The Marriage of Technology, Markets and Sustainable (and) Social Finance- Insights from ICO Markets for a New Regulatory Framework

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Abstract and Introduction

This paper aims to bring together two areas seemingly far apart in finance- the world of sustainable and social finance and the largely unregulated markets in initial coin offerings (ICOs). Insights of cross-fertilisation can be derived to deal with a question that sustainable and social finance has struggled with, viz, the scaling up of such finance by fund-raising in markets rather than through institutions or intermediaries.[1] We see the underlying technology that has powered ICOs to be relevant for the scaling up of marketization in sustainable and social finance, but will argue for a new regulatory approach in order to support the market revolution we advocate.

The gaps in finance for sustainable and social needs are well-canvassed. These gaps are largely due to the slow pace in successful marketization of such finance, perceived to be often incompatible with the needs and requirements of investors in conventional markets.

We offer a proposal to scale up the marketization of sustainable and social finance, by building on insights derived from the controversial ICO markets. We argue that ICO markets hold insights for transforming sustainable and social finance into a different asset class altogether, and the application of these insights may greatly increase the marketization potential of such finance. In this proposal we move away from treating sustainable and social finance as securities or securitised assets, and propose regulatory reforms to support such a new asset class. These regulatory reforms move away from a merely incremental approach that is focused on encouraging conventional investors to diversify their portfolios to include sustainable and social finance.

In this analysis, we are not seeking to fit sustainable or social finance into ICOs or suggest that they should take advantage of the hitherto unregulated ICO markets. We are also keenly aware of the nascent efforts in regulatory treatment of ICOs, especially in relation to the extension of securities regulation over ICOs by the US Securities and Exchange Commission. We argue that policy-makers would miss the innovative and transformative elements in ICOs if an approach is forced upon ICOs to submit to existing regulatory regimes for securities and commodities. We take a different approach that breaks away from the conventional mould, arguing that sustainable and social finance can be transformed into a new asset class with the help of technology. Such a new asset class would have expanded market appeal as well. This result will however crucially require the support of new regulatory policy. In taking this approach, we accept the enormous financing potential of private markets, albeit in areas of sustainable and social finance that may deliver public goods.[2] The public interest in the outcomes of sustainable and social finance would be optimally met by drawing upon

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[1] Whether we refer to public bodies, development institutions, international organisations or private banks.

[2] A hybrid approach in governing green bonds is discussed in Park (2018).

the resources in the private markets while being nested within a regulatory framework that would strike an appropriate balance between the public and private interest aspects of this integrated approach.

We capitalise on the wide and borderless appeal that ICOs have already gained, in reaching out to communities and forming new markets for sustainable and social finance. Our proposal ultimately seeks to integrate the social and commercial dimensions in a new way in fund-raising, towards the construction of a new form of capitalism based on the crowdsourcing society for creating value in an integrated social-commercial manner. This phenomenon, powered by technology, meshes the social and commercial dimensions in fund-raising and disrupts existing establishments of marketplaces where sustainable and social finance have been inadequately served.

Section 1 explores the needs of sustainable and social finance and what gaps there are for filling such needs. Section 2 then considers an unusually robust but volatile market, the ICOs market, which has facilitated phenomenal amounts of fund-raising in a largely unregulated environment.[3] We suggest that the ICO markets offer insights into transforming technologies for the successful marketization of new forms of finance, although we are not unequivocally comfortable with all the factors that contribute to that success.

Section 3 builds upon two essential driving factors for the success of ICO markets and considers how these innovative aspects may transform conventional conceptions of 'investible' and 'marketable' assets, and support the development of a new asset class in sustainable and social finance. We suggest that regulators refrain from classifying and fitting ICOs within existing regimes such as securities or collective investment scheme regulation, as in doing so, the asset innovation potential offered by the technologies powering ICOs may be unduly hampered or even extinguished. One of us has developed at length in another paper why ICOs do not fit neatly into securities or collective investment scheme regulation. In this article we refer to this other piece and will only summarise our arguments in relation to the lack of coherence between ICOs and existing capital markets regulatory regimes. The key argument we wish to make is that by moving away from a dogged approach to submit ICOs to the existing regulatory frameworks, the truly innovative and useful aspects can be developed so that markets can benefit from them. We propose new regulatory policy to support and govern a new asset class in sustainable and social finance that is transformed by innovative technology derived from ICOs. Finally Section 4 offers concluding thoughts on the broader role of financial regulation in building markets and the need to be responsive to innovation and technological disruptions.

1. The Road to Marketising Sustainable and Social Finance

1.1 What is Sustainable and Social Finance?

Sustainable finance relates ultimately to the question of how sustainable goals are funded, these are set out in the current list of 17 sustainable development goals pronounced by the United Nations.[4] These goals seek to achieve collective goods in terms of basic provision, healthy physical environments that can be preserved for future generations, civic societies, institutions and infrastructure that serve common good, and responsible business. Although we intuitively think that international organisations and nation states are naturally-placed to deliver such goals through public policy, Black[5] has often referred to the space for policy and implementation as de-centred,

[3] Section 2.
[4] http://www.un.org/sustainabledevelopment/sustainable-development-goals/.
[5] Black (2002).

especially at the international level, where well-resourced actors in the private sector, whether financially[6] or in relation to capacity[7] and expertise,[8] can offer initiatives to implement such public goods.[9] Seen in this context, sustainable and social finance, which relates to how finance can be raised to fund projects that deliver on sustainable goals or making social changes, is not merely a fiscal obligation for states but a space for considering various channels of fund-raising including through private sector institutions and markets. Sustainable and social finance support the shifting boundaries in the roles, capacities and responsibilities of public, private and civil society bodies and the hybrid agendas or goals that such actors foster.

1.2 Marketisation as Way Forward for Growth in Sustainable and Social Finance

Gaps in sustainable and social finance have been identified. It is estimated that about USD$5.7trillion is needed annually for sustainable finance projects and current levels of financing are only reaching about USD$360billion annually.[10] These financing needs have largely been provided by institutional finance, ie finance provided by governments, public sector bodies, development and international organisations and private sector banks, as characteristics of institutional finance are relatively more compatible with sustainable and social financing needs.[11] However, in scaling up sustainable and social finance, it is important to consider how they may be met by marketization. Marketisation refers to the raising of funds from markets instead of from institutions. The sources for market-based finance are growing phenomenally and it is estimated that USD$5 trillion could move from conventional market-based finance into sustainable finance.[12].

It remains challenging for private sector bodies to be willing to take on sustainable and social finance in significant measure. Sustainable and social finance projects may involve risk management in challenging aspects, such as the risks of environmental harm or social risks that affect communities' lives. Such risks may be better assessed and managed by public sector bodies or financing bodies such as multilateral development institutions.[13] Private sector banks, in a medium-to-long term relationship context of lending, are also able to address and manage project risks.[14]

The private sector, in particular market-based finance, may lack incentives to invest in sustainable and social finance as commentators document the inevitable trade-off between the financial returns from these projects and the attainment of 'sustainable' or 'social' outcomes.[15] This trade-off is in

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[6] The wealth of some multinational corporations would dwarf some countries' gross domestic product, see 'World's largest corporations make more money than most countries on Earth combined', *The Independent* (13 Sep 2016) at https://www.independent.co.uk/news/business/news/worlds-largest-corporations-more-money-countries-world-combined-apple-walmart-shell-global-justice-a7245991.html. Multinational corporations sometimes bring infrastructural, economic and innovative developments to emerging countries that host them, see Dunning and Lundan, (2008) at chs 10, 11, 16, 17 and 18; Bodewwyn ' (2017); Narula and Guimón, (2009); but not without externalities too, see for eg Ruggie, (2017); Dine, (2000, 2006), Bakan, (2003).

