



CRYPTOCURRENCY IN THE LIGHT OF COMPETITION LAW

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1. INTRODUCTION

Even before the invention of the cryptocurrency, digital cash has been theorized in a setting of centralized system to prevent the double spending by chawn in 1983. Later, in 2008 with the invention of the cryptocurrency which was introduced by Satoshi Nakamoto in his paper "Bitcoin: A Peer to Peer Electronic Cash System; however it was decentralized in nature. In spite of major cryptographic advances in the technology till now, failure to ensure competition friendly nature due to decentralization, anonymity and transparency of blockchain eventually put this new form of technology into question. Though there are wide applications of blockchain, this paper will mainly focus on cryptocurrency and how the very nature of cryptocurrency can be the reason to disrupt competition in the market and thus can be anti-competitive in nature.

The firstly presents the structure of cryptocurrency and blockchain technology which form the basis for the subsequent analysis of fundamental issues with respect to their influence to the competition in the market. The principal issue which will be discussed here is whether the use of cryptocurrency can give rise to the unilateral conduct by a dominant firm and whether there is a risk of collusion due to the use of

cryptocurrency in the market. Also, since cryptocurrencies are decentralised, transparent and anonymous in nature it raises many questions regarding the detection of such anti-competitive practices and identification of persons involved in such practices. This paper further aims to discuss that whether the existing competition law is adequate in respect of this technology as to prevent the development of anti-competitive practices through it.

As blockchain technology is still under the process of evolution and recognition, it is difficult to answer all the potential threats of cryptocurrency to competition in the market but the foreseeable can be answered and prevented.

Chapter 1 provides the whole picture to the main question: anti-competitive practices raised by the use of cryptocurrency, competition law, blockchain technology, how blockchain technology work and uses of blockchain technology, what is cryptocurrency and factors determining the influence of cryptocurrency in the market. Chapter 2 focuses on the collusion and why cryptocurrency can be a concern for raising collusion and disrupting competition in the market. The chapter states the new forms of collusion by this evolving technology underlying cryptocurrency and how it could facilitate collusion through cryptocurrency. Chapter 3 focuses on abuse of dominance or unilateral conduct which can be resulted if cryptocurrency gain the dominant position in certain circumstance in the relevant market by showing through illustrations. Chapter 4 provides the identification and detection problems of the anti-competitive



practices with respect to the cryptocurrencies and blockchain and provides for the competition law challenges.

2. CRYPTOCURRENCY AND COMPETITION LAW MAIN QUESTION AND ISSUES

The fundamental or central question of this thesis is: “Whether the use of cryptocurrency can give rise to anti-competitive practices?”

The transformative nature of blockchain technology underlying cryptocurrency has raised many potential legal issues. These can include issues varying from the enforceability of Smart Contracts to anti-money laundering, securities regulations to competition law issues.¹ This paper will focus on a number of key competition concerns raised by the cryptocurrencies.

Competition in market “means sellers striving independently for buyer’s patronage, to maximize profit or other business objectives”.² Buyer’s gets their maximum benefit and seller their maximum benefit. Competition is necessary so that consumers can access to the broadest range of services or products possible at competitive prices while producers get an incentive to innovate, reduce their costs and meet consumers demand at the same time. Therefore,

¹ Fangda Partner, *Competition law implication of blockchain technology*, Mondaq <http://www.mondaq.com/china/x/657738/fin+tech/COMPETITION+LAW+IMPLICATIONS+OF+BLOCKCHAIN+TECHNOLOGY> (Jan 10th, 2019).

² Rakesh J Saxena, *Competition Law in India - Lacunae, Complaint and Procedure*, <https://ezinearticles.com/?Competition-Law-in-India--Lacunae,-Complaint-and-Procedure&id=1390167> (Jan 10th, 2019).

competition promotes allocative and productive efficiency. This requires healthy market conditions so came the need of competition law.

The competition law is virtually limitless. It is enforced in overwhelming majority of sectors from cement to rail, roads, food industry to innovation and technology and captures a very wide range of business practices. Unquestionably, antitrust enforcement must not be taken frivolously and only used where damage is probable or proven. Competition authority should be conscious of the danger of over interference the risk that competition enforcement might chill innovation and the competition in the relevant market. At the same time, they should be conscious of the price of under-enforcement.

Competition Law provisions are triggered in the following situations:

1. Anti-competitive Agreements
2. Unilateral conduct of dominant firms
3. Combination or merger and acquisition

Against aggressive practices states assortment of business conducts in which a firm may include so as to confine competition in the market, to hold or expand their "relative market position and benefits without fundamentally giving goods and services at a lower cost or of higher quality". "Firms invent as far as possible competition by not constructing such a great amount on their favorable circumstances but rather on misusing their market position to the inconvenience or hindrance" of customers, clients and providers, for example, price fixing, limit output, market restriction and so forth results in "loss of financial proficiency



and misallocation of assets (or blends thereof)".

