INTERFACE OF COMPETITION LAW AND BLOCKCHAIN TECHNOLOGY: A GLOBAL PERSPECTIVE

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ABSTRACT

The rule of law does not govern all human interactions. There are times when the state bypasses legal constraints, as documented by the World Justice Project. Other times, jurisdictions may be mutually unfriendly and refuse to enforce foreign laws. One may want to rely on other means to increase the common good in these situations.

Against this background, it intends to show that blockchains are a great candidate for doing so. More specifically, it shows that blockchains can complement antitrust law in realms where legal rules do not apply.

Blockchains create trust between contracting parties at the individual level, enabling them to transact freely and increase consumer welfare. Concomitantly, blockchains also help in increasing decentralization; an objective shared with antitrust laws. But there is a catch. Blockchains can only supplement antitrust if the legal constraints do not impede their development. The law should thus support the decentralization of blockchains so that blockchain-based mechanisms may take over (even if imperfectly) where the law does not apply.

With that in mind, it contends that law and technology should be thought of as allies-not enemies-as they feature complementary strengths and defects. Doing so leads to a new "law and technology" approach. It justify the attractiveness of that approach by showing that blockchain causes an increase in the number of transactions by creating trust and that it may overall increase the decentralization of economic transactions. The law should take into account where it applies.

Keywords: Law, Enforcement, Cross Border, Blockchain, Competition Law, Technology.

JEL Classification: K02, K21

INTRODUCTION

Blockchain and Trust

The rule of law makes games cooperative by binding the players together. The same is true for blockchain when using smart contracts. This translates into an increase in the number of transactions, which has multiple consequences.

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A Primer on Game Theory and Blockchain

In game theory, a Nash Equilibrium is a non-cooperative game (Kaplow, 2013). outcome whereby no players can independently change their position and be better off. One may find Nash equilibrium for every finite game. That being said, the Nash Equilibrium of a game is not necessarily Pareto optimal; that is, there could be other game results that are better for one participant but would require making altruistic sacrifices.

Game theory helps to understand why players may be willing to transact. When games are non-cooperative, each player ignores the strategy that other players will choose. This uncertainty can make them reluctant to enter into a transaction because they are unsure the other players will also follow the course of action that leads to Pareto optimality. Instead, they are left with a stochastic Nash equilibrium.

The rule of law helps in that regard by allowing each player to bind the others contractually. When a product is sold on a website, for instance, whoever completes part of the transaction first (for instance, paying before receiving the product) is put in a vulnerable position (Klein et al., 1978). Laws can help create trust by incentivizing the co-contractors to comply with their respective obligations. In turn; this transforms transactions into cooperative games, and thereby makes it in participants' individual interest to engage in productive transactions more often. The same goes for smart contracts (Schrepel, 2019). Each player is assured that the others will collaborate as they are tied by code, potentially, with automatic sanctions in case of breaches of contract. It gives players more certainty about the game, leading toward Nash equilibria with Pareto optimality. Generally speaking, the enforcement of cryptographic rules can be compared to the enforcement of legal rules, although distinctions come into play when it comes to drafting and enforcing them. Trust simply results from the code written in a computer language, rather than a human language.

Trust without Antitrust

Transforming a non-cooperative game into a cooperative one creates trust, which eventually translates into more transactions being implemented. That is a positive outcome that our societies have embraced. In fact, corporate and contract laws have played a significant role in fostering the modern economy by creating legal certainty. It believe the same to be true for blockchain. That being said, an increase in the number of transactions also leads to an increase in the number of illegal ones. This is, for example, the case when firms agree to fix prices. Legal systems seek to solve this problem by striking a balance between the creation of legal certainty thanks to private law, and the enforcement of public law (such as antitrust) with the broader objective of ensuring the proper functioning of markets. But what about situations where the rule of law does not apply, for instance, when jurisdictions are mutually unfriendly (cross-border issue), or when the state is not enforcing legal limitations on the exercise of power by its agents or private entities (internal issue)? How can the same balance be achieved? In other words, does the increase in the number of transactions permitted by blockchain (where the law does not apply) benefit the common good despite the implementation of illegal transactions along the way? More specifically, should blockchains be designed in a way that leans towards the objectives pursued by antitrust laws? How?.

