Guest editorial

Blockchain innovation and public policy

Overview

Blockchain, or distributed ledger technology, invented by Satoshi Nakamoto (2008), has quickly and somewhat surprisingly emerged as one of the most disruptive new technologies of the early twenty-first century; it is facilitating an entirely new decentralised architecture of economic organization (Narayanan *et al.*, 2016; Davidson *et al.*, 2018; Rauchs *et al.*, 2018; Werbach, 2018; Berg *et al.*, 2019). While still an experimental technology, shrouded in technological, economic, regulatory and legal uncertainty, blockchain is nevertheless moving from being a proof-of-concept innovation to early-stage pilots that will likely significantly disrupt sector after sector in the coming years. This process of what Joseph Schumpeter called "creative destruction" first started with money (with Bitcoin, the world's first cryptocurrency) and then payments, and is now moving through banking and finance (decentralised finance, or defi), logistics, health, and generally across the digital economy. Like other digital and internet-based technologies, such as virtual reality and machine learning, we are still in the early phases of an economy-wide disruption that is being driven and shaped by new entrepreneurial startups (since 2017 funded through initial coin offerings, although increasingly now through venture capital financing) and also by industry dominant firms who are working to reimagine and rebuild their business models and services on a more decentralised organisational architecture and business infrastructure (Rauchs *et al.*, 2019).

A key challenge for all entrepreneurs, whether in start-ups or in large incumbent firms, is policy uncertainty in relation to this radical new technology. Blockchain technology facilitates an entirely new architecture for money and payments, for establishing ownership and storing value, for making contracts and recording data and facts. This means that legal and regulatory frameworks, tax models and economic policy settings are not designed for this technology and will need to be adapted (De Filippi and Wright, 2018).

This special issue aligns scholarship and analysis towards a better understanding of the nature of entrepreneurship in relation to the development and innovation of this new technology, and the way in which that entrepreneurship interacts with current public policy settings. The papers in this special issue broadly seek to explore particular problem domains where public policy is either failing or succeeding in this context, and also to explore new frameworks for public policy that are conducive to entrepreneurship and innovation.

These papers cover a broad set of questions, ranging from consideration about the shifting role of government and economic policy in a world with widespread blockchain adoption, to seeking to provide a global map of the policy dimensions upon which governments are acting with respect to blockchain technology, to exploring how public policy interacts with entrepreneurial discovery of blockchain use cases and commercial applications. Papers also explore the implications for constitutional experimentations and monetary policy reform.

In the first paper in this special issue, Berg, Davidson and Potts explore the long run policy equilibrium associated with the consequences of wide-spread blockchain adoption, drawing on theories of institutional cryptoeconomics (Berg *et al.*, 2019). They argue that the long run policy implication of the industrial revolution and the era of modern economic growth through the twentieth century was for competition policy and industry policy to counterbalance the power of large hierarchical organizations (or the rise of very large firms as a basic dynamic of industrial capitalism). Berg, Davidson and Potts argue that blockchain technology predicts both market disintermediation and organizational "dehierarchicalisation", which they then infer unwinds the economic justification for a large range of economic policies implemented through the twentieth century that sought to control the effects of market power and organizational hierarchy.

Journal of Entrepreneurship and Public Policy
Vol. 9 No. 2, 2020
pp. 149-151

2045-2101
DOI 10.1108/JEPP-07-2020-116

"Capitalism after Satoshi" predicts widespread blockchain technology adoption could reduce the need for counter-veiling economic policy, and therefore shrinking the role of government, and therefore a new public policy equilibrium with reduced demand for economic policy. This shows the long-run relationship between digital technological innovation and the regulatory state.

In "Cryptofriendliness", Mikayla Novak explores the chief aspects of policy interest in blockchain technology, and maps these to an index-based policy measure that she calls "cryptofriendliness" (see Novak *et al.* 2018). Novak is particularly interested in using national case studies of blockchain policies to identify "policy entrepreneurship" that seeks to foster and promote the discovery and development of entrepreneurial opportunities in the emerging, but still nascent, blockchain economy. Novak argues that so-called "crypto-friendly" jurisdictions are more likely to attract entrepreneurs and investors in the crypto-economic blockchain space.

Brendan Markey-Towler builds on the idea of blockchain as an "institutional technology", a concept first developed by Davidson *et al.* (2018), in order to propose an evolutionary model of institutional competition. Markey-Towler shows how blockchain development is a form of institutional evolution that then interacts with national systems of innovation (which are themselves institutional systems), furnishing a macro-level concept of how blockchain technology interacts not only with economic administrative and organizational infrastructure (e.g. money and payments, supply chains, and specific sectors), but also with higher-order knowledge and innovation institutions. He argues that institutional competition from blockchain technology predicts superior performance from national systems of innovation, which in turn predicts greater opportunity space for entrepreneurs.

In "Governing entrepreneurial discovery" Darcy Allen explores how entrepreneurs discover opportunities in blockchain applications, which is a specific instance of the general problem of entrepreneurial discovery in early stage technologies. Allen focuses on the institutional mechanisms that facilitate the pooling of the broad information set that entrepreneurs require, and how policy choices that affect the institutional environment in turn affect entrepreneurial transaction costs. Elaborating on Novak's argument that specific policy choices shape the viability of blockchain entrepreneurial development (what she calls crypto-friendly policy), Allen further argues that an important way that crypto-friendly policy is operationalized is through channels that lower the cost of opportunity discovery for entrepreneurs.

In "The market for rules" Nick Cowen builds on the constitutional tradition in economics (as pioneered by James Buchanan as a hybrid of New Institutional Economics and political theory) to observe that the entrepreneurial opportunity space of blockchain is fundamentally in the provision of rules for governance that are in effect hard-coded into blockchain platform infrastructure. Cowen therefore argues that blockchain technology facilitates competition between the entrepreneurial supply of governance rules – encoded in "private order" platform or protocol mechanisms – with the government or legislator supply of "public order" policy rules. Whereas Davidson, Berg and Potts argue in "Capitalism after Satoshi" that blockchain technology will reduce demand for public policy, via the mechanism of disintermediation and dehierarchicalisation, Cowen makes a different argument but with the same broad direction of prediction, namely, that competition from private-order rules (what Cowen calls "the market for rules") will reduce demand for public-order rules.

In "Cryptoliquidity", James Caton examines the connection between blockchain technology adoption and broad monetary stability. Caton observes that macroeconomic fluctuations tend to be in significant part a monetary phenomena, and therefore monetary policy stabilisation works through exogenous changes in money supply. He then shows that cryptocurrencies can create endogenous liquidity creation mechanisms through rules-based asset liquidation (assuming real-asset backed cryptocurrencies) as triggered by changes in macroeconomic variables. Entrepreneurial development of novel cryptocurrency instruments such as stablecoins can therefore also be potentially developed at the level of

monetary aggregates in order to automate the supply of liquidity. This predicts that blockchain technologies can further facilitate the evolution of market economy institutions.

The six separate and distinct papers in this special issue each deal with different aspects that connect the economic study of entrepreneurship to both the immediate practical implications (e.g. Novak, 2019; Allen, 2019) and broadly philosophical implications (e.g. Berg *et al.*, 2019; Cowen, 2019) of blockchain adoption for public policy. Yet taken together these papers all broadly point in the same direction, in terms of the predicted effect: blockchain technology, which is an institutional technology, offers institutional competition with public policy rules, and this entrepreneurial competition is expected to improve the overall quality of economic rules and governance. Taken together, these six papers predict that blockchain technology will, on the whole, induce a better institutional environment for entrepreneurial action.

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Further reading

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