[7] Neil Gunningham, 'Regulatory Reform and Reflexive Regulation: Beyond Command and Control' in Kaul (2012); Boscheck (2008).

[8] Eric Brousseau, Tom Dedeurwaerdere and Bernd Siebenhüner, 'Knowledge Matters: Institutional Frameworks to Govern the Provision of Global Public Goods' in Kaul (2012); Drori and Meyer (2009).

[9] Roberts (2011). Also discussed in Cafaggi and Renda (2012); Abbott and Snidal, (2009).

[10] Sourced from World Resources Institute online at http://www.wri.org/our-work/project/climate-finance.

[11] Discussed below.

[12] Sourced from World Resources Institute online at http://www.wri.org/our-work/project/climate-finance.

[13] Adeyemi (2014); Herbertson and Hunter (2007).

[14] Weber (2015).

[15] Cornée and Szafarz (2014) on social banks charging lower interest rates on lending in order to mitigate defaults; Jim Clifford, Tobias Jung, 'Social Impact Bonds' in Lehner (2016) on social impact bonds generating

part due to the collective/public goods nature of the sustainable or social outcomes but also in part due to the needs of these projects. In order for projects to be successful, perhaps it is inherently required that financial extraction be kept modest. For example, social banks,[16] specialising in lending to social enterprises or community needs[17] or social crowdfunding are largely premised on non-financial motivations.[18]

There is a growing movement to encourage sustainable and social finance to be marketed to mainstream institutional investors by focusing on how such finance can be aligned with their needs.[19] Reforms are to be escalated in the EU as policy-makers are embarking on a drive towards the internalisation of sustainable and social finance by conventional investment markets.[20] Further, market developments have arisen to bridge the needs between investment participants in the market and the opportunities in sustainable and social finance such as the standardisation of terms in investment instruments,[21] availability of investment ratings[22] and indices to act as benchmarks.[23]

1.3 Making Sustainable and Social Finance Marketable?

In order to support the marketization of sustainable and social finance, legal and regulatory frameworks are likely to be introduced to support asset 'investibility' and 'marketability'. We however think challenges remain in the fit between the needs of sustainable and social finance and market-based finance.

1.3.1 'Investibility' of Assets

In relation to 'investibility', we mean the quality of investment assets that generates investment performance required by investors. The 'investment performance' that the market expects is generally accepted as financial value creation.

Institutions need to generate returns on assets under management as a matter of contractual as well as regulatory mandate. [24] Although ancillary objectives such as considering the investment's ethical or social dimensions are not necessarily contrary, their relevance is confined to being aligned

lower returns on average than conventional investments; Lisa Brandstetter, Othmar M. Lehner, 'Opening The Market For Impact Investments' in Lehner (2016).

[16] Olaf Weber, 'Social Banks' Mission and Finance'; Daniel Tischer, Sven Remer, 'Growing Social Banking Through (Business) Associations'; in (2016); Weber and Duan (2012).

[17] Credit Unions Act 1979 now superseded by the Co-operative and Community Benefit Societies Act 2014. Also cf co-operative or community bank in other jurisdictions, Andrea Bonoldi, Eleonora Broccardo, Luca Erzegovesi, Andrea Leonardi, 'The Quality Of Bank Capital In Cooperative Banks' in Lehner (2016).

[18] Balboni, Kocollari and Pais (2014); Burtch, Ghose and Wattal (2013); Harms (2007); Lehner (2013) document the importance of altruism, alignment of social value and non-financial motivations as being important to social crowdfunding alongside or relative to financial motivations.

[19] Such as long-term sustainable or social finance being aligned with long-term maturity of investment obligations for pension funds, see HLEG (2018) at p74ff.

[20] HELG (2018).

[21] OECD, *Green Finance and Investment Mobilising Bond Markets for a Low-Carbon Transition* (2017) at p33 on initiatives to standardise green bond issuance terms.

[22] Discussed in World Bank (2017); Philippe Gillet, Julie Salaber-Ayton, 'The Recent Development And Performance Of Ethical Investments' in Lehner (2016).

[23] Such as the FTSE4Good Index; Dow Jones Sustainability Index provided by leading stock exchanges. Discussed in World Bank, 2017; Vogel (2005) at ch3.

[24] *Cowan v Scargill* [1985] 1 Ch 270; also see Richardson (2007).

with financial value creation.[25] The primary focus on financial value creation[26] in investment management is supported by the legal and regulatory framing of investment management duties such as care,[27] diligence[28] and loyalty.[29] These also drive institutional investment into certain asset classes: stocks and bonds being the prevailing conventional ones.[30] As institutions often delegate to professional asset managers to manage their portfolios,[31] asset managers are also ranked and rated in relation to their past performance in generating financial returns.[32]

The legal obligations for investment management that focus and protect investors' expectations of financial value creation are mirrored in the laws and regulations that govern investment 'assets', usually the underlying corporations that issue securities. Corporate law and securities regulation support the obligations of management to prioritise the realisation of financial value creation for the benefit of investors (shareholders), culminating in a 'symmetry' of laws.[33]

A question for sustainable and social finance In relation to investibility is whether they can generate financial value creation alongside the attainment of sustainable or social outcomes. The 'alignment' of financial and non-financial value creation underlies much of the policy exhortation towards 'socially responsible investing',[34] i.e. encouraging mainstream institutions to take on board 'environment', 'social' and 'governance' (ESG) issues relating to their investments as these are important for financial value creation.[35] Further, institutions are encouraged to call their investee companies to account for ESG issues.[36] There are European reforms afoot to make it a mandatory aspect of fiduciary duties owed by institutions to their investors that ESG factors be internalised in investment management.[37] Investors' awareness is supported[38] by increased requirements imposed on companies to report their ESG performance.[39]

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[25] UNEPFI, *Fiduciary Responsibility: Legal and Practical Aspects of Integrating Environmental, Social And Governance Issues Into Institutional Investment* (Geneva: UNEPFI, 2009); Sandberg (2011).
[26] explained as 'singularising' the profit of investment as a monetised measure, see Amaeshi (2010).
[27] The duty of care imposed on pension trustees in sections 1 and 2 Trustees Act, or imposed on mutual fund managers in the EU UCITs Commission Directive 2010/43/EU, Art 23.
[28] Above.
[29] The duty of loyalty refers to non-deviation from the primacy of financial value creation, thus, investing for other purposes such as for social and ethical purposes could potentially be contrary to the requirements of the duty, an issue dealt with in UNEPFI, 2009; Generation Foundation, UNEP and UNPRI, *Fiduciary Duty for the 21st Century: Statement on Investor Obligations and Duties* (June 2016) at https://www.unpri.org/download_report/19422; this issue still not satisfactorily resolved, see Hoepnerab, Rezec & Siegl (2011); Yeoh, (2014).
[30] See Leibowitz '(1986) at 68-75 and 47-57 respectively.
[31] Morley (2013-14); Fender (2003).
[32] Eg Fitch rates asset managers and funds, and Morningstar also provides a much trusted bond and equities funds ratings service.
[33] Iain MacNeil, 'Mapping the Landscape of the Legal Framework for Sustainable Finance', at the Sustainable Finance Workshop, University of Glasgow, 29 March 2018.
[34] Eg UN Principles of Responsible Investment, at https://www.unpri.org/pri/what-are-the-principles-for-responsible-investment; Puashunder (2016).
[35] Sean Geobey, 'Joint Social-Financial Value Creation in Social Enterprise and Social Finance and Its Implications for Measurement Creation and Measurement of Profit and Impact in Social Financing' and Carol Royal, G. Sampath S. Windsor, 'Sustainable Institutional Investment Models And The Human Capital Analytics Approach' in Lehner (2016).
[36] Such as Principle 4, UK Stewardship Code 2012; the EU Shareholders' Rights Directive 2017/828/EU, Art 3g.
[37] HLEG, 2018 at pp7, 20-21.
[38] It remains elusive how the ESG reporting impacts on investment decisions, see Chiu (2014) and (2017).
[39] EU Non-financial Reporting Directive 2014/95/EU, art 19a, transposed into s414CA, UK Companies Act 2006. See also HLEG, 2018 at pp23-25.

