

Author Abstracts

Cryptoassets and the History of Payments

Benjamin Geva, Professor, Osgoode Hall Law School York University; Torys

This paper explores cryptoassets against the backdrop of the monetary and payment system, from a legal perspective. Providing a historical overview beginning in Antiquity, it explores just how today's cyber revolution compares against some key predicate operations, and situates cryptoassets in the context of the long-running evolution of bank intermediation, payments and monetary policy.

Blockchain Technology and The Transformation of Financial Exchange Organisation and Governance

E. Avgouleas, Chair in Banking Law and Finance, University of Edinburgh and the European Banking Authority

A. Kiayias, Chair of Cryptography, University of Edinburgh

Harnessing the potential of blockchain technology is the next frontier in securities and derivatives trading and clearing. In this context, we discuss what happens in the event of trade failure, how tokens may be allocated via the system's treasury, how trade priority is identified and safeguarded, and explain the omnipresent issue of regulation. The second part of our paper shows how technology run on the next generation of blockchain platforms can prove transformative in several areas including management and warehousing of settlement risk, alleviation of systemic risk concentration, collateral reuse, the curbing of speculation. The third parts theorises how these developments will also have a transformative impact on financial exchange organisation and governance including the structure of decision-making within blockchain exchanges and CCHs and the impact on the development of market regulation.

Defining Decentralization

Angela Walch, St. Mary's University School of Law, Research Fellow, University College London Centre for Blockchain Technologies

A core claimed feature of cryptoassets is that the systems that create them are ‘decentralized.’ This is said make them more resilient and to eliminate the need to trust in a central party. Indeed, the feature of ‘decentralization’ appears to now be relevant to the legal treatment of cryptoassets, as the SEC recently highlighted the decentralization of Ethereum and Bitcoin as a key factor in whether ether and bitcoin should be treated as securities. In this piece, I explore what ‘decentralization’ means in public blockchain networks, focusing on the fundamental actors in the system: software developers, transaction processors (miners), and nodes. I offer a theory of why ‘decentralization’ might be relevant from a legal perspective and analyze the implications of using such as fluid concept as a basis for legal determinations.

Valuing Crypto-Assets

Alex Acree, Managing Director and General Counsel, Fenway Summer Ventures
Patrick Murck, Berkman Klein Center, Harvard University

Valuing cryptoassets and concomitant distributed ledger infrastructures can be challenging. Not only do startups and firms have shorter histories and less information available with which to conduct valuations, but also the value proposition of the underlying technology can itself exhibit dynamic features, and be subject to change depending on both market and developments in blockchain and related sectors. In this chapter, we outline some of the key vectors driving valuations, and offer additional metrics and methodologies that may prove useful as the sector grows.

Blockchain Systems and Risk Management Infrastructures

Petal Walker, WilmerHale
Twane Harris, WilmerHale

This chapter examines the implications of blockchain systems for risk management infrastructures, and the derivatives industry more generally. It asserts that Blockchain technology necessarily: (1) changes, and expands the number of, participants who engage in traditional risk management functions; (2) changes the nature of the risk as the technology itself poses new risks; (3) increases the prominence of the technologist in the risk management process; and (4) moves risk management further up the lifespan of the typical contract. As a result, functions that were tied to specific sectors of the market become diffuse – changing, among other things, the fundamental dynamics between regulator and market participants. This transformation will

necessitate a fundamental rethink in how and when financial regulations are deployed, and ultimately enforced.

End-to-End Regulation of Cryptoassets

Moad Fahmi, Director, Fintech and Innovation, AMF
Caron Marylise, AMF

Crypto-economics relies, like the proper functioning of the financial economy, on the effective operation of actors that provide liquidity, diversification, security and administrative functions. We define this network of actors as the "end-to-end ecosystem" of the crypto-economy.