WHAT IS CRYPTOCURRENCY?

Cryptocurrencies is an alternative online payment system based on blockchain technology which allows shoppers and suppliers or buyer and seller to interact directly eliminating the need of any intermediary. There are wide range of applications for blockchain technology including cryptocurrency which attracts many issues in respect of Competition Law along with it. However, this paper will mainly focus on the implications of cryptocurrency on Competition Law.

3. COLLUSION

"In 2018, US probe into cryptocurrencies³ like bitcoin and ethereum involvement in collusion. Regulators are weighing the likelihood that colluding traders are making the price of several cryptocurrencies to rise and crash, artificially for personal gain according to the report published by Bloomberg"⁴.

To understand how collusion is possible in cryptocurrencies, it is important to know what amounts to collusion under competition law or anti-trust law and why it comes under the red flag of anti-trust

authorities i.e. when it is considered anti-competitive in nature.

WHAT IS COLLUSION?

At whatever point new technological tools revolutionise profoundly the manner in which firms or organisation operate and interact with each other, there is the risk that some market players use their enhanced power to accomplish private interests that are not lined up with social objectives⁵. The term "collusion" commonly refers to any form of co-ordination or agreement among competing firms with the objective of raising profits to a higher level than the non-cooperative equilibrium, resulting in a deadweight loss.

In other words, collusion is a joint profit maximisation strategy put in place by competing firms that might harm consumers.⁶ "In order to reach and sustain a collusive equilibrium over time, competitors must put in place a structure to govern their interaction, enabling them:

- (1) To agree on a common policy;
- (2) To monitor the adherence to this common policy; and
- (3) To enforce the common policy by punishing any deviations"⁷.

THE COMPETITION ACT, 2002

Section 3 of the Competition Act provides for the anti-competitive agreement⁸. "Anti-competitive agreement" means an agreement which is entered by two or more enterprise to prevent either directly or indirectly others

³The Justice Department is investigating possible collusion among cryptocurrency traders who may be manipulating the price of Bitcoin, Ethereum and other cryptocurrencies.

⁴ [The Daily Hodl: news and insight for the digital economy, US Launches Probe into Bitcoin and Ethereum Trading Collusion and Crypto Market Manipulation](https://dailyhodl.com/2018/05/24/us-investigates-bitcoin-and-ethereum-trading-collusion-and-crypto-market-manipulation) (May 24, 2018) <https://dailyhodl.com/2018/05/24/us-investigates-bitcoin-and-ethereum-trading-collusion-and-crypto-market-manipulation>.

⁵ OECD, *Algorithm and collusion*, <https://issuu.com/oecd-daf/docs/daf-comp-2017-4.en>.

⁶ OECD (2017), *Algorithms and Collusion: Competition Policy in the Digital Age*.

⁷ *Id* at 19.

⁸ Section 3, Competition Act, 2002.



from entering into the market or even try to exclude or eliminate them. The effect of such kind of agreement is always to foreclose the competition from the market.

TYPES OF COLLUSION

Economists usually distinguish between two forms of collusion, explicit and tacit.

i. **Explicit Collusion**

“It refers to anti-competitive conducts that are maintained with explicit agreements, whether they are written or oral. The most direct way for firms to achieve an explicit collusive outcome is to interact directly and agree on the optimal level of price or output”⁹.

Explicit collusion is an assertion among competitors to stifle competition that depends on interfirm correspondence or potentially exchanges. Competition between contenders disintegrates benefits; the concealment of competition through collusion is one road by which firms can improve benefits.

ii. **Tacit Collusion**

“It refers to forms of anti-competitive co-ordination which can be achieved without any need for an explicit agreement, but which competitors are able to maintain by recognising their mutual interdependence. In a tacitly collusive context, the non-competitive outcome is achieved by each participant deciding its own profit-maximising strategy independently of its competitors”¹⁰.

This typically occurs in transparent markets with few market players, where firms can

benefit from their collective market power without entering in any explicit communication and is more effective. For instance, by facilitating detection of cheating and the administration of punishment of deviations.