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LITERATURE REVIEW

Decentralization of Economic Transactions

Antitrust and blockchain are made of different materials. Like Lawrence Lessigputit, the first is the East Coast Code, while the second is West Coast Code (Lessig, 2006). They share a common goal nonetheless: decentralization. After showing how they each proceed to reach it is addressed how blockchain may help in maximizing it in the absence of antitrust.

Decentralization as a Common Language

The end goal of antitrust law is to enhance consumer welfare (Hovenkamp, 2019). It achieves this objective mainly through the decentralization of monopolistic confidence, hence its designation, *"anti-trust*" (in the sense of trustees). Put differently, it seeks to free markets from economic coercion.

In a nutshell, the Sherman Act has two sections. Section 1 prohibits companies from combining their resources from achieving illegal centralization. Section 2 prevents a firm from abusing its centralized market power to eliminate competition. On top of the Sherman Act, the Clayton Act prevents harmful concentrations when it is expected that new entities would have too much market power. The same point could be made for European competition law, prohibiting similar kinds of practices under TFEU Article 101 and Article 102, and scrutinizing concentrations under the EC Merger Regulation. In short, centralization is only permitted when it results from competition on the merits. For the rest, the capture of economic power must remain possible for all the market players, making sure that no market player can live "*the quiet life*".

Blockchain raison d'être is also decentralization. Emerging from the cypherpunk and open-source movements (Chaum, 1985), blockchain decentralization is the primary reason why it could eventually disrupt centralized platforms, namely, by providing users with trustful features. Blockchain communities none the less admit centralized outcomes on the merits. At the protocol layer centralization is welcomed if one core design is proven to be "better" than others. At the application layer, centralization is welcomed when one idea turns out to be more useful. Here again, decentralization is seen as a means.

In short, in neither case is it a question of pursuing decentralization at all costs. Decentralization is sought as a process toward efficiency, not as a moral or political stand. The idea is for all market players to retain the ability to decide without having to follow the instructions of centralized economic power. In other words, decentralization is thought of as a bulwark against the dangers of structural centralization. There are plenty of them, including antitrust abuses related to Section 2 of the Sherman Act in which one powerful market player is exercising coercive measures against its competitors (Schrepel, 2019). Although the objective is similar antitrust and blockchain seek to achieve it in different ways. Roughly, antitrust punishes anticompetitive practices and prevents harmful concentrations while blockchain implements decentralization in its core functioning. In that regard, the decisions of courts and agencies' decisions are continuously assessed by antitrust scholars to ensure that the law is applied correctly. Similarly, one may question whether the design of blockchains enables the optimal level of decentralization. This question is crucial in situations where antitrust laws cannot be

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applied.

Blockchains Optimum Decentralization

The general way in which blockchains can facilitate more decentralized industry structures is simple: they allow for markets to be split into two layers, one competitive layer with many providers and the other layer that is the commonly shared network connecting them. Network effects accrue to the common network layer, and *when* no direct form of control can be exercised on it, one blockchain participant cannot possibly abuse any natural monopoly that may arise. It makes other participants more willing to join because they know the network will not suddenly change its rules to turn against them (Buterin, 2017). One may want, therefore, to analyze that layer further.

The common network layer can be constructed either using private/permissioned (or "*consortium*") blockchains or using public blockchains. Permissioned networks have historically been considered easier to adopt because of their more familiar security model, though more recently, it was seen more adoption of public blockchains in enterprise contexts as well. The ongoing stable operation of public blockchains over time is likely to alleviate concerns that their security model is unproven.

Additionally, arguments that public chains are unsuitable for enterprise use because they are seen as "*anarchic*" are increasingly being recognized as incorrect. Base layers with no central points of control are fully compatible with higher-layer applications that add such points of control as needed; a historical precedent of this being corporations using (decentralized) networks such as Bit Torrent to distribute files that they (centrally) upload. Hence, all in all, it is expect to see the adoption of public blockchains to continue increasing, and for that reason, it shall compare private and public blockchains when it comes to our subject.

When evaluating the gains that a blockchain-based structure provides in terms of maximizing decentralization, it is looked for few key parameters:

1. Is the underlying blockchain (common network layer) private or public?
2. To the extent that private/consortium components exist:
3. Are there legal barriers preventing incumbents from blocking legitimate new participants attempting to join?
4. Is their governance structure providing them equal or similar control to that of centralized firms?
5. If the blockchain is public.

Is joining the network technologically and legally barrier-free? For example, is public open-source software for performing all necessary functions available?