The alignment thesis may be over-optimistic. Investors are still not able to see how sustainable or social performance can be integrated into financial value creation, as the paradigms of evaluation in financial and non-financial value creation remain different and difficult to reconcile. Sun argues that financial value creation has become a form of 'scientific finance' as economists have developed models of risk and return to quantify financial value creation and return on investment.[40] These paradigms of measurement[41] do not apply to evaluating sustainable and social outcomes or performance. Moreover, not all sustainable outcomes are susceptible to objective quantification, and social outcomes such as community well-being, happiness or cohesion are more susceptible to being evaluated qualitatively rather than quantitatively.[42] Qualitative measurement of social or sustainable performance is an emerging area where convergent standards have yet to be achieved.[43]

The EU reforms propose that accounting standards should tend towards long-termism,[44] but there is still no real progress on how social or sustainable accounting can be standardised, and how such relates to financial accounting. Market providers of information mediation such as 'social responsibility rating' agencies or stock exchange indices help overcome information asymmetry to an extent.[45] However, investors remain uninformed as to the evaluation methodologies employed, the aggregation methods used to integrate different types of quantitative and qualitative information and the credibility and comprehensiveness represented in the shorthand rating or index inclusion.[46] Compared to understanding the representation of financial value creation which has been supported by the legal frameworks in corporate law and securities regulation,[47] markets are less certain of the current state of representations of non-financial value creation in sustainable or social performance.[48]

A more pressing problem for the alignment thesis is that financial and non-financial value creation may sometimes not be aligned in reality. Trade-offs between profit and sustainability/social outcomes may have to be made,[49] and the pursuit of the sustainable or social goal as a matter of priority could compromise financial value creation.[50] For example in microfinance, it is found that an

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[40] Such as the capital asset pricing model and the developments in modelling since. William Sun, Céline Louche, Roland Pérez, 'Exploring the Reality We are Making' in Sun, Louche, Pérez (2015).

[41] Pascal Glémain, "The Strategy and Fundamentals of Sustainable Finance Serving Sustainable Development' and Pascale Château Terrisse, 'In what Conditions can Venture Capital and Social Justice Co-Exist? A Case Study of a French Venture Capital Fund Investing Ethically in Africa' in Sun, Louche, Pérez (2015) at pp187-209; 211-232.

[42] Tekula and Shah (2016); Islam (2015) at ch2.

[43] Gray, Collison and Bebbington (1997); Islam, 2015 above; Climent and Soriano (2011).

[44] HLEG, 2018 at pp5-7, 46-8, 55-58.

[45] Philippe Gillet, Julie Salaber-Ayton, 'The Recent Development And Performance Of Ethical Investments' in Lehner (2016); Frédérique Déjean, , Marie-Astrid Le Theule, , Bruno Oxibar,'Drivers of Socially Responsible Investment in the French Financial Market' in Sun, Louche, Pérez (2015) at 145-167; Anderson, 2016; Richardson (2009).

[46] Arne Kroeger, Christiana Weber, 'Measuring and Comparing Social Value Creation' in Lehner (2016); Chiu (2010/2011).

[47] Such as the standardisation of the International Accounting Standards to be used in EU corporate reporting, Accounting Standards Directive 2001/65/EC.

[48] Hess (2008).

[49] Lisa Brandstetter, Othmar M. Lehner, 'Opening The Market For Impact Investments' and Guillermo Casasnovas, Marc J. Ventresca, 'Formative Dynamics In The UK Social Investment Market, 2000–2015' in Lehner (2016); and this issue is faced in many jurisdictions, see for eg Leeora D Black, 'Policy Impediments to Social Investments by Australian Businesses' in Butcher and Gilchrist (2016); Preu & Richardson (2011).

[50] empirical research reports that renewable energy projects have been cancelled as their financial value creation is too uncertain for investors in market-based finance, see Herbertson and Hunter (2007).

increased focus on profit would entail decisions that compromise the social goal of alleviating poverty.[51] Social venture capital has also been challenged by 'mission drift' as investors compromise social goals in favour of profit.[52] Sustainable and social finance remains a niche market, and Amaeshi sums up the incompatibilities between the 'market logics' of financial value creation and the needs of non-financial value creation.[53]

1.3.2 Marketability of Assets

Next, investment assets in market-based finance need to be 'marketable', i.e. readily tradeable on a financial market. Investment management duties imposed on institutions are highly aligned with asset marketability in order to achieve the best interests of savers. Institutions are subject to duties of diligence and care that require regular monitoring and taking stock of financial value creation. Hence they regard as essential the ability to 'exit' out of certain investments, whether in terms of assets in the portfolios[54] or in terms of terminating asset manager mandates and switching to another asset manager.[55] Investors' exit rights in fund investments are protected by mandatory redemption rights[56] that are supported by duties of fair and independent valuation.[57] The rise of asset classes such as exchange-traded funds (which provide investors the opportunity of investing in a collective investment vehicle that also enjoys the ease of intra-day trading) bears testament to investors' preferences for ease of exit and liquidity.[58] Even in alternative fund management such as hedge funds or private equity funds where investments are subject to certain periods of lock-ups, investors expect an ultimate expiry of the lock-up for the investment to be realised.[59]

Financial markets regulation also facilitate and support liquid markets for conventional investment instruments, such as by protecting legitimate market making[60] and regulating trading environments.[61]

In terms of the marketability of sustainable and social finance, investors face two problems. One is that sustainable and social finance may require relational forms of commitment over a certain time period, in order to cultivate the sustainable or social outcome envisaged. For example, early stages of infrastructure finance which do not produce revenue streams should be insulated from market pressures.[62] Further in social impact finance, it may be optimal to have funders are able to engage in capacity-building and monitoring the implementation the project, such as in the case of social banks, social venture capitalists and to an extent social crowd-funders.[63] These needs may not be

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[51] Linne Marie Lauesen, 'The Landscape and Scale of Sustainable and social Finance' in Lehner (2016).
[52] Cetindamar and Ozkazanc-Pan (2017).
[53] Amaeshi (2010).
[54] Portfolio turnover may generate better returns if asset managers actively switch in and out of assets depending on their performance, but it is inconclusive if portfolio turnover is a key determinant of investment performance, Ippolito and Turner (1987); Payne, Prather and Bertin (1999).
[55] Above.
[56] Eg Art 84, UCITs Directive 2009; Art 16, 18, AIFMD.
[57] Art 85, Schedule A, UCITs Directive 2009; Art 19, AIFMD.
[58] Abner (2010) at ch2. Gastineau (2010).
[59] See discussion in chapters 6, 7, Barker and Chiu, 2017.
[60] Taranto et al (2016).
[61] Against market abuse.
[62] See 'Intermediating Infrastructure Finance: Market Contours' and 'Project and Infrastructure Debt as an Asset Class' in Walter et al (2016); Miles (2005).
[63] On social venture capital, see Qihai Cai, 'Government-Sponsored Venture Philanthropy And Social Entrepreneurship In China'; Maximilian Martin, 'Building The Impact Investing Market' in Lehner (2016), Glemain, 2015; Terrise, 2015; Crifo and Forget (2013). On specialist institutions such as social banks and microfinance, see Fergus Lyon, 'Lending To Social Ventures'; Jim Clifford, Tobias Jung, 'Social Impact Bonds';

compatible with the characteristics of market-based finance which are less relational and emphasise the right to 'exit'.