In order to address these intermediate forms of co-ordination, some jurisdiction have stretched the concept of “agreement” for anti-trust purposes and looked at whether an agreement can be concluded from data suggesting that competitors have not acted independently. Even in the absence of an explicit agreement, for instance, courts have established an infringement of the competition law if evidence of parallel conduct was accompanied by other factors, which indicated that the parallel conduct was indeed inconsistent with unilateral behaviour and rather the result of co-ordination among the parties.¹¹

For instance other factors include communications revealing an intention to collude or engagements in facilitating practices, such as information exchanges. Some jurisdictions, in particular those in the EU, also depend on the notion of “concerted practice”, allowing them to deal with conducts that do not amount to an agreement but nevertheless have the effect of replacing effective competition with practical co-operation between the competitors.

Issue No. 1: Whether the use of cryptocurrency can give rise to collusion?

The exchange of information is a typical component of all cartel members being

⁹ OECD (2017), Algorithms and Collusion: Competition Policy in the Digital Age.

¹⁰ OECD (2017), Algorithms and Collusion: Competition Policy in the Digital Age.

¹¹ OECD (2017), Algorithms and Collusion: Competition Policy in the Digital Age www.oecd.org/competition/algorithms-collusion-competition-policy-in-the-digital-age.htm.



equal what's more, a major component of the blockchain. Can developer who contend in a similar market use blockchain in a way that comprises a cartel? Would they be able to exchange data to empower them to settle on better-economic choices in the market? To state the self-evident, if a cartel wishes to utilize blockchain to help or encourage it, it is, obviously, conceivable similarly a cartel can use email or the phone.

What is important to consider is whether the idea of a blockchain could incidentally make or encourage a cartel. The main explanation behind this plausibility is the component of block chain's transparency. On a basic level, each individual from a blockchain can discover the subtleties of exchange led utilizing the blockchain. This proposes value coordination might develop as rivals in a blockchain see costs change with more noteworthy speed and exactness than previously, and adjust their future activities thus. The equivalent can be said for some other material enlightening components influencing competition that are likewise recorded in the blockchain exchanges.

Where the market is transparent and user data is relatively easy available. In such a case the problem may arise because of the use of computer algorithms in a way that promotes express and tacit collusion: algorithms can be used to find non-competitive price equilibria, implement agreements, detect deviations and implement automatic reactions to market conditions. Such conduct may even result not from the conscious behaviour of competitors but from other circumstances, such as using the same services provider for the data-based algorithms.

Collusion both for exclusion and exploitation

Blockchain cryptocurrency uses mathematical algorithm for creating and verifying a continuously growing data structure to which data can only be added and from which existing data cannot be removed that takes the form of a chain of "transaction blocks", which functions as a distributed ledger.¹² It is done to protect blockchain data from prospective hackers but this is can also be a concern for competitive authority as according to the Organisation for Economic Cooperation and Development (OECD), 'a particular concern highlighted in the literature is the risk that algorithms may work as a facilitating factor for collusion and may enable new forms of co-ordination that were not observed or even possible before. This is referred to as "algorithmic collusion"¹³.

When few market players make an investment in technology to benefit from an "algorithmic competitive advantage", the remaining firms of the industry have a strong incentive to do the same, risking otherwise being driven out of the market. The increase of market transparency is not only a result of more data being available, but also of the ability of algorithms to make predictions and to reduce strategic uncertainty. "Indeed, complex algorithms

¹²Prof.Dr.Houben and A. Snyers, *Cryptocurrencies and blockchain: legal context and implications for financial crime, money laundering and tax evasion*, Policy Department for Economic, Scientific and Quality of Life POLICIES, European Parliament (July, 2018).

¹³ OECD (2017), *Algorithms and Collusion: Competition Policy in the Digital Age* www.oecd.org/competition/algorithms-collusion-competition-policy-in-the-digital-age.htm.



with powerful data mining capacity are in a better place to distinguish between intentional deviations from collusion and natural reactions to changes in market conditions or even mistakes, which may prevent unnecessary retaliations”¹⁴.

With respect to the frequency of interaction, the advent of the digital economy has revolutionised the speed at which firms can make business decisions. Unlike in a brick and mortar business environment where price adjustments are costly and take time to implement, in online markets prices can in principle be changed as frequently as the manager wishes. If automation through pricing algorithms is added to digitisation, prices may be updated in real-time, allowing for an immediate retaliation to deviations from collusion¹⁵. In fact, the combination of machine learning with market data may allow algorithms to accurately predict rivals actions and to anticipate any deviations before they actually take place making it more effective.

There are many different ways in which algorithms may be used for collusion.

Ariel Ezrachi and Maurice Stucke (*Artificial Intelligence & Collusion: When Computers Inhibit Competition*, 2017) discuss **four**

such ways and their categorisation and nomenclature have been borrowed in this paper.