When taken in aggregate, this ecosystem is non-linear, fragmented and chaotic, especially when measured against traditional financial and regulatory intermediation. In this paper, we argue that this is in part due to the arrival of blockchain and distributive ledger technologies that operationally necessitate a paradigm shift in how supervisory oversight is exercised as well as a rethink of the core functions of regulation. Against this backdrop, this paper explores whether a commensurate "end-to-end" regulatory approach—built on the learnings of regulatory sandboxes and experimental labs—offers an appropriate response to this challenge and explores the conditions under which it might be most effective.

What is the Proper Disclosure for an ICO?

Chris Brummer, Georgetown University Law Center, Director, IIEL
Jai Massari, Davis Polk & Wardell LLP
Trevor Kiviat, Davis Polk & Wardell LLP

Although an estimated \$5.6 billion (USD) was raised worldwide in 2017 through initial coin offerings (ICOs), the information provided by ICO promoters in fundraises has been spotty at best, raising novel questions about what kind of disclosures are necessary for ICOs. As this chapter shows, ICOs pose novel sets of challenges for the Securities Act of 1933, the model upon which global regulators have largely based their own disclosure regimes. Not only do ICOs involve very different kinds of companies and even investment products anticipated in the first fifty years of the 33 Act's existence, but their value propositions and innate complexity also require a reconceptualization of disclosure and longstanding disclosure obligations. In light

thereof, this chapter suggests a disclosure framework rooted in those principles, but tailored for special considerations raised by ICOs.

Towards a Stable Tokenized Medium of Exchange

Alexander Lipton, Chief Technical Officer, Sila Inc and Connection Science Fellow, MIT

Existing banking and payment systems, while still working, are obsolete and not perfectly aligned with the constantly changing requirements of the modern world. While open access Internet protocols have unleashed a wave of creativity and growth in numerous fields, banking is not one of them. The reason stems mostly from the fact that successful open access protocols for money and identity, while sorely needed, are conspicuously absent at present. We argue that a regulatorily compliant, fiat-backed tokenized medium of exchange, can help to fill this gap. The corresponding tokens can be viewed as an electronic analogue of cash, with all its pluses and minuses. While such tokens can have numerous fintech applications, we consider just a few representative examples. Experience shows that all decentralized crypto coins are inherently unstable, which makes them less than useful for commercial applications. Unfortunately, building a successful stable token is hard. Contrary to the often made claims, it is not possible to build a truly decentralized stable token, so that any potentially successful stable coin has to be partially centralized. The degree of decentralization can vary. We describe three approaches including fully collateralized custodial tokens, partially collateralized custodial tokens, and dynamically stabilized tokens, and conclude that only fully collateralized tokens can be stable, even under extreme circumstances.

ICOs in Asia

Douglas Arner, Kerry Holdings Professor in Law, Hong Kong University
Ross Buckey, Scientia Professor, King & Wood Mallesons Chair of International Finance Law, UNSW

Asia has emerged as an important region for investment in blockchain, cryptocurrencies and ICOs. At the same time, different economies across the region are taking very different approaches, with China banning ICOs and crypto exchanges with Singapore has been much more facilitative and the Australian Securities Exchange is expected to be the first major exchange to implement a blockchain-based

clearing and settlement system. At the same time, China in particular is focusing on blockchain development as a major national strategy and is also in advanced stages of exploration of a sovereign cryptocurrency. This paper discusses the evolution of blockchain, cryptocurrencies and ICOs in Asia, focusing on opportunities, challenges and policy approaches as well as the contribution of Asia in terms of investment and development, concluding that blockchain is likely to be an important part of Asia's ongoing financial transformation.

Crypto-assets: Old ideas parading as new, or a driver for a regulatory rethink?

Peter Kerstens, Advisor, Digital Finance and Cybersecurity Lead, European Commission

Around the world, the emergence of crypto-assets has sparked off an intense debate—should they be considered currencies, commodities, securities—or something else? Our view is that this is no semantic debate, but reflects important political and economic consequences. Among them, the jostling over nomenclature reflects a desire by stakeholders, regulators and policymakers to situate these financial products inside or outside preferred established market categories—and their associated jurisdictional claims and applicable regulation. Using a Europe focused frame of reference, this chapter will explore whether attempts to leverage existing and established classes of instruments are suitable to cover crypto-assets. In doing so, we examine the novelty of cryptoassets and explore whether cryptoassets can be successfully integrated into existing European regulatory approaches and frameworks.

