sept 11, 2018); TokenLot LLC, Lenny Kugel & Eli Lewitt (Sept. 11, 2018); SEC v. 1Pool Ltd aka 1Broker & Patrick Brunner (Sept. 27, 2018); SEC v. Blockvest LLC & Reginald Buddy Ringgold, III aka Rasool Abdul Rahim El (Oct. 11, 2018); Zachary Coburn (Nov. 8, 2018); CarrierEQ Inc d/b/a Airfox (Nov. 16, 2018); Paragon Coin Inc. (Nov. 16, 2018); Khaled Khaled ('DJ Khaled') (Nov. 29, 2018); Floyd Mayweather Jr. (Nov. 29, 2018); CoinAlpha Advisors LLC (Dec. 7, 2018); Gladius Network LLC (Feb. 20, 2019); Mutual Coin Fund LLC & Usman Majeed (Apr. 1, 2019). The SEC has taken a number of other actions in relation to account intrusions, hacking and insider trading, market manipulation, safeguarding customer information, public company disclosure and controls and trading suspensions.

102 PWC & Crypto Valley, *supra* note 9, at 6.

103 §§ 3(2), (7).

104 The statement was issued by the People's Bank of China, the Central Network Office, the Ministry of Industry and Information Technology, the State Administration for Industry and Commerce and the China Banking Regulatory Commission. *See* MIIT https://www.miit.gov.cn/in1146290/in4388791/c5781140/content.html; *see also China Bans Digital Coin Offers as Celebrities Like Paris Hilton Tout Them*, Wall St. J. (Sept. 4, 2017).

105 'ICO financing refers to the activity of an entity raising virtual currencies, such as Bitcoin or Ethereum, through illegally selling and distributing tokens. In essence, it is a kind of non-approved illegal open fund raising behaviour, suspected of illegal sale tokens, illegal securities issuance and illegal fund-raising, financial fraud, pyramid schemes and other criminal activities.' *Id.*

106 'Trading platforms shall not conduct any exchange business between fiat money and tokens, shall not provide information and price for token trading.' *Id.*

107 Repoza, *supra* note 94.

108 Library of Congress, *supra* note 63.

109 Josiah Wilmoth, *Breaking – South Korea Bans Initial Coin Offerings: Report*, CCN (Sept. 29, 2017).

110 Mark Emem, *Ban Hammer Remains: South Korea's Financial Services Commission Refuses to Lift ICO Ban*, CCN (Feb. 1, 2019).

111 SMSG, *supra* note 42.

112 ESMA, *supra* note 43,

113 EBA, *supra* note 48.

114 ESMA, *supra* note 43, at 8-9.

115 The EBA FinTech Roadmap would monitor the regulatory perimeter (especially with regard to authorisation and licensing approaches and the value of regulatory sandboxes and innovation hubs), monitor emerging trends and analyse business model impact, promote best supervisory practices (especially on cyber security and promoting a common cyber threat testing framework), consider consumer issues and identify and assess anti-money laundering and terrorist financing risks. EBA, The EBA's FinTech Roadmap (2018).

116 EBA, Report with Advice for the European Commission on Crypto-Assets (2019); *see also* FATF, Guidance for a Risk-Based Approach to Virtual *Currencies* (2015).

117 OECD, Initial Coin Offerings (ICOs) for SME Financing (2019).

118 Securities & Futures Commission, Statement on Initial Coin Offerings (Sept. 5, 2017).

119 Australian Securities & Investments Commission, Initial Coin Offerings and Cryptocurrency, Info. Sheet 225 (2017). (Separate warnings were issued by the ASIC on the MoneySmart website, *Initial Coin Offerings (ICOs)*, MoneySmart, https://www.moneysmart.gov.au/investing/investment-warnings/initial-coin-offerings-icos (last visited Dec. 6, 2019.

120 CSA, Cryptocurrency Offerings, Staff Notice 46-307 (Aug. 24, 2017).

121 Pac. Coast Coin Exchange v. Ontario Sec. Comm'n, [1978] 2 S.C.R. 112 (Can.). The case concerned the sale of silver coins on margin as part of a commodity account agreement. The appellant had failed to file a prospectus and the Ontario Securities Commission had sought a prohibitory order to cease trading. It was held that the activities constituted an investment contract or in the alternative evidence of title to or interest in the capital, assets, property, profits, earnings or royalties.

guidance was issued by the Financial Markets Authority (FMA) in February 2019.[122]

9. ICO COMMENT AND CLOSE

The ICO market remains an important source of funding for many coin and token offerings. While there has been a relative decline in the number of ICOs more recently, they remain important, with significant amounts of funding being raised through ICOs. They provide working capital and investment for platforms and sponsors and attractive opportunities for returns for investors. Blockchain and DLT may also continue to be advantageous, especially in terms of disintermediation, asset digitalisation, cryptographic access control, security, automation, reconciliation, modularisation, interlinkage, codification and open governance with shared function, responsibility and liability.

Substantial and legitimate regulatory concerns nevertheless arise. Authorities have to ensure that all necessary information is properly disclosed and that investors are capable of making an informed and timely choice as to the risks involved. Markets have to support efficient price discovery. Substantial disadvantages may also arise, including low relative speed and latency, limited size and capacity, lack of scalability, complexity, business model fragmentation, regulatory and supervisory dilution of function, concentration, confusion, limited functionality, technological dependence, lack of effective governance and the wider risk of technological contagion, emergence and systemic collapse.

Authorities have experimented with different approaches to attempt to balance innovation and advantage with a degree of proper control and managed market integrity and stability. Regulatory tolerance or reaction generally depends on the initial classification of the coin or token involved in this, determining which area of law should apply and the specific conditions and obligations concerned. Gaps in regulatory definitions and controls will nevertheless arise, which need to be corrected in time.

The growth and expansion of this new digital marketplace has also raised wider issues regarding the relationship between law and technology and more generally the rule of law. Technology should not attempt to avoid, contradict or replace law. It cannot remove essential rights and protections. Some rights, interests and entitlements may be adjusted through implied and express consent although other common law, statutory, constitutional, administrative or fundamental human rights cannot be simply dis-applied. There is also a core right to private dispute resolution and public judicial review. This creates a paradox that has not yet been fully resolved.

Technology has to work with law and operate within the confines of the legal and regulatory sphere or environment applicable in any particular country. It should complement and support rather than attempt to contradict or supplant legal entitlement, and it will be most effective where it respects and reinforces legal rights and protections. Technology platform sponsors, programmers and coders should work together with lawyers and politicians to create new understanding and new relationships to support longer-term growth and innovation and commercial and social advance. All of this creates exciting opportunities in still evolving significant areas of new market and regulatory practice.

122 *Initial Coin Offers*, Financial Markets Authority (Feb. 11, 2019), https://www.fma.govt.nz/ compliance/cryptocurrencies/initial-coin-offers/