1. Messenger

The first type of algorithm collusion in which human beings agree to collude and merely use the algorithm to implement such agreement. An example of this could be the selfish mining case where miner form group to increase their revenue by forming a secret block.

2. Hub and Spoke

This is a second type of algorithm collusion where market players adopt the same algorithm. Such collusion is facilitated by the developer of the algorithm who by entering into vertical agreements with various competitors ensures price fixing or could be a third- party service provider.

3. Predictable Agent

The third category is “**Predictable Agent**” where competitors do not use the same algorithm but independently and unilaterally design their own algorithm. These algorithms are designed to react in certain ways to market changes and deliver predictable outcomes. Therefore, even though the competitors do not use the same algorithm by programming algorithms to react in the same manner to the same stimulants tacit collusion is affected.

4. Digital Eye

The fourth type of algorithmic collusion- “**Digital Eye**” involves machine-learning algorithms. Here the makers once again develop their algorithms unilaterally but this time without programming them to react a certain way to market stimulants. However, since these algorithms use artificial intelligence, and by the virtue of self-learning, start colluding on their own.

¹⁴Ezrachi, Ariel and Stucke, Maurice E., Sustainable and Unchallenged Algorithmic Tacit Collusion (November 10, 2018). University of Tennessee Legal Studies Research Paper No. 366, <https://ssrn.com/abstract=3282235>; <http://dx.doi.org/10.2139/ssrn.3282235>

¹⁵Ezrachi, Ariel and Stucke, Maurice E., Sustainable and Unchallenged Algorithmic Tacit Collusion (November 10, 2018). University of Tennessee Legal Studies Research Paper No. 366, <https://ssrn.com/abstract=3282235>; <http://dx.doi.org/10.2139/ssrn.3282235>.



The Cryptocurrency case of collusion in India can at best fall under any of the above categories. The issues posed by such cases are not very different from the conventional collusion cases since the algorithms are merely being used to reflect the collusive intent of the players- a scenario very similar to the standard colluders manually fixing prices of commodities.

In India, the provision which prohibits collusion is Sec 3(3) of the Competition Act. Sec 3(3) is not just limited to horizontal agreements but extends also to practice and decisions taken in a collusive manner, making the section quite broad.

Sec 3(3) of The Competition Act, 2002 can be broken down into 3 components:

- (i) “any “agreement entered into” or “practice carried on” or “decision taken by”;
- (ii) persons or association of persons or enterprises or association of enterprises;
- (iii) which directly or indirectly determines purchase or sale prices; then it shall be presumed to have an appreciable adverse effect on competition”¹⁶.
- (iv)

Applying Sec. 3(3) to the present issue

It is important to note that appreciable adverse effect in such cases needn't be proved and is automatically presumed. The third leg of the test involves proving price parallelism. Since it is a factual determination, it is not relevant for this paper. The first two requirements under Sec 3(3) are analysed in turn.

The First Requirement

First, the width of conduct which might fall under “horizontal restraint” is quite expansive. Unlike most other jurisdictions not just explicit agreements but even practice or decision could fall within the ambit of horizontal restraints. “Agreement” has been defined to include any arrangement or understanding or action in concert and similarly, “Practice” has been broadly defined to include any practice relating to the carrying on of any trade by a person or enterprise.¹⁷

- First kind of algorithmic collusion (“Messenger”) is concerned it is very clear from the meaning itself that it would amount to agreement between the stakeholder of the cryptocurrency and therefore will come under the purview of competition authority.
- Second kind of algorithmic collusion (“Hub and Spoke”) is using the service of same third party for the determination of price or change in the market price ultimately leading to price-fixing.
- As far as the third kind of algorithmic collusion (“Predictable Agent”) is concerned, it is clear that the act of programming algorithms to react a certain way to market stimulants (even though done independently and unilaterally) would amount to both an “action in concert” and to “practice.”
- Additionally, for the fourth kind of collusion (“Digital Eye”), the act of self-learning algorithms to price fares at a certain level in response to the price fixed by the algorithms of other competitors would amount to an “action in concert.” For Instance, AI services used in cryptocurrency.

¹⁶ Section 3(3), the Competition Act, 2002.

¹⁷ Competition Commission of India, Introduction to competition law (2016).



Therefore, irrespective of the nature of the interaction between the algorithms it is likely to satisfy the first criteria of the test because of the broad ambit of conduct covered under horizontal restraint.

The Second Requirement

Second, the agreement or practice or decision must be between persons or enterprises or associations thereof. It is doubtful whether the existing groups of “individual,” “artificial juridical person” or the other groups under the definition of “person” could be read to include algorithms.