Cryptocurrencies and Africa

Uche Ofodile, E.J. Ball Professor of Law, University of Arkansas

Although Africa does not currently represent a global cryptocurrency market, speculations are rife that the continent may become the next big market in the coming years. At least 15 trading venues opened in Africa within the past year alone. By 2025, Luno, the continent's oldest cryptocurrency exchange, plans to reach 1 billion customers. Recently, the central bank of South Africa launched a new proof-of-concept (PoC) project to replicate interbank settlements on an Ethereum-based blockchain. This paper addresses two questions. First, from the standpoint of sustainable development, what risks and opportunities do cryptocurrencies pose for countries in Africa? Second, what is the legal and regulatory landscape for cryptocurrency and cryptocurrency exchanges in Africa? In other words, how are

countries in Africa and regional economic communities in the continent grappling with cryptocurrencies?

Global Coordination in Oversight, Policy, and Governance of Crypto Assets

Reena Aggarwal, Provost for Faculty, Georgetown University

The global nature of cryptographically enabled assets, including cryptocurrencies, requires consistent, unified global approaches to oversight and regulation. Attempts to regulate these assets on a jurisdictional basis will drive geographical displacement of adoption and utilization, falling short of regulators intentions to protect investors and stability within the global economy. It is imperative for international organizations to take a leadership role in uniting regulators to develop thoughtful and consistent approaches to regulating emerging cross border crypto assets. Traditional paradigms must shift to enforce regulation where feasible, which in many cases may occur at the point of transaction for goods and/or services. Application of existing regulations may succeed in controlling risk within established asset classes; however they fall short to address cryptocurrencies and the unique risks they present to economic stability.

Central Bank Digital Currencies

Ita Agur, Anil Ari, Fabio Comelli, Giovanni Dell'Ariccia, Vikram Haksar, Dong He, Ashraf Khan, Tanai Khiaonarong, John Kiff, Darryl King, Tommaso Mancini Griffoli, Maria Soledad Martinez Peria, Adina Popescu, and Celine Rochon

Various central banks are actively considering issuing digital versions of their fiat currencies. The rationale for issuing these central bank digital currencies (CBDCs) includes countering the dwindling use of bank notes and reducing the costs of maintaining and replacing them. CBDCs may also reduce transaction costs for individuals and small enterprises, and may facilitate financial inclusion. CBDCs could also help sustain demand for central bank money in the face of increasing competition from privately issued crypto-assets. In addition, interest-bearing CBDCs could allow central banks to overcome the zero lower bound, in conjunction with constraints on cash usage. On the other hand, CBDCs are potential competitors to commercial bank

deposits, and could lead to volatility in fund flows between commercial banks and the central bank, thereby hampering financial stability and intermediation. This note will review CDBC basics and design features, drawing on a growing literature and central bank investigations in this area. It will then consider implications of CBDCs on bank funding using a model focusing on the choice between designing the CBDC in a cash-like (token-based) or deposit-like (account-based) fashion. Results show that CBDC introduction will cause an increase in commercial bank deposit and lending rates, and a drop in lending. The more the central bank cares about financial disintermediation, the more cash-like it chooses to make the CBDC. The note will end with a discussion of monetary policy implications.

The Law and Finance of Initial Coin Offerings

Aurelio Gurrea-Martínez, Assistant Professor of Law at Singapore Management University

Nydia Remolina León is Legal Advisor for Innovation, Regulation and Digital Transformation at Grupo Bancolombia.