Second, the commitment to sustainable or social finance may entail liquidity constraints due to the nature of the asset or market conditions. This would not appeal to investors' and institutions' needs for investment assets to be marketable.[64] The cultivation of sustainable and social outcomes also takes time, and investors have to be prepared to endure the illiquid nature of the investment. The cultivation period may not readily involve the generation of income streams or profitability, hence it would be difficult to marketise such assets given the risks and uncertainty of financial value creation.[65]

Sustainable and social finance do not readily fit with the needs of investment market participants for investible and marketable assets. EU reforms intend to incentivise institutions which are likelier to have long-term horizons such as insurance companies to invest in sustainable and social finance.[66] However they also have maturing liabilities and immediate needs to meet,[67] and it is uncertain to what extent the assumption of alignment can be made. We risk relying excessively on a select group of institutions.

Further, the EU plans to develop a taxonomy of sustainable and social finance, standardising the terms of these instruments for investors.[68] However, we query to what extent standardisation may compromise the long-term, relational and illiquid needs of sustainable and social finance and whether their non-financial goals may be compromised.

We propose thinking out of the box to transform sustainable and social finance into a new asset class that can scale up its marketization potential. Our reform proposal is derived from two key insights from the hitherto unregulated but wildly successful initial coin offering (ICO) markets.

2. Insights from ICO Markets

About 50 ICOs have raised over USD$1bn from early 2018, with the top ten ICOs raising between the equivalent of USD$36m to USD$100m,[69] evidencing successful fund-raising in a novel and unregulated market. ICOs fund technological innovation,[70] to provide a range of services or products over blockchain-based platforms. These include: global wireless internet (Iungo), 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 healthcare, data analytics, travel, tourism, gaming and energy/utilities.[71] ICOs fund technological innovation at the very cutting edge and the fund-raising is itself innovative as conventional intermediaries, markets and their technologies are not needed.

Daniel Tischer, Sven Remer, 'Growing Social Banking Through (Business) Associations' in Lehner (2016), Tekula and Shah, 2016. On social crowdfunders and their engagement with the project, see Lehner (2013); Schweinbacher and Larralde (2010); Frosio (2015).

[64] Section 1; Preu & Richardson (2011).

[65] 'Investable Infrastructure Assets' in Walter et al (2016).

[66] HLEG, 2018 at pp6, 20, 70-72.

[67] See discussion in ch4, Barker and Chiu, 2017.

[68] HLEG, 2018 at pp15-19.

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

[70] Adhami et al (2017).

[71] Above.

2.1 Offers of Tokens

ICOs raise funds for the development of technological innovations by offering 'tokens' in return for cryptocurrency from ICO purchasers. ICOs developers introduce their projects in the form of a white paper, but content in white papers may be variable. [72] Tokens are offered over a blockchain platform in return for contributions made in cyptocurrency, such as ethereum or bitcoin.[73]

The tokens can be utility tokens, conferring on subscribers a right (in the future) to use or enjoy certain services,[74] 'fun' tokens such as conferring a benefit to the community at large,[75] crypto-asset tokens which confer on subscribers the issuers' 'currency' (eg Clearcoin, Reddcoin by Reddit.com) that will be used to purchase the products or services they develop[76] 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 subscribers by the smart contract protocol. The DAO has however been categorised as a securities offering by the US SEC,[77] and the threat of extension of securities regulation to ICOs have to an extent affected offerings, an issue we return to shortly.

Marketing for ICOs is usually carried out by announcements made in crypto-discussion forums and blogs (such as 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. 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). 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.

Although no standardisation in project transparency is offered in ICO markets and information mediation services are fragmented and relatively young, ICOs have been a market success, perhaps contrary to theoretical foundations in law and finance.[78] We suggest that the success of ICOs is attributed largely to the existence of liquid secondary markets, facilitating the immediate trading of tokens after subscription, and the ease of exit by ICO purchasers.

2.2 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 are themselves treated as 'assets' that can be traded immediately. The existence of secondary

[72] Zetzsche et al (2017).
[73] Kaal and Dell'Erba (2018).
[74] Hacker and Thomale (2017); Zetzsche et al, 2017;.Jonathan Rohr and Wright (2017).
[75] Zetasche et al, 2017.
[76] Barsan (2017); Chen (2017) and documented by Zetzsche et al as the majority of type of tokens issued.
[77] SEC report, above.
[78] La Porta et al (2006).

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 to realise trading gains.

There are many secondary markets for trading ICO tokens. The existence of this bottom-up infrastructure evolves from exchanges that have arisen to facilitate trading in cryptocurrencies such as bitcoin and ether, dating back to 2011. They 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, for more established cryptocurrencies or for state-backed currencies.

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,[79] conflicts of interest[80] and poor practices in conduct of business.[81] 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.

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 structures, such as centralised or decentralised trading, fee structures and custodial policies. Crypto-assets or currencies can be stored in digital wallets maintained by exchanges, with different exchanges adopting different measures of protection from cybersecurity risks.[82] The failure of Mt Gox in 2011 left investors stranded although the hacked Coincheck repaid its investors. Exchanges can compete on various qualities such as cost, ease of use and reputation,[83] and user choice can deselect markets that inadequately serve their needs. However, information asymmetry abounds in the market for exchanges, as many of these are young businesses with limited track records.[84] The quick failure rate of exchanges as unviable

[79] 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.

[80] Discussion in Chiu (2017a).

[81] 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.

[82] 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.

[83] Dimpfl (2017).

[84] 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

businesses[85] also reflects a highly transient and unpredictable landscape for users, even if competitive forces are at work.

Although the landscape for secondary markets is fragmented, unpredictable and completely self-regulatory,[86] market participants seem unfazed. This is because liquidity conditions remain attractive. Large exchanges seem to lead price formation and integrate each other's price information.[87] Most exchanges are liquid although different markets have different levels of depth.[88]

It is observed by both media and academic commentators that cryptocurrency and token prices are highly volatile, capable of significant changes within the day.[89] To an extent, the volatility is attributed to there being no market-makers in exchanges who can smooth out the liquidity conditions. The volatility of prices reflects a market that is steered completely by speculative and short-termist trading sentiment,[90] and there seems little connection between token prices in secondary markets and the prospects of the project that the ICOs are intended to fund. ICO purchasers may quickly dispose of their tokens in the immediate aftermarket to enjoy initial trading gains and move on to something else. 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. Further, secondary trading in relation to tokens seems not affected even if the project fails, as tokens themselves can carry on independent life as assets whose value is determined relative to their exchange appeal.[91]

However commentators also find that there are large block-holders of cryptocurrencies and tokens,[92] who are technologically savvy and committed to the project's long-term success.[93] This group may provide a form of relational and long-term commitment needed for projects.