However, the definition of “person” is inclusive. Therefore, if a purposive interpretation of the Act were to be adopted then protection of consumer welfare and competitive structures should lead the CCI to utilise the non-exhaustive nature of the definition of “person” to include algorithms in it.

Collusion can be between the following

1. Collusion between stakeholders of different cryptocurrencies

Collusion is possible between the stakeholders of different cryptocurrencies to co-ordinated their prices or for exclusive distribution. Say bitcoin and litecoin coordinate their prices on which customers can invest on that particular cryptocurrency.

2. Exclusive agreement between stakeholders in a cryptocurrency and third-party providers.

There can be exclusive agreement between stakeholders in a cryptocurrency and the third-party provider to limit the open competition. For instance, stakeholders use same third-party provider’s pricing algorithm to determine the market price and

or react to market changes which can lead to price fixing.

3. Selfish Mining

Selfish Mining is an approach for mining cryptocurrency in which groups of miners collude to increase their revenue¹⁸.

4. Vertical restraint between operators and input providers

Vertical restraint refers to restrictive agreements made between firms at different levels of production/distribution/supply chain. For instance, there can be restrictive agreement between blockchain technology providers with the cryptocurrency stakeholders to limit the open competition or causing preclosure of new cryptocurrency.

COLLUSION AND CRYPTOCURRENCY

There are possibilities that all competitor will use single blockchain technology. Another possibility is that each firm have their own blockchain in the way that each firm has their own server space. Where a single blockchain is used by all, the potential transparency might help identify any deviation by cartel participants.¹⁹ The transparency might also help to identify the terms on which to collude, for example the price or market share. The potential transparency offered by blockchain technology underlying cryptocurrency might also help firms in oligopolistic market to coordinate tacitly without any direct or indirect contact or any agreement to do so.

¹⁸ Selfish Mining, Investopedia, <https://www.investopedia.com/terms/s/selfish-mining.asp>.

¹⁹ OECD Secretariat, Blockchain Technology and Competition Policy (2018).



“The principle behind blockchain is that miners are atomistic individuals who cannot collude but in practice, the highly concentrated nature of mining pools can make collusion by packs of miners” a real possibility. This is particularly for less significant and identified cryptocurrencies where the populace of miners is small²⁰. For instance, in Bitcoin, the miners are more numerous, but the mining pools themselves are highly concentrated, with three mining pools accounting for more than 50% of the computing power.²¹

4. DOMINANCE

It is ability of an enterprise to behave independently of a market force that determines its dominant position. Position of market power enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by giving it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of its consumers.²² Some powerful firms have the ability to influence the market outcomes very significantly. Where this is the case competition law applies to prevent that the market conditions are not detrimental further by the behaviour of the dominant firm.

In a perfectly competitive market no enterprise has control over the market especially in determination of price of

product²³. Possibly the most prominent objectives of these practices are from the buyers who are often unaware of the degree of the influence. Therefore, Act mentions the various factors that ought to be taken into consideration while considering that whether a firm is dominant or not.

WHAT IS DOMINANT POSITION?

“A position of strength, enjoyed by an enterprise, in the relevant market, in India, which enables it to:-

- 1) Operate independently of competitive forces prevailing in the relevant market, or
- 2) affect its competitors/consumers or the relevant market in its favour.”²⁴

ABUSE OF DOMINANCE

“Dominance is not considered bad per se but its abuse is.” “Abuse is stated to occur when an enterprise or a group of enterprise uses its dominant position in the relevant market in an exclusionary or exploitative manner.”²⁵

The Act²⁶ gives an exhaustive list of practices that shall constitute abuse of dominant position and therefore prohibited²⁷. “Such practices shall constitute

²³ Competition Commission of India, *Provisions relating to abuse of dominance*, 4 ADVOCACY SERIES 5, 7, https://www.cci.gov.in/sites/default/files/advocacy_booklet_document/AOD.pdf (Feb 16th, 2019).

²⁴ Section 4, The Competition Act, 2002, No. 12, Acts of Parliament, 2003(India).

²⁵ Competition Commission of India, *Provisions relating to abuse of dominance*, 4 ADVOCACY SERIES 5, 7, https://www.cci.gov.in/sites/default/files/advocacy_booklet_document/AOD.pdf (Feb 16th, 2019).

²⁶ The Competition Act, 2002, No.12, Acts of Parliament, 2003(India).

²⁷ Competition Commission of India, *Provisions relating to abuse of dominance*, 4 ADVOCACY SERIES 5, 7,

²⁰ Hyun Shon Shin, *Cryptocurrencies and economics of money* (2018).

²¹*Id* at 5.

