

Virtual Competition: Challenges for Competition Policy in an algorithm driven market

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The Promises of a digital algorithm economy

The digital world has overtaken its offline counterparts in most aspects and is only expected to grow by leaps and bounds due to its economic efficiency features. Take online commerce for instance. It promotes greater transparency, ensures dissemination of symmetric information and ease of doing business. It allows low entry barriers and opportunity to expand without hurdles and reduces the concentration of power in the hands of one player, making monopolies a rare event in the market. It brings the virtual market to closely resemble a perfect competition.

The rapid growth of online platforms is, however, largely driven by the evolution of Big Data & Analytics and self-learning algorithms. Prof. Ariel Ezrachi argues that the *volume* of data; the *velocity* at which the data is collected, used and disseminated; the *variety* of information aggregated and the *value* of the data- commonly characterize Big Data. He further writes that the use and value of Big Data has increased with the rise of Big Analytics: the ability to design algorithms that can access and analyze vast amounts of information. Amazon, an online shopping platform, for instance uses computer algorithms to adjust pricing automatically rather than manually. These algorithms scoop personal and market data to match the best prices for the products available on shelf.

This could lead to a scenario of 'data advantage' amongst companies in order to harvest greater profits in the market. As the online sellers would begin to rely on Artificial Intelligence and algorithmic pricing, it is likely that their rivals will be tempted to develop 'smart' algorithmic pricing in order to sustain the competitive pressure.[1] The possible use of sophisticated pricing algorithms and Artificial Intelligence to enter into collusion or which may lead to conscious parallelism and their effect on competition in the virtual market eventually becomes a policy concern. This is amply demonstrated by the Google case, recently adjudicated upon by the Competition Commission of India ('Commission').

The Case of Google 'search bias' in India

The Commission recently imposed a penalty on Google for abusing its dominant position in online general search and advertising services. The order by the Commission impeaches Google's activities as a 'platform' for connecting Internet users with content providers/advertisers. The Commission, taking into account the two-sided nature of a digital platform, dispelled the contention that Google's services are provided to Internet users for 'free'. It held that Internet users form consideration by providing their attention or 'eyeballs' to the search result pages.

The Commission found Google to be engaging in 'search bias' by showing specialised results designs, i.e. by Google's preferential treatment of its own sites over its competitors. As Google search results run on algorithms designed by the technology company itself, this process is most likely to be biased favouring its own websites. Google has the flexibility to intervene with the self-learning algorithms and distort the ranking displayed on the SERP (Search Engine Results Page) to its advantage.

This raises two possible anti-trust violations: *Firstly*, Google favouring its own products and services while displaying results on SERP. Being a dominant entity, Google's SERP ranking may be justified. However, this should not discriminate against its competitors. As also suggested by the Commission, Google could have timely disseminated information about the algorithmic changes so that it does not compromise on its competitiveness and maintains transparency. *Secondly*, based on the user's search history, Google has access to a huge amount of personal data ('Big Data'), then translated to data-driven analytics and dynamic pricing. Google could leverage its Big Data power to harvest profit in its vertical market (Youtube, Google News, Google maps, etc.) to the disadvantage of other competitors.

The Indian regulator, following European Commission's stand that '*dominant undertakings* have a *special responsibility* not to impair genuine undistorted competition in the market', has declared Google's 'special responsibility' unequivocally.

Computer algorithm facilitated collusion

The nature of cartel activity today has evolved: algorithms now aid collusion. Pricing algorithms widen the ambit of the anti-competitive activities. The following are certain scenarios wherein computers could facilitate evolved method of price-collusion.

i. The Messenger scenario

Under this scenario, computer algorithms are used to facilitate information exchange by monitoring the cartel activities. Illustratively, executives from rival firms would fix prices, allocate markets or bids, or reduce. The agreement would then be enforced and monitored through the algorithm. The algorithms are mere 'intermediaries' to the '*per se*' illegality of the agreed upon actions of the human agents.

ii. Algorithm based Hub and Spoke

In the *traditional hub-and-spoke model*, the computer algorithms are used as central hub to coordinate competitors' prices and other activities. The 'hub' here is the main players/or individual player, which coordinates all the activities of the other players i.e. the 'spokes' either collectively or individually. Prof. Ezrachi argues that in order to show a single hub-and-spoke conspiracy, rather than multiple independent conspiracies, there must be a 'rim' of players who are aware of a conspiracy and have reason to believe that their own benefits are contingent upon the overall success of the entire venture.

Likewise, in an *algorithm-fueled hub-and-spoke model*, computer algorithms execute the 'hub' function to facilitate collusion among the competitors. Today, algorithmic pricing has made players quick to react to market dynamics. The online market, competitors usually do not interact directly with each other. They all use the upstream suppliers' pricing algorithm. Thus, many competitors operating on the same platform use a single algorithm and the prices automatically align.

iii. Algorithm enhanced conscious parallelism or Tacit Collusion

Pricing algorithms used individually by firms respond to market dynamics and in doing so may become synced and predictable. No actual agreement takes place between the executives. Firms unilaterally operate through their own pricing algorithms, which reach a similar common understanding that is not explicitly negotiated. However, each player is aware of the use of such pricing algorithm by others. They, thus, facilitate tacit collusion or conscious parallelism. In such cases it is difficult to get direct evidence but can be prosecuted premised on the anti-competitive *intent* of the firms. Both circumstances are difficult to establish given the complex nature of the algorithms used and difficulty in identifying the human perpetrator.

iv. Artificial Intelligence

Artificial Intelligence (AI) induced competition can be deceptive. As explained by *Maurice E. Stucke* in his book on Digital Competition, the enhanced ability of the computers to process huge amounts of data at real time speed could achieve a God-like or divine view of the market. This could amplify tacit collusion. Further, with experience, AI will be better placed to build even more sophisticated algorithms, which may from the lens of Digital Eye give us a perfect image of virtual competition.