The ICO secondary markets show us how markets can be attracted to fund projects even if the tokens conferred seem to be *non-financial assets*, not necessarily connected with the project's financial value creation.[94] This seems to defy the focus on 'investibility' and measurable financial value creation in conventional asset markets. A key explanation for the market's open-ness to ICOs is the observed self-sustaining nature of secondary markets, which thrive on critical masses of crowds even if such crowds are speculative and short-termist. The success of ICO markets seems to depend on the creation of tradeable assets,[95] whose tradeability is maintained by *market, not necessarily asset* conditions.

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.

[85] '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/.

[86] These markets may however require registration with the SEC if investment tokens, thus securities, are traded.

[87] Fink and Johann (2014).

[88] Dimpfl (2017).

[89] Fink and Johann (2014); Scailliet et al (2017).

[90] Perez (2002) and (2010).

[91] 'ICO bankruptcy: what happens with tokens of failed projects' at https://bitnewstoday.com/market/ico/ico-bankruptcy-what-happens-with-tokens-of-failed-projects/.

[92] Bianchetti et al (2018).

[93] Fink and Johann (2014).

[94] Chiu (2018).

[95] Ho (2014), on this development for corporate securities.

We argue that the success of ICO markets gives rise to two key insights for developing successful fund-raising even if the conventional conditions of asset 'investibility' and 'marketability' may not be fully met. The first is that the offer of tokens in return for investment can transform investment expectations and the characteristic of 'investibility' in assets, paving the way for the development of new asset classes not necessarily tied to future financial value creation. Second, 'tokenisation' can pave the way for the development of a new form of 'marketability' that can greatly increase the market appeal of new asset classes while not necessarily conforming to the characteristics of conventional investment assets. Tokenisation offers new opportunities for restructuring sustainable and social finance into a new asset class that may scale up their marketization.

3. Transforming Sustainable and Social Finance into a New Asset Class?

In arguing for sustainable and social finance to be transformed into a new asset class, we acknowledge our scepticism of the current tide of reforms. These attempt to scale up the marketization of sustainable and social finance by relying on *incremental* measures within existing legal and regulatory regimes, such as integrating ESG into corporate performance evaluation and reporting, strengthening directors' duties to integrate sustainable and social issues (but still accountable to shareholders collectively),[96] and nudging investment institutions,[97] to account for sustainable and social factors in their investment management. The same securities and investment regulation frameworks[98] continue to support measurable financial value creation and asset marketability.

Devolving to market participants themselves to integrate and reconcile sustainable and social achievements with their private financial value creation is arguably unlikely to change investment behaviour markedly.[99] Market participants prefer 'tried and tested' financial instruments clearly tied to financial value creation,[100] and/or pay ceremonial attention to ESG factors. Successful marketization of sustainable and social finance may also only concentrate in certain areas[101] where the alignment between non-financial and financial value creation is accepted, risking neglect for a diversity of other sustainable and social finance needs.

Our proposal encourages the development of a new asset class that applies across the board for sustainable and social finance. This is in addition to existing channels of institutional finance. The

[96] A new directors' reporting requirements pursuant to government recommendations to strengthen directors' duties to account for how they have taken environment, social and stakeholder factors into account in promoting the long-term success of the company, see s414CZA, Companies Act 2006, as amended 2018.
[97] The soft law in the UK Stewardship Code Principle 4 encourages engagement with ESG issues, but this is strengthened now in the EU Shareholder Rights Directive 2017/828/EU Art 3g in relation to the best practice that institutions need to put in place in relation to their monitoring and engagement, subject to a comply or explain basis. The developments in reconciling investment managers' fiduciary duties towards financial value creation and taking into account ESG factors have also scaled up, see HLEG in Sustainable Finance, 2018 at pps 20-21 arguing that investment managers' fiduciary duties to investors should explicitly incorporate the need to consider material sustainable and social factors.
[98] Discussed in Section 1.
[99] Ambec and Lanoie (2008); Richardson, 2009; Richardson and Cragg 2010.
[100] There is a lot of innovation in terms of investment instruments for financial value creation, such as alpha, beta and smart beta techniques for investing in portfolios of conventional securities assets, see Fidelity, 'Alpha, Beta and Smart Beta' at https://www.fidelity.com/learning-center/investment-products/etf/smart-beta.
[101] There is a marked rise in the appetite for green bonds largely because of regulatory efforts aimed at standardising and marketising them, remarks made by Gavin Templeton, 'Green Bonds' at the Sustainable Finance Workshop, University of Glasgow, 29 March 2018.

development of such a new asset class crucially taps into global communities that are aware of or support technologically-powered crowdsourcing, galvanising their participation in sustainable and social finance beyond the conventional marketplaces dominated by investment funds. This approach breaks away from incrementalism and galvanises new actors, new incentives and new architecture.[102] ICO technology can transform the appeal of sustainable and social finance as the social and commercial dimensions are interconnected and integrated in new ways, ushering in a new form of crowdsourced capitalism that creates new social-commercial value and markets. Regulatory policy will however be needed to establish this asset class in order to distinguish from conventional securities and other investment instruments such as collective investment schemes.

3.1 Tokenisation of Sustainable and Social Finance

We propose that participation in sustainable and social finance can be structured as token sales, drawing from the inspiration in ICO markets. Tokenisation allows issuers to offer a variety of consideration in return for the funds raised. This variety of consideration reflects the new social-commercial value created in these new markets and is crucial to our proposal to scale up the marketization of sustainable and social finance.

Tokenisation allows consideration to be offered by issuers in financial and non-financial forms. Financial forms of consideration may include a share in the financial value creation of the underlying project, just like equity securities, or regular financial payments based on the income streams of the project, like fixed income investments. Tokenisation however allows for innovation in financial forms of consideration too, such as a mixture of financial entitlements, or subjecting them to certain restraints or qualifications. These financial right 'innovations' have been explored in the context of the US benefit corporation (discussed in (d) below), in order to cater for investors who pursue the creation of both financial and non-financial value.[103] Although fund-raising for the benefit corporation is for a specific private legal form,[104] innovations developed can be further adapted in relation the public offerings of tokens we propose in this article.

In terms of non-financial consideration, one of us has argued in another article[105] that it is important to recognise that the majority of ICO tokens are non-financial as they confer future rights to products or services (utility tokens), community benefit (fun tokens) or the project developer's own 'currency' tied to purchasing future products or services (currency tokens). Indeed the majority of tokens issued are currency tokens.[106] These tokens are non-financial in nature as they are not related to the financial value creation of the project (which is reserved to the developers). As sustainable and social finance intend to create outcomes that are not wholly financial in nature, we see an opportunity for fund-raising to be tied to non-financial tokens which can confer a variety of different consideration, such as rights to use future services, opportunities to participate in community benefit generation. As ICO markets have demonstrated, non-financial assets can be marketised and gain popularity, but we crucially need to support such assets with liquid secondary markets.

By issuing financial and non-financial tokens, sustainable and social finance can appeal to a variety of funders who look to different types of return. One group of funders for sustainable and social

[102] Belinda Bell, Helen Haugh,'The Emergence and Institutionalization of The Field of Social Investment in The United Kingdom' in Lehner (2016).
[103] Brakman Reiser & Dean (2017).
[104] Dulac (2015) on mooting the possibility of benefit corporations going public.
[105] Chiu, 2018.
[106] Catalini and Gans (2018).

finance may care about the actual sustainable or social outcome, in addition to financial value creation, and may even wish to be actively engaged in bringing about the successful attainment of such outcomes.[107] Such funders would likely respond to the appeal of this new asset class, which is distinguished from the conventional 'monetised' asset classes in the investment economy. Schäfer[108] argues that sustainable and social finance can only be galvanised if we move away from investing in the 'monetary market economy' which offers financial contracts and assets that are measured in monetary gain but have little connection with the real economy and society.

