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Decentralized Autonomous Organizations: Internal Governance and External Legal Design

Wulf A. Kaal

Professor of Law

University of St. Thomas School of Law

Minneapolis

USA

wulfkaal@stthomas.edu

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Decentralized Autonomous Organizations: Internal Governance and External Legal Design

Wulf A. Kaal

Professor of Law, University of St. Thomas School of Law, Minneapolis, USA; wulfkaal@stthomas.edu

ABSTRACT

Most of the applications and uses of digital assets are improved and expanded with well-functioning and well-governed DAOs. The monograph evaluates the technical and internal governance solutions promulgated by DAO projects. Particular emphasis is placed on the duality of feedback effects between internal DOA governance and external DAO legal designs.

Keywords: decentralized autonomous organization; governance; legal design; digital assets; decentralized finance; blockchain; start-up; decentralized commerce; emerging technology; token models; incentive design; tokens; distributed ledger technology; decentralized infrastructure; reputation staking

1

Introduction

Blockchain-based businesses are a natural global extension of platform businesses. Blockchain-based smart contracts can standardize business processes and enable autonomous organizations. Decentralized autonomous organizations (DAOs) instantiate the need for truly global borderless entities that coordinate agency relationships and limit liabilities via smart contracts. Given the global nature of commerce through internet-based platform businesses and borderless payment systems, among many others, the global promise of the concept of a DAO as a business vehicle is only truly fulfilled if DAOs can be set up via the internet and are jurisdictionally recognized.

DAOs have the potential to upgrade business and society on multiple levels. The business applications of DAOs are near limitless. For example, most of the applications and uses of digital currencies are improved and expanded with well-functioning and well-governed DAOs. DAOs help upgrade digital assets across the spectrum of applications and uses. This includes digital assets that can be used as mediums of

exchange, speculation,¹ payment rail for non-expensive cross-borders money transfer, and non-monetary uses such as time stamping.² Additional use cases of DAOs include financial transactions, secure voting, autonomous organizations, company management, freedom of speech networks, online games, crowdfunding, and speculation, among many other possible applications that cannot be foreseen at the time of publication of this monograph.³

DAOs are organizations that run through rules encoded in smart contracts.⁴ DAO smart contracts are executed when the conditions embedded in them are recognized as math by the network.⁵ DAOs can be built on any smart contracting platform. In the 2020s, was still the leading smart contracting platform for DAO creation. Ethereum's programming language, Solidity, enables the development of smart contracts⁶ in conjunction with Ethereum's Virtual Machine (EVM), upon which every Ethereum node runs to maintain consensus. EVM is Turing-complete, meaning that it can perform calculations that any other programmable computer is capable of, enabling execution of code exactly as intended.⁷ This is the unique feature of the Ethereum network that enables smart contracts and a high level of flexibility in digital innovation, which makes the platform attractive to developers. Other networks are developing upgrades to blockchains that enhance smart contracting and associated DAO features.

¹A. Rogojanu and L. Badea, *The Issue of Competing Currencies: Case Study – Bitcoin*, 21 THEOR. APPL. ECON. 103–14 (2014); Paola Ceruleo, *Bitcoin: A Rival to Fiat Foney or a Speculative Financial Asset?* (Apr. 13, 2015) (Master's Degree Thesis) (on file with LUISS Guido Carli Library).

²Robleh Ali, John Barrdear, Roger Clews, and James Southgate, *The Economics of Digital Currencies*, BANK OF ENGLAND: Q. BULL., 2014, at 276.

³Zvezdin Besarabov and Todor Kolev, *Predicting Digital Asset Market Based on Blockchain Activity Data* (Oct. 15, 2018), <https://arxiv.org/abs/1810.06696>.

⁴CoinMarketCap, *Crypto Glossary*, COINMARKETCAP, <https://coinmarketcap.com/glossary/> (last accessed Jun. 22, 2020).

⁵Lanouar Charfeddine, Nouredine Benlagha, and Youcef Maouchi, *Investigating the Dynamic Relationship Between Cryptocurrencies and Conventional Assets: Implications for Financial Investors*, 85 ECON. MODELLING 198, 201 (2020).

⁶*Crypto Glossary*, *supra* note 4.

⁷*Crypto Glossary*, *supra* note 4.

A core problem in the evolution of DAOs is the applicable legal framework. The concept of a DAO fails if it becomes centralized. Tying the legal existence of a DAO to any forms of existing legal and jurisdictional frameworks typically results in the need for a representative in the chosen legal framework and jurisdiction, which, in turn, centralizes the DAO and results in the failure of the DAO concept. From the perspective of regulatory competition, one jurisdiction may one day offer a DAO legal framework that removes the need for a representative in that jurisdiction.

Until jurisdictional recognition materializes, DAO entities around the world are at substantial risk of being labeled a partnership with joint and several liability for its members in a given jurisdiction. Ideas about DAOs as partnership originate from a desire to apply existing and proven legal concepts to new technological challenges. DAOs may be construed as partnerships if DAO members are seen as co-owners for profit who are not using a limited liability entity to conduct business. Following traditional legal interpretation that merely looks at the legal relationships while ignoring the technological instantiation of such legal relationships may default to the construction of a partnership in the case of DAOs.

DAO entities depend on jurisdictional recognition. Only a jurisdiction that gives the DAO limited liability as an entity and accepts its independent status without the need for representation may truly be favorable for DAO concepts. Such jurisdiction would have to accept that the DAO is a virtual organization based on code that is accessible from any computer with an internet connection and cannot be jurisdictionally captured. The implication is that such DAO on each computer in any country is effective if another computer in a given country connects with and interacts with the code.

DAO structures are evolving lockstep with applicable legal solutions. On the operational side, overcoming bugs that lead to security flaws is a crucial part of the DAO technology evolution. On the legal side, experimentation with different legal arrangements in disparate jurisdictions helps DAO communities innovate for the creation of consumer facing applications in different settings around the globe.

This monograph examines the existing attempts to establish DAO concepts and legal frameworks. The author evaluates the technical solutions and internal governance solutions promulgated by DAO projects. Particular emphasis is placed on the duality and feedback effects between internal DAO governance and external legal design. The monograph concludes with an examination of legal DAO frameworks and their existing limitations and potential for future development.

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