²² *United Brands Co. v. Commission of the European Communities*, 21 Comm. Mkt. L.R. 429 (1978).



abuse only when adopted by an enterprise enjoying dominant position in the relevant market in India”²⁸.

EXPLOITATIVE AND EXCLUSIONARY BEHAVIOUR

Abuse in the Act falls in two categories:

- a) “Exploitative Behaviour: Excessive or discriminatory pricing
- b) Exclusionary Behaviour: For instance: Denial of market access, Predatory Pricing etc.”²⁹

PREDATORY PRICING

The “predatory price” under the Act means “the sale of goods or provision of services, at a price which is below the cost, as may be determined by regulations, of production of goods or provision of services, with a view to reduce competition or eliminate the competitors”³⁰ [Explanation (b) of Section 4].

“Predation is exclusionary behavior and can be indulged in only by enterprises(s) having dominant position in the concerned relevant market.”³¹

https://www.cci.gov.in/sites/default/files/advocacy_booklet_document/AOD.pdf (Feb 16th, 2019).

²⁸ Arthapedia, *Abuse of dominance* (Feb 16th, 2019), http://www.arthapedia.in/index.php%3Ftitle%3DAbuse_of_Dominance; Tax Guru, *Abuse of dominance under competition act, 2002* (Feb 16th, 2019), <https://taxguru.in/corporate-law/abuse-of-dominance-under-competition-act-2002.html>.

²⁹ Anubhav Pandey, *Evolution and Development of Competition Law in India*, iPleaders (August 8th, 2017) <https://blog.ipleaders.in/competition-law-evolution/>.

³⁰ Section 4, the Competition Act, 2002; http://www.cci.com/sites/default/files/advocacy_booklet_documnet/AOD.pdf.

³¹ Harsh Pandey, *Anti-Dumping and Predatory Pricing (Laws according to competition act, 2002)*, ACADEMIA (Feb 12th, 2019),

REFUSAL TO ACCESS

Abuse of dominance can also be prompted by *refusal to access* of permissioned blockchain, where such existence is indispensable to contribute in the market. Wherever access stands organised and controlled mutually through current members of the consortia, such controlled arrangement of access might be used to foreclose or exit new entrants in the market. This concept is called “gating”. Similarly a private blockchain might only give access to that consumers to make transactions with a few dominant firms. Such a scenario could also raise the possibility of predatory pricing.

EXCLUSIVE AGREEMENT

- **Exclusive Agreement can be of two types:**
 - **Exclusive Distribution Agreement:** Agreement to limit, restrict or withhold the output or supply of any goods or services, or allocate any area or market for disposal or sale of goods or services is referred as exclusive distribution agreement³².
 - **Exclusive Supply Agreement:** Agreement restricting in any manner the purchaser from acquiring in course of business any goods other than those of seller or any other person is referred as exclusive supply agreement³³.

TIE-IN ARRANGEMENT

https://www.academia.edu/16193724/Anti-Dumping_and_Predatory_Pricing_laws_according_to_Competition_Act_2002.

³² Explanation (c) of section 3, The Competition Act, 2002.

³³ Explanation (b) of Section 3, The Competition Act, 2002.



The condition to purchase some other goods with the required item is referred as tie-in arrangement. **There are four elements of tying:**

a) Tying and Tied: The tying product would never be on standalone basis while the tied product can be on standalone basis.

b) Dominant Position in tying product: Manufactures or supplier or developer should have dominant position.

c) Coercion: Customers do not have option to buy the tying product alone. So out of compulsion they buy both the products together.

d) Foreclosure of competition (always in respect of the tied product): Competition of the tied product are driven out of the market.

Technical tying or technological tying concerns a situation in which the condition imposed on customer does not result from a contractual device but from the fact that it only works well with the tied product. For instance cryptocurrency which is in dominant position can be tied with wallets specific suitable for the easy transaction of that particular cryptocurrency.

BUNDLING

Bundling is a type of Rebates offered on buys of an assortment of items by a dominant firm. Bundling is moving of at least two items just together in; One group at one discounted cost.

FACTORS DETERMINING THE INFLUENCE OF CRYPTOCURRENCY IN MARKET

I. Relevant market associated with cryptocurrency

Dominance can only be determined and have importance for competition perspective when the relevant market has been well-defined.

The relevant market means “the market that may be determined by the Commission with reference to the relevant product market or the relevant geographic market or with reference to both the markets”³⁴.

The Act sets out a few variables of which any one or all will be considered by the Commission while characterizing the applicable relevant market. Relevant product market entails a market consisting of all those goods or services which can be considered as interchangeable or substitutable through the customer, by purpose of features of the goods or services, their prices and anticipated usage. Relevant product market is defined in terms of substitutability. It is the smallest arrangement of the both goods and services which are variable or substitutable between themselves, given a small but significant non-transitory increase in price (SSNIP).