Enforcement Challenges

i. Tacit Collusion

As seen above in Messenger and Hub-and-spoke model, it is easy to establish the existence of an agreement but under the other two scenarios- conscious parallelism and Artificial Intelligence- it is difficult to establish an agreement *per se*. Thus, it might be relevant for the competition authorities to look at the anti-competitive intent in such cases.

Though the question that needs to be addressed is -Whether use of similar algorithms to distort competition without the evidence of any illegal agreement be brought under the scanner of Competition law? Conscious parallelism behavior by firms in online market leading to equilibrium prices above competitive levels does not attract anti-trust provisions. Thus, the main challenge before the competition authorities is to bring under its scanner such algorithm developers who program machines to unilaterally support tacit collusion. Competition agencies lack enforcement tools to do so. Such cases might be prosecuted under the banner of 'unfair trade practice'. As in this case, 'anti-competitive intent' is a strong ground for establishing a cartel like activity; a legislation to counter excessive transparency can do its bit when the competitors in the market abuse this transparency.

ii. Artificial Intelligence (AI)

The enforcement could be even more challenging in case of AI. In the messenger, hub-and-spoke, and tacit collusion models, human agency, and intent are grounds of prosecution. However, in case of AI, there is complete isolation of the 'human' element from algorithms making strategic decisions. With no express agreement, no anti-competitive agreement and no human interference, what will the future be of the implications of Competition law on AI? The answer to that at the moment could be that nobody can be held liable and an adverse impact on 'consumer welfare' is inevitable fallout of Artificial Intelligence.

Way Forward: Smart Regulation by the Government and the Role of Antitrust Enforcers

In this context, the question that needs to be answered is whether with the advent of pricing algorithms, unilateral coordinated behavior of firms and Big Data, is the invisible hand sufficient to promote competition? A shift towards 'smart regulation' and intervention through 'digitized hands' is suggested. For instance, in the case of Uber, it is the algorithm that decides the base price for ride-sharing. This algorithm determines *when* to implement a surge price, for *which* areas, for how long; and to *what* extent. Uber gives the defence of demand-supply dynamics to counter the surge pricing. To solve this problem, it is proposed that governments should make use of Big Data and Data Analytics to effectively set a market price. This shall ensure a sense of belief amongst the consumers that the prices are as competitive and the pricing algorithms used by the government are equally reliable.

As such, there are *three key enforcement challenges* that needs to be addressed by antitrust authorities across jurisdictions: i) Does the competition agency have adequate tools to address the problems of an algorithm driven economy? ii) Who should the competition authorities hold liable in case of advanced and complex tacit collusion, involving the difficult legal issues of human accountability of a computers' behavior? iii) When is the appropriate time for competition agencies to intervene?

The competition agencies are currently struggling with the problem of designing new tools to address the difficulties posed by virtual competition. With the need to identify new tools, the competition authorities must

find a way out lest it sends a perception that large online platforms are above the law.^[2] In case of online markets, the entry is easier however the expansion is controlled by super-platforms, which try to reduce competition by introducing differential pricing, etc. It is difficult to identify the competition as genuine or illusory.

Can the existing antitrust law be applied to the current challenges in virtual competition? In some cases, despite a theory of harm being in place, it might be difficult for antitrust agencies to establish a violation. For instance, the Messenger and Hub-and-spoke scenario discussed above could be brought under Article 101 of the Treaty on the Functioning of European Union (TFEU),^[3] Section 1 of the U.S. Sherman Act and Section 3 of the Indian Competition Act, 2002, wherein the anti-competitive element can be established. However, where Artificial Intelligence plays a role, instances and participants of collusion are difficult to identify. It is also difficult to establish a clear market power in algorithm pricing, as it would completely depend on the relevant product and geographical market being defined. We need to build a framework for healthy virtual competition such that it promotes competition, advances consumer welfare and safeguards the privacy of the individual.

Thus, it is proposed that a specific legislation on privacy to give individuals more power over their personal data can arm them in this race of being tracked both online and offline has become an imperative. It might be useful to quote the EU Commissioners' 2016 speech where he stated 'competition law may not solve all the problems however it can make useful contribution in keeping digital markets level and open'.

[1] Ariel Ezrachi & Maurice E. Stucke, 'Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy', Harvard University Press (2016), at p. 21.

[2] House of Lords, Select Committee on European Union, 'Online Platforms and the Digital Single Market', (April 20, 2016), 10th Report of Session 2015-2016, para. 373.

[3] Daniel Mandrescu, 'Applying EU Competition law to online platforms: The Road Ahead-Part I', European Competition Law Review, 2017, 38 (8), 353-365, at p. 4