THE SILENT CONSPIRACY: ALGORITHMIC TACIT COLLUSION AND THE EVIDENTIARY VOID IN SECTION 3 OF THE COMPETITION ACT, 2002

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ABSTRACT

Section 3 of the Competition Act, 2002 was built to catch cartels, conspiracies formed by human beings who consciously chose to fix prices and harm competition. It was not built for a world where pricing algorithms, deployed independently by competing firms, learn on their own to coordinate prices above competitive levels without any human communication, instruction or intent. This phenomenon 'algorithmic tacit collusion' is already present in India's ride-hailing, e-commerce and real estate markets, and the law currently has no adequate response to it.

This paper examines the "accountability gap" that arises when anti-competitive harm occurs without any legally cognizable "agreement" under Section 2(b) of the Act. Drawing on the CCI's Market Study on Artificial Intelligence and Competition, the European Court of Justice's ruling in *Eturas*, and the United States' ongoing *RealPage* litigation, the paper argues that India's existing ex post, intent-based enforcement framework is structurally insufficient to address digital cartels that leave no paper trail. A shift from intent-based to functional liability is proposed, alongside a Plus Factors evidentiary standard and ex ante algorithmic transparency obligations.

Keywords: Algorithmic Collusion, Section 3, Competition Act 2002, Artificial Intelligence, Tacit Collusion, Evidentiary Standard, CCI, Plus Factors, Functional Liability.

Introduction

The digital revolution has fundamentally altered the competitive landscape of modern markets. The use of complex pricing algorithms driven by artificial intelligence and machine learning has created a paradigm that calls into question the fundamental presumptions underpinning competition law enforcement. The concept of 'Algorithmic Tacit Collusion', which occurs when independently deployed self-learning pricing algorithms automatically learn to coordinate prices above competitive levels without any human communication, explicit agreement, or shared intent, is at the core of this problem. The results are identical to those of a purposeful price-fixing cartel.[1]

The competitive harm inflicted by such algorithmic coordination is real and measurable. A significant empirical study by Calvano et al. demonstrated through controlled simulations that Q-learning algorithms, when placed in a competitive market environment, consistently learn to coordinate prices above competitive levels without any communication between them.[2] These conclusions are not only theoretical; they have been supported by enforcement proceedings in the United States, policy examination in the European Union, and market research carried out by the Competition Commission of India (CCI).[3]

The Competition Act, 2002, the main competition statute in India, was conceived and drafted during a time when collusion was seen as an essentially human activity that required a meeting of minds. Section 3 of the Competition Act, 2002 prohibits anti-competitive agreements.[4] The word 'agreement' is defined under Section 2(b) of the Act to mean "any arrangement or understanding or action in concert".[5] The critical issue is that, as per this definition, it still assumes that there are human beings who have consciously decided to coordinate with each other. An algorithm does not understand anything, nor does it arrange or concert with another algorithm in the way the law envisions. It simply computes the most profitable response to market conditions and sometimes, that response accidentally mirrors what a cartel would have deliberately done. As a result, this

[1]Ariel Ezrachi & Maurice E. Stucke, *Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy* 1 (Harvard Univ. Press 2016).
[2]Emilio Calvano et al., *Artificial Intelligence, Algorithmic Pricing and Collusion*, 110 *Am. Econ. Rev.* 3267, 3268 (2020).
[3]OECD, *Algorithms and Collusion: Competition Policy in the Digital Age* 10 (2017).
[4]Competition Act, 2002, § 3 (India).
[5]Competition Act, 2002, § 2(b) (India).

human-centric definitional structure leaves a significant conceptual and evidentiary gap, even though it is sufficient for regulating traditional cartels.

This accountability gap is not accidental but rather fundamental. No unlawful agreement, arrangement, or understanding has been formed in any legally enforceable sense as recognised by Indian law when two rival e-commerce platforms simultaneously raise prices by identical margins as a result of their respective pricing algorithms' independent responses to the same market signals. No command was issued, no paper was made, no executive communicated, and no intent was developed.[6] However, the consumer suffers a result comparable to that of the most heinous price-fixing cartel. It also highlights that, when this kind of situation arises, the CCI has no clear legal basis to act because no human agreement was signed.

This paper first addresses the different ways in which algorithms can produce coordinated pricing outcomes. It then analyses why Section 3 of the Competition Act falls short when faced with such conduct. It also addresses other jurisdictions that have attempted to deal with similar problems, particularly the European Union in the *Eturas* case[7] and the United States in the *RealPage* litigation.[8] Based on the CCI's own Market Study on Artificial Intelligence and Competition released in October 2025,[9] the paper concludes by proposing specific reforms: a shift from intent-based liability to functional liability for algorithms, and the adoption of a Plus Factors evidentiary standard suited to the realities of digital markets.

[6]Ariel Ezrachi & Maurice Stucke, *Artificial Intelligence & Collusion: When Computers Inhibit Competition*, 2017 *U. Ill. L. Rev.* 1775, 1780.

[7]Case C-74/14, Eturas UAB v. Lietuvos Respublikos Konkurencijos taryba, ECLI:EU:C:2016:42 (Eur. Ct. Justice 2016).

[8]Complaint, United States v. RealPage, Inc., No. 1:24-cv-00710 (M.D.N.C. Aug. 23, 2024).

[9]Competition Commission of India, *Market Study on Artificial Intelligence and Competition* 45 (2025) [hereinafter CCI AI Market Study].

The Architecture Of Algorithmic Collusion: A Taxonomy

Before engaging in legal analysis, intellectual rigour demands a precise taxonomy of the phenomenon under examination. Ezrachi and Stucke, in their foundational treatise *Virtual Competition*, identify four distinct modalities through which algorithms may facilitate anti-competitive price coordination.[10] Each modality presents different legal challenges and sits at different points along the spectrum of regulatory tractability.

A. The Messenger Algorithm

The simplest modality involves competitors using algorithms merely to execute a price-fixing agreement already reached by human actors. Executives agree to coordinate in the traditional fashion and simply delegate implementation to their respective algorithms. This raises no novel legal challenges, the anti-competitive agreement exists at the human level, and its automation is legally irrelevant. The CCI's existing enforcement toolkit under Section 3(3) is fully adequate.[11]

B. The Hub-and-Spoke Algorithm

The second modality involves competing firms subscribing to a common third-party algorithmic pricing platform, which functions as the "hub" of a collusive arrangement, with each competing firm constituting a "