For the group of funders who are interested in the social and economic success of a sustainable or social project, tokens should be offered to them that represent a share in that complex and hybrid outcome of financial and non-financial value creation. This also paves the way for developments in sustainable and social value creation and accounting to attain recognition and adoption. We propose shortly a package of regulatory reforms that support the offer of tokens for 'hybrid' or 'blended' value creation[109] to investors, supported by a unique organisational form, a suite of governance rights, certain standard terms, social accounting methodology that underpins the evaluation of the value creation, dispute resolution mechanisms and appropriate exit rights.[110]

Another group of potential funders may be less committed in terms of capacity, time horizons and even enthusiasm for the sustainable and social outcomes in the project, but may nevertheless be motivated by more transient notions of appeal.[111] Indeed mainstream institutions could fall within this group and be interested in sustainable and social finance tokens as part of portfolio diversification. We propose that non-financial tokens may be issued to such funders, offering utility, 'currency' or community benefit in relation to sustainable or social aspects. These funders can also be encouraged to become more educated in the purposes of sustainable and social finance,[112] but more importantly, their tokens should be capable of being traded in secondary markets, allowing them to exercise exit rights when they wish. Regulatory reforms are needed to support the issue of tokens, distinguishing from the hybrid financial tokens discussed above, the standard terms of such offers, purchaser protection rights and remedies, the governance of secondary trading markets and protection of market participants. Crucially we argue that non-financial token-holders should not enjoy governance rights in relation to the project[113] so as to insulate the project from market pressures. They should find their protection in token tradeability and their exit rights in secondary markets. [114]

3.2 Hybrid Financial Tokens and Legal Framework

Hybrid financial tokens are intended for funders who wish to share in the 'blended' value creation of the sustainable or social project, but in return are willing to commit over the required investment horizon, and be actively and constructively engaged in the project's progress. Regulatory reform can usefully standardise the key terms of these tokens in order to support the new asset class as follows:

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[107] The relevance of non-financial motivations such as wishing to benefit the community or attain a collective good see Bernard Paranque, 'Finance as Commons' in Paranque and Pérez (2016).
[108] Schäfer (2012).
[109] Scott Fullwiler, 'Sustainable Finance' in Lehner (2016).
[110] Discussed below.
[111] Such as people willing to engage in social crowdfunding for the 'fun' aspect of the experience, see Pascal Dey, Laurent Marti, 'Studying Crowdfunding Through Extreme Cases' in Lehner (2016); Burtch, Ghose and Wahal (2013).
[112] Schoenmaker (2017); Hockett (2014).
[113] similar to that argued in Talbot (2013).
[114] Keister (2002).

(a) The tokens should confer a form of sharing in financial value creation, as well as the meet the attainment of sustainable or social outcomes envisaged. Commentators offer a vision of 'blended value'[115] or 'joint social-financial value creation'[116] as a hybrid concept whereby the fusion or integration of financial and non-financial value creation is achieved. We are of the view that such 'fusion' or 'integration' may be more ideological than real as financial value creation can be susceptible to a proprietary form of apportionment to individual entitlement. However the attainment of sustainable or social outcomes often relates to 'commons'[117] or collective goods,[118] which are not susceptible to individual and proprietary apportionment as they are non-rivalrous and non-excludable. We propose that token holders' financial rights could be structured as individual entitlements, such as a coupon rate payable when the project reaches a stage of maturity and threshold of revenue-generation. Or the financial rights could be structured resembling equity instruments, with entitlements to dividends when the project reaches a certain stage of profitability and self-sustainability.

Token holders' interest in the attainment of sustainable or social outcomes should not be structured as entitlements but they should be owed rights of accountability and verification for the evaluation of the outcomes.

In this regard, regulatory reform can introduce obligations of periodic reporting as well as auditing/assurance for the token-issuer in relation to both financial value creation and sustainable/social outcome attained. It may be queried whether sustainable or social performance is susceptible to standards of measurement or verification, a point we raised earlier. Although there is a variety of methodologies for different sustainable or social performance valuations,[119] regulatory reform could provide for the recognition of a menu of standards already developed. This approach has been taken for the benefit corporation, a business form legalised in many US states that focus on public benefit objectives.[120] The reporting obligations imposed on B-corps require the reporting of social achievements measured according to a third party standard (except in Delaware), and there is considerable freedom in choosing an appropriate standard, such as the balanced scorecard, or the B-Lab Impact Assessment standard.[121]

(b) The tokens are to be held for the required term to nurture the project and they should contain prohibitions on transfer. In this way projects are insulated from the pressure to generate financial value that can be quickly extracted. We argue that such lock-ups are not uncommon and are commonly used when the investment strategy concerned revolves around generating real productivity changes. They have been used in alternative asset classes such as activist hedge funds and private equity funds who require time to generate financial value creation in their medium to long term investment strategies.[122]

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[115] Fullwiler, 2016.
[116] Sean Geobey, 'Joint Social-Financial Value Creation in Social Enterprise and Social Finance and Its Implications for Measurement Creation and Measurement of Profit and Impact in Social Financing' in Lehner (2016).
[117] Schoenmaker, 2017.
[118] Bernard Paranque, Roland Pérez, "Finance Reconsidered: New Perspectives for a Responsible and Sustainable Finance" in Paranque and Pérez (2016).
[119] Kroeger and Weber, 2016; Gray et al, 1997.
[120] See (d) below.
[121] Anne Richards, 'We Need a New Way to Assess Investment Managers', *Financial Times* (5 April 2018) advocating the use of a balanced scorecard for financial and non-financial value creation; the B-Lab Impact Assessment standard can be found at https://bimpactassessment.net.
[122] Chs 6, 7, Barker and Chiu, 2017.

(c) In return for the lock-up which restricts transferability, we propose that token holders should be incentivised to engage with the project in constructive ways to contribute towards its success.[123] They should enjoy governance and accountability rights such as participating in decision-making within the governance framework for the project, and enjoy accountability rights. The governance framework for projects should also be subject to some standardisation without importing the same standards for conventional corporate governance. As ICOs have demonstrated the use of the blockchain platform to offer and issue tokens, blockchain technology can offer new possibilities in relation to the interaction and communications within the governance framework of the project.

Commentators argue that blockchain platforms act as repositories of data and transactions, record-keeping and verification and facilitate exchange.[124] Hence, we are of the view that governance and accountability rights enjoyed by token holders can be facilitated through the use of blockchain platforms, for communications, meetings, voting, record-keeping of decision-making etc. The blockchain technology offers an economic way of facilitating and managing the relational and governance framework for the project, and governance and accountability rights can be as finely tailored as appropriate for the relational paradigm of each project.[125] Further, there will be a need for a dispute resolution mechanism for governance actors. We propose that regulatory standards be promulgated for mandatory dispute resolution mechanisms within the governance framework of the project,[126] and such mechanisms should encompass both internal procedures and the right to externalise the matter if necessary to judicial determination.

(d) A wider issue in relation to standardising governance, accountability and relational rights is that it would be optimal for tokens to be offered by a legal entity that is not a conventional for-profit corporation limited by shares. In this way, the issuer would not attract the 'baggage' of corporate governance rules and securities regulation. The Anglo-American corporation has developed a corporate governance framework that implements shareholder primacy,[127] which has contributed to many corporations' insular and a-social behaviour[128] in relation to their failure to take care of stakeholder and wider social needs.[129] Hence, it is arguable that the for-profit corporate form limited by shares is not optimal for carrying out a sustainable or social project.[130] Regulatory reforms could provide for a new legal form to be used for these projects, their fund-raising, their objectives, governance, accountability and relational frameworks.