The rise of new technologies is changing the way companies raise funds. Along with the recent increase of crowdfunding in the past years, a new form of funding has emerged more recently: the use of Initial Coin Offerings (ICOs). In 2017, companies raised more than \$4 billion through ICOs in the United States, and more than \$11 billion has been raised during the first semester of 2018. In a typical ICO, a company raises cryptocurrencies giving some rights in return. The different nature and features of these rights, known as “tokens”, are generating many controversies among securities regulators around the world. Namely, it is not clear whether and, if so, when these tokens should comply with securities law. Securities regulators are addressing this issue in a very different manner across jurisdictions: while countries like the United States, Switzerland and Singapore are requiring companies to comply with existing securities rules only when a company issues “security tokens”, other jurisdictions, such as China and South Korea, have prohibited ICOs, and Mexico subject any issuance of tokens to a system of full control ex ante. Nevertheless, ICOs not only generate these challenges for securities regulators. They also arise many other issues from an accounting, finance, corporate governance, data protection, anti-money laundry and insolvency law perspective. By providing a comparative and interdisciplinary analysis of ICOs, our paper seeks to provide regulators and policy-makers with a set of recommendations to deal with ICOs in a way that may promote innovation and firms’ access to finance without harming investor protection, market integrity and the stability of the financial system.

Challenges in Achieving Neutrality in the Taxation of Crypto Assets

Irving Aw, Counsel (tax law), IMF

Christophe Waerzeggers, Senior Counsel, IMF

Vast increases in the prices of crypto assets in recent times have generated strong interest in governments and tax administrations to consider the appropriate tax treatment of relevant gains derived by taxpayers from the acquisition and disposal of crypto assets. With tech entrepreneurs coming up with evermore innovative ways to harness blockchain technology and established businesses embracing the technology to reinvent how they connect with clients and investors, it becomes imperative that jurisdictions formulate appropriate tax policy responses to the taxation of this emerging industry to ensure consistency in and effectiveness of their tax laws.

Not every jurisdiction has yet proactively addressed the tax treatment of investments in crypto assets based on the principle of tax neutrality. This is unsurprising in part since tax is also commonly used as an instrument by governments to discourage behaviors perceived to be harmful or otherwise undesirable, even as countries continue to struggle with the risks and benefits associated with the crypto phenomenon. For jurisdictions that are generally supportive of—or at least neutral towards—the crypto industry (for instance, Australia, Singapore, United Kingdom), the approach towards the taxation of transactions involving crypto assets is largely based on the application of first principles in domestic tax legislation to approximate neutrality. However, this approach requires a proper understanding of the facts surrounding each particular case, including the nature of the crypto asset in question and the purpose for which the crypto asset was acquired and disposed. The nature and versatility of crypto assets as well as the distinctiveness in operations of the crypto industry—driven by the underlying technology—present particular challenges to the application of first principles to transactions involving crypto assets.

This paper will focus on how and to what extent the principle of tax neutrality can inform the tax treatment of crypto assets, through a discussion of the main types of crypto assets and transactions, and a comparison with their conventional equivalents. It will survey selected country responses and explore the use of rebuttable presumptions as a possibility to help alleviate some of the difficulties in applying first principles to paradigm scenarios. The proposed paper will also highlight some of the administrative challenges faced by tax administrations seeking to tax gains derived from crypto assets.

Cryptoassets and Identity Persistence

Catherine Tucker, National Bureau of Economic Research, MIT
Alex Marthews, National Chair, Restore the Fourth

The development of ‘smart contracts’ based on the blockchain requires the creation of a permanent public record of agreed-upon transactions that cannot be changed retroactively. A person entering into a smart contract pre-commits both their current self and their future selves, no matter what changes may occur to them or to their circumstances. Yet for all of the advantages of such a product, self-reinvention, even in an age of distributed ledger technologies, remains important—for assuming new identities both formally and informally, and for preventing the government from reliably associating a particular cryptoasset transaction with a particular person. In this chapter we present a number of potential scenarios that suggest broader policy exploration, from domestic relations to money laundering, and highlight possible implications for corresponding civil and criminal statutes.