Relevant geographic market is defined in terms of “the area in which the environment of competition for supply of goods or provision of services or demand of goods or services are specifically homogenous and can be notable from the environment prevailing in the neighbouring areas”³⁵.

³⁴ Section 2(r), The Competition Act, 2002.

³⁵ Section 2(s), the Competition Act, 2002.



Dominance of an undertaking has been traditionally demarcated in footings of market share or market power of the undertaking or group of undertakings concerned. However, a number of other factors play a role in determining the influence of an enterprise or a group of enterprises in the market.

Factors that determine the dominant position is given in section 19(4) of the Competition Act, 2002.

The following are the relevant market associated with the cryptocurrency, and which should be considered while determining the dominant position with respect to the cryptocurrency market.

a. Cryptocurrencies provides for money functions

Cryptocurrency can perform monetary functions, though many countries have banned it due to the regulation issues many countries have adopted it.

- Medium of exchange³⁶
- Store of value³⁷
- Unit of account³⁸

b. Cryptocurrencies are separate payment system

- Compete with each other and other traditional payment systems or service providers.

Cryptocurrencies can perform separate payment system and therefore can compete with the traditional payments system such as credit cards.

c. Cryptocurrencies can be a platform for intermediation of suitable services.

- Smart contracts

Bitcoin could be alluded to as a cutting edge case of effective shrewd smart contracts: the system of nodes will possibly approve transactions made on the blockchain network if certain conditions intended to guarantee the genuineness and estimation of the transactions are altogether met. If not, the exchange doesn't go through or work.

- AI services
For example, AICoin.
- Data storage
For example, The Filecoin network.

II.

III. Market power in cryptocurrency market

Competition law concerned as a matter of first importance with the issues that happen when firms or two or more firms have market control. Firms that have market control appreciate a portion of the advantages accessible to a genuine monopolist. Market control empowers firms to restrain output, development and innovation, and nature and quality of products or restricting customer decisions and raise costs, destructive to buyer welfare.

a) Market power within cryptocurrency

- Certain stakeholders can have market power vis-à-vis other stakeholders in a cryptocurrency

³⁶ Medium of exchange is one of the three fundamental functions of money in mainstream economics. It is widely accepted token which can be exchanged for goods and services.

³⁷ Store of value is the function of an asset that can be saved, retrieved and exchanged at a later time, and be predictably useful when retrieved that retains purchasing power into the future.

³⁸ In economics, Unit of account is one of the functions of money. The value of something is measured in a specific currency. This allows different things to compare against each other, for example, goods, services, assets, liabilities, labour, income, expenses.



- i. Academia: universities that provides research and support the growth of cryptocurrency.
- ii. Association: Trade and Industry that represent the use of the technology underlying cryptocurrency.
- iii. Advocacy groups who provides research and education on cryptocurrency. For example Coin Center.
- iv. Customers who buy cryptocurrency; etc.
 - Anti-competitive alliances are possible

b) Market power in broader relevant markets where a cryptocurrency participate

- Certain cryptocurrencies may gain a strong position in a relevant market.
- The stakeholders can engage in exclusionary or exploitative practices.

IV. Market power within cryptocurrency

a) Operators

- Users who perform validation and maintain the cryptocurrency's integrity

b) Code-developers

c) Input Providers

- Software, hardware, communication providers, financial services providers
- d) Normal Users**

- Those who use cryptocurrency as intended

V. Market power in broader relevant markets where a cryptocurrency participate

- Stakeholders within the various cryptocurrencies
- Wallets and exchanges
- Payment services providers
- Financial infrastructures
- Banks
- Internet or communication providers

MIGHT CRYPTOCURRENCIES EXPLOIT DOMINANT POSITION BUILT UPON NETWORK AND PLATFORM EFFECTS BY CHARGING EXCESSIVE TRANSACTION FEES?

Cryptocurrencies that are built upon blockchain are likely to subject of both platform and network effects. Therefore, for instance if in the more distant future they do replace credit card companies or other cash systems, then one or two might gain market power as a result of the take-up of that product by other users. While this is unlikely to become an issue anytime soon, there may, in some jurisdiction, then be a question of whether they exploitatively abuse that market power, for instance by raising transaction fees charged by those that validate the blockchain. This will eliminate the competition in any of the relevant market.

For a situation where diverse items offered independently by a dominant firm don't bring about the ideal deals, the dominant firm offers the items packaged together as bundles at such high rebate costs, that purchasers are compelled to purchase the packaged parcel of items as opposed to purchasing the particular required item. Such Bundling by a dominant provider is in violation of Section 4 of the Indian Competition law.