Policy-makers can consider using existing legal forms that expressly do not subscribe to shareholder primacy, as vehicles that can raise funds under our tokenisation proposal. Some examples of existing legal forms would be the community interest company (CIC) in the UK or the benefit-corporation (B-corp) in many US states. The CIC can only be formed with approval of the Office of the Regulator of

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[123] Nadler and Breuer (2017); Mariana Bozesan, 'Integral Sustainability or How Evolutionary Forces are Driving Investors' Trust and The Integration of People, Planet, and Profit' in Lehner (2016) on non-financial, community-focused and other-centred motivations for sustainable and social investment.
[124] Wright and De Fillippi (2015); Kakavand et al (2016).
[125] Lafarre and van der Elst (2018).
[126] Kaal and Calterra (2018); Kaal (2017); Norton Rose Fulbright, 'Arbitrating Smart Contract Disputes' at http://www.nortonrosefulbright.com/knowledge/publications/157162/arbitrating-smart-contract-disputes.
[127] Keay (2009); in the US see Strine (2012).
[128] See Chiu (2018a) at section A.
[129] Bakan (2003).
[130] Gunnar Glänzel, Björn Schmitz, 'Organizational Hybridity In Social Finance' and Lisa Brandstetter, Othmar M. Lehner, 'Opening The Market For Impact Investments' in Lehner (2006).

Community Interest Companies, if the objective of the company is to benefit the community.[131] CICs cannot be political associations[132] but otherwise there is considerable freedom to frame their community benefit objectives. CICs are accountable every year in terms of the community benefit achieved and their stakeholder engagement,[133] but they can be structured as for-profit companies limited by shares. They are required to make financial reporting and provide for governance rights in a manner applicable to companies,[134] and may declare dividends in favour of shareholders.[135] The CIC does not envisage or allow public fund-raising, and reforms would have to be introduced to allow them to do so. The CIC form does not at the moment accommodate the public offer of tokens and flexibility in structuring financial, governance and accountability rights as we envisage.

The B-corp, according to its model legislation, is incorporated with a mandatory public benefit purpose in its charter, to achieve '[a] material positive impact on society and the environment, … taking into account [its] impacts …as reported against a third-party standard.'[136] The Delaware legislation however frames the benefit corporation as having the objective to balance stockholders' financial interests with public benefit.[137] B-Corps can include optional specific benefit purposes in their charter such as in relation to the environment, human health, under-served and low income communities or other public benefit.[138] The special requirements for the B-corp are that benefit directors need to take into account a wide range of stakeholder and socially responsible factors in decision-making and clearly do not subscribe to shareholder primacy.[139] Annual reporting of the achievement of public benefit must be made and such report should be publicly available.[140]

The CIC and B-corp both offer useful tenets in considering an organisational form suitable for our proposal. They both accommodate for-profit and non-commercial value creation but in both cases it is unclear if the social or sustainable goal can take priority or have primacy.[141] This is an aspect we submit to be important for the organisational form to carry out our proposal. The CIC regime is especially helpful as the regulator uses a 'reasonable person' test to ensure that the public benefit objective is approved. However we suggest that it is necessary to introduce a new organisational form that accommodates the primacy of the social or sustainable goal, the fund-raising in dual-class tokens that we propose with the attendant rights and obligations in both streams and supported by systems of hybrid financial and non-financial accounting, reporting and verification. This is because existing regimes do not comprehensively accommodate our proposal but offer useful aspects to build upon. We do not think the introduction of a new organisational form is unduly challenging for policy-makers, as for example, the Limited Partnership for Investment Funds has been specifically

[131] Companies (Audit, Investigations and Community Enterprise) Act 2004, the test is whether a company's objective is in the community interest according to a reasonable person, s35.
[132] Reg 3, The Community Interest Company Regulations 2005.
[133] Reg 26, above.
[134] Part 3, above and s32, Companies (Audit, Investigations and Community Enterprise) Act 2004.
[135] Part 6, The Community Interest Company Regulations 2005.
[136] S102, 201, Model Benefit Corporation Legislation v2017, which is used as the basic template for most of the US States' benefit corporation legislation, at http://benefitcorp.net/sites/default/files/Model%20benefit%20corp%20legislation%20_4_17_17.pdf.
[137] Delaware Code Annotated tit. 8, §§ 361–368 (2013) at § 362.
[138] S102, 201, Model Benefit Corporation Legislation v2017.
[139] S301, above.
[140] S401, above.
[141] Brakman Reiser (2012), Brakman Reiser and Dean (2017a) on how social enterprise law needs to provide more clearly an organisational form to advance social benefit.

tailored for investment funds after policy-makers responded to a series of case law challenging the limits of existing organisational forms.[142]

As we take the opportunity to advocate revolutionary law reform for structuring sustainable and social finance as a new asset class, we do not prefer the incremental approach of increasing marketization appeal by relying on path dependent standards, whether in corporate, securities or investment laws and regulation.

3.3 Non-financial Tokens and Legal Framework

The offer of non-financial tokens can broaden the marketization appeal of the sustainable or social project, without embedding the same market or short-termist pressures that conventional securities and investment products attract. Many sustainable and social finance projects are aimed at developing 'blended' or 'hybrid' value outcomes that are not well-accommodated within conventional market yardsticks based on present value and are essentially monetised. Further, such 'blended' or hybrid value may not mature until a reasonable lapse of time, posing challenges to a market that seeks to measure what value may be immediately extractable. We do not see the easy reconciliation between 'market logics' and 'blended' or 'hybrid' value conceptions.[143] By proposing the marketization of sustainable and social finance through the offer of non-financial tokens, we appeal to capital providers, including mainstream institutions, who may have a passing interest in such projects, but are primarily market-facing and are likely to succumb to short-term pressures.

Regulatory reforms would be needed for the offer of non-financial tokens and their trading. Further, our discussion in (d) above applies as we believe that the offer of 'dual-class' tokens by sustainable and social project issuers should only be carried out via the appropriate (and approved) legal form.

(i) First, non-financial tokens should be immediately tradeable and purchasers' exit rights are safeguarded. We also propose in (iii) below to support non-financial token holders' trading interests by a regulatory framework for maintaining an optimal and liquid trading environment.

(ii) In order to insulate the sustainable or social project from short-termist or market pressures, standard terms should be introduced in regulation that clearly confer only non-financial interests in the tokens, such as utility or currency rights in ICOs, and that token-holders do not enjoy governance rights.

Further, as non-financial tokens confer utility or currency rights in future products or services of the project, we propose that standard terms should be introduced to protect the purchase of such non-financial interests. In another article[144] one of us argues that non-financial token sales should attract fundamental tenets of consumer protection, such as against mis-description, failure of consideration and product quality where relevant.[145] These consumer protection rights should be part of the 'property' in the tokens and are transferable for enforcement by any legal token-holder. The code for such tokens could embed these consumer protection and dispute resolution rights. Indeed internal dispute resolution processes can be built into the blockchain platform for token-holders, so that internal dispute resolution can be facilitated by smart contracts, like the proposal we make

[142] The Legislative Reform (Private Fund Limited Partnerships) Order 2017.
[143] The HLEG suggestions for reforms of accounting standards and reporting measures, see above.
[144] Chiu, 2018.
[145] above.

for hybrid financial token holders in relation to the governance framework.[146] We however advocate the retention of external dispute resolution processes where automated processes in the blockchain platform are unable to deal with the nature of the dispute.