What is the type of consensus algorithm? How resilient is it against commonly known attacks? What are the risks that the system will somehow be captured by one or a small group of participants? How quickly could such a thing happen?

When the blockchain is public, resistant to the most well-known attacks, and free to use, it maximizes decentralization. In fact, this type of blockchain is optimal to supplement antitrust law in ensuring decentralization of coercive economic power, at the very least, in these situations it described where the law does not apply. Of course, this type of blockchain design will not preclude all anti-competitive practices from being implemented. The balance is nonetheless

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positive when it comes to weighing in the increase in the number of transactions leaning toward decentralization versus anticompetitive strategies. The first has a positive worldwide macroeconomic effect while the second is generally quite limited (in scope, in time, or in effect). And after all, even where antitrust law applies, not all illegal practices are being prevented. Because the detectability of such practices is low (Connor, 2011). Antitrust laws are designed to effectively deter most practices. The same applies to technology.

The Regulatory Path toward Decentralization

Ensuring decentralization via blockchain requires an adaptation of antitrust and regulatory policies. It also has long-term implications, namely, in shifting the way it approach the matter of law and technology.

Short-Term Implications

It is shown that blockchain can be used to enable new transactions that decentralize the economy. For that reason, antitrust agencies should welcome blockchain as a great ally, and use the law to ensure that no anticompetitive form of coercive power is being exercised in the blockchain ecosystem (Schrepel, 2020). If, on the contrary, antitrust agencies were to use their enforcement power toward other goals than ensuring blockchain optimum decentralization, they could put the entire ecosystem at risk.

In addition to adequate enforcement, it contends that antitrust agencies should set up various mechanisms to promote blockchain optimum decentralization. This would require the creation of regulatory sandboxes and safe harbors to protect blockchain developers and users from antitrust concerns (so long as blockchain is designed in such a way to maximize decentralization).

Sandboxes and safe harbors create comfort zones where the technology can be tested in ways that would otherwise be illegal or require overly burdensome regulatory approval (Pindyck, 1991). Sandboxes are testing grounds for businesses supervised by regulatory institutions. They could push blockchain developments toward more decentralization, precisely by incentivizing decentralized designs. Safe harbors, which are similar to sandboxes but with no limit in time or scale, could be adopted if sandboxes' results are positive (i.e., they improved centralization).

Long-Term Implications

In the long term, antitrust and blockchain both have concessions to make. For antitrust, a re-conceptualization is needed, as it must become an ally to technological developments instead of just a threat. It implies directing antitrust enforcement toward technological issues in exchange for not going after other anticompetitive practices. The short-term regulatory instruments which it just exposed must also be institutionalized. Only if a legal environment that permits blockchain flourishing is created will it prove to be particularly helpful where the law does not apply. As for blockchain developers, they must be willing to keep on ensuring the process of decentralization, although it might create temporary barriers to greater adoption or scalability, for instance.

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There is a long way to go. Policymakers might be tempted to point out the existence of a consistent dominant strategy for the law by systematically punishing all illegal practices, while blockchain developers might be tempted to ignore legal constraints consistently. But neither of these would be a dominant strategy. That is because the law cannot be applied to all illegal practices (whether because of detectability issues, or mutually unfriendly jurisdictions), and the technology cannot systematically trump the law. Here, depending on whether the technology collaborates or not, the law must adapt its strategy. When technology chooses confrontation, the law must also choose confrontation. When the tech chooses collaboration, the law must choose collaboration despite the absence of certain sanction in it may entail.

CONCLUSION

As it is shown that trust in blockchain cryptographic rules spurs new transactions in areas where the law does not apply. It does so by making games more cooperative. It has contended that, although new anti-competitive practices will be created along the way, their negative impact will be outweighed when blockchain is designed to ensure optimum decentralization.

All blockchains that feature the characteristics should benefit from various legal protections, whether in law enforcement, or regulatory benefits. Absent such protections, antitrust agencies would most certainly create a disincentive to invest in such blockchains. The overall objective of decentralization would not be optimized.

It is acknowledge that the most challenging part lies ahead of us in convincing governments and antitrust authorities that, despite the creation of anticompetitive practices (easily observable), the increase in the number of transactions (not easily noticeable) should none the less be encouraged when it results from a technology designed in a way to achieve the same objective as antitrust law. It is believe that it is the optimum way of playing the game of decentralization.

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