For instance, a particular cryptocurrency can be bundled with the payment wallet chargeable at lower transaction fees, while both the services are offered separately by the dominant firm but charges higher transaction fees for it.

Issue No. 2: Whether the use of cryptocurrency can give rise to unilateral conduct or abuse of dominance?



MIGHT CRYPTOCURRENCY EXPLOIT DOMINANT POSITION BY REFUSAL TO ACCESS?

Abuse of dominance can also be prompted by *refusal to access* of permissioned blockchain, where such existence is indispensable to contribute in the market. Wherever access stands organised and controlled mutually through current members of the consortia, such controlled arrangement of access might be used to foreclose or exit new entrants in the market. This concept is called “gating”.

For instance, if cryptocurrency replaces other tradition payment service in future, there will be need for blockchain network for all the banks in the market to facilitate payment. If a new entity was seeking entry in the market, it would require access to the blockchain in order to become a competitive force. This entity could be declined entry on the system by the controlling members (the guardians or gatekeepers) subsequently enjoying aggressive conduct and constraining the selections of buyers to execute only with the dominant one in the market.

MIGHT THIRD PARTIES EXPLOIT OR EXCLUDE USING A DOMINANT POSITION THAT DEPENDS UPON BLOCKCHAIN RELATED DEMAND?

For example, firms that sell the specialised hardware that is required for mining tokens might find themselves with market power over inputs required by blockchain users that ‘mine’ the currency (by solving the cryptographic challenges required to validate the blockchain). These users might have few alternatives, and so might find themselves subject to excessive pricing in the absence of regulation. Alternatively,

these firms might seek to leverage their market power in mining hardware into downstream markets.

MIGHT CRYPTOCURRENCIES ABUSE DOMINANT POSITION THROUGH EXCLUSION TRANSACTION BY CERTAIN USERS OR OF BLOCKS VALIDATED BY CERTAIN VALIDATORS?

Several stakeholders of the cryptocurrency markets can be said to have market power for instance Bitcoin. Several practices of these stakeholders can be considered as unilateral conduct of their dominant position according to the anti-trust law. Predatory Pricing can be considered as one of the exclusionary practice under the abuse of dominant position. Predatory Pricing involves a supplier who sets prices below the cost of production and therefore forcing the competitors out of the market.³⁹ For instance, a large block validator or a mining pool of a dominant cryptocurrency to set transaction fees below cost in the market with the intention to exclude a rival cryptocurrency.

MIGHT EXCHANGES, WALLETS OR PAYMENT SERVICES PROVIDERS MAY OBTAIN A DOMINANT POSITION AND DISCRIMINATE AGAINST CERTAIN CRYPTOCURRENCIES?

Another example can be that a marketing team of a cryptocurrency could provide important merchants and suppliers of payment services free or services charged

³⁹ Section 4, the Competition Act, 2002.



below cost in exchange for preferential handling of this particular currency. This could raise the exploitative or discriminatory practices against certain other cryptocurrencies resulting in foreclosure of competition in the market.

5. CONCLUSION

The principal reason for the Competition law is to secure and advance competition in the market. Competition is exceptionally essential as it benefits: the Consumers as they get more extensive selection of merchandise and enterprises, better quality and improved an incentive for cash; it benefits the Businesses as a dimension playing field is made and a redressal of against anti-competitive practices is accessible, the inputs are aggressively evaluated, they will, in general, have more prominent profitability and capacity to contend in worldwide markets lastly it additionally benefits the state as there is ideal acknowledgment from closeout of advantages and there is upgraded accessibility of assets for social part.

Accordingly, by ensuring competition in the market the competition law is advantageous to every player in the market which thusly is valuable for the economy all in all.

Violations of competition law can result in prolonged investigations and huge fines. In some jurisdictions, they can also expose companies to private litigation and, in the most serious cases, potential criminal liability. The situation is not yet clear how competition authorities will approach the regulatory issues raised by blockchain technology underlying cryptocurrency. But it is important for companies to be aware of the potential competition law risks as they begin to harness its benefits.

Blockchain technology, though still in its start, carries the promise to be the next huge disruption after the Internet, with its uses as wide as one's mind's eye. The exceptional features of blockchain such as pseudo-anonymity, transparency and immutability give limitless possibilities of its use cases even though as cryptocurrency. However, setting up a blockchain may involve direct or indirect collaboration between competitors at different levels in the value chain. Further, as the innovation develops and its uses develop into various divisions, it will exhibit competition challenges novel to the factual circumstance close by.