(iii) Finally, as a key attractive factor for non-financial tokens would be their immediate tradeability, it is important to ensure that the trading marketplaces are well-governed, orderly and promote liquid conditions. We propose a proportionate extension of financial market regulation to these trading markets. Financial market regulation has also been proportionately extended to one of the key markets for controlling carbon emissions- the emission allowances trading market in the EU.[147]

First, market regulation should deal with protecting market participants from intermediary misconduct or failure, and other principal-agent problems. Second, 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. This regime would likely appeal to mainstream institutions familiar with conventional trading environments.

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[148] moots the possibility of imposing fiduciary duties on blockchain developers and key miners towards all users. Regulatory duties can be imposed in relation to incorporating fair dealing, management of conflicts of interest, care and good faith, implemented through code[149] 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 where applicable.[150] This is an area of particular concern as exchanges' 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 market providers are themselves for-profit organisations, special duties in mitigating conflicts of interest and treating users fairly and in good faith need to be imposed. In this light we argue that market providers must maintain a robust dispute resolution mechanism with users, and the 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'.[151]

Next, market regulation should deal with market operators' responsibilities to ensure the provision of collective goods for the optimal functioning of markets and prevention of/dealing with market misconduct.[152]

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[146] Kaal and Calterra (2018).
[147] Read (2016).
[148] Walch (2016).
[149] Robinson (2018).
[150] We draw extensively from the Markets in Financial Instruments Directive 2014/65/EU in terms of the prevailing standards for financial intermediary conduct, see generally Busch and Ferranini (2017).
[151] FCA Handbook PRIN2.
[152] Lee (2011).

Token-trading markets should maintain the collective goods of market orderliness, such as certain levels of transparency of order books and post-trade information, and should maintain an environment against manipulative and anti-social conduct.[153] They 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. Market providers 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. They should also moderate abnormal and highly volatile situations such as liquidity flooding or withdrawal by high frequency trading and have in place policies to moderate such trading conduct.

We further propose that market providers should implement policies in relation to business continuity so that users can be protected from the sudden onset of market insolvency. Mt Gox is the most often-cited example of a cryptocurrency trading market that became insolvent after cyber-hacking emptied it of the cryptocurrencies it held as custodian for its users. However market insolvencies can also occur due to business failure, where they fail to garner the necessary network effects to be viable.[154]

There are a few options for regulators to consider. In terms of *ex ante* risk management, a capital adequacy regime could be considered for market providers. Capital adequacy relates to risk constraint more than *ex post* crisis-management. Capital adequacy requirements could compel market providers to limit the volumes of trading if they have to maintain risk levels according to their levels of capital. Such a measure could prevent them from becoming 'too big to fail', but may restrain the network effects they can enjoy.[155] However this measure can also promote the growth of diverse marketplaces and promote choice for token issuers and market participants.

Next, market providers should maintain business continuity policies in order to ensure the orderly transition of customer service if a market should become embroiled in crisis. These are in the same spirit as 'living wills' that important financial institutions are required to maintain.[156] These plans could provide for how markets 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 market providers.

One must however be prepared that market providers can fail and provision for the best possible *ex post* management that entail orderliness as far as is possible. We propose a number of policy alternatives. One is that market providers could submit to a tailor-made 'reserves' regime. Market providers can be made to deposit the equivalent in fiat currency of a certain proportion of crypto-assets traded on their platforms so as to be able to meet liabilities. Such reserve deposits could be placed with approved financial institutions that are not part of the market provider's group. However as crypto-assets are highly volatile in

[153] Bradley (2000) at 83-88.
[154] '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/.
[155] Whether capital adequacy constrains risk depends on the level it is set. The international standards for capital adequacy in the form of the Basel II and III Accords are discussed in Gleeson (2012).
[156] See Bank Recovery and Resolution Directive 2014/59/EU, Section 2.

price, a reserves requirement may need to be calculated daily and would fluctuate significantly.

In addition, a market provider 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. In addition to or in the alternative, market providers can also institute loss mutualisation, ie a mechanism to spread losses amongst all participants so as to limit each participant's loss. This is adopted by many financial exchanges for derivative contracts that are also central counterparties.[157]

Ultimately, in order to extend these regulatory proposals to token markets, regulators need to be able to exercise supervisory and enforcement powers over them. We propose that token market providers should be approved by the regulator and should be subject to regulators' inspection, supervisory and enforcement powers, as well as regular duties of accountability.[158]

Our suggestions for the regulation and standards for token markets above intend to strike a balance between facilitating the rise of market places while ensuring that they are robust and trusted places for trading novel assets, as the 'jungle' conditions of unregulated ICO markets is not likely to sustain appeal to a broad base of legitimate investors.[159]

4. Concluding Thoughts

It is generally agreed that gaps in sustainable and social finance should be met by increased marketization. However there are significant challenges in galvanising the investment community used to conventional securities and other investment market instruments. Our article proposes using technological innovations in fund-raising, observed in the ICOs market, to transform the asset class of sustainable and social finance in order to achieve greater marketization, creating an integrated form of social-commercial value for a variety of different investors, from conventional to crowdsourced marketplaces.

Key to our proposal is the innovation of tokenisation introduced in ICOs. We argue that tokenisation holds transformative potential for restructuring investment opportunities, as assets need not be tied to the expectations and obligations of conventional financial value creation. Tokens can offer different classes of financial and non-financial rights and rewards. Hence, we also do not support an approach of extending existing regulatory treatment to ICOs, such as securities regulation,[160] which has the potential to ride roughshod over genuinely distinguishing and innovative asset characteristics, and drown out the beneficial aspects of innovation that can be developed.

We acknowledge the fears of fraud in fund-raising in ICO markets and the perceived need for regulators to 'take a position'. However, in considering appropriate regulatory policy for ICOs, the

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[157] The importance of loss mutualisation is discussed in Levitin (2015).
[158] This is not dissimilar to the MiFID 2014 standards requiring market operators to be approved by regulators.
[159] ''Market manipulation 101': 'Wolf of Wall Street'-style 'pump and dump' scams plague cryptocurrency markets', *UK Business Insider* 14 Nov 2017 at http://uk.businessinsider.com/ico-cryptocurrency-pump-and-dump-telegram-2017-11.
[160] 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; and increased subpoenas issued to intended ICO issuers, see 'Spooked By SEC, Video Streaming ICO Halts Airdrop' (Coindesk.com, 13 March 2018).

existing regulatory perimeter can often be ill-fitting or crude. The consequence of treating ICOs as securities is that ICOs would be *per se* treated as giving rise to financial rights, and such treatment is inappropriate. We would also miss out on the innovative possibilities of developing tokenisation in (new) capital markets. One of us has argued elsewhere[161] that ICO tokens do not largely fall within the definition of securities or collective investment schemes, and urges regulators to move away from adopting an approach that compels innovation to fit within existing 'coherences', in order to explore more meaningful and appropriate regulatory design.

Our proposal needs to be supported by a significant amount of regulatory reform, as ultimately, the public goods which will bear fruit from sustainable and social finance demands a governance framework that will integrate well and be balanced with the marketization approach. We have sketched out the contours of such a framework above and suggest that regulators take the opportunity to take stock of regulatory policy over investment assets and develop responsive regimes based on present and future, not yesterday's technology. [162]

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[161] Chiu (2018).
[162] Lo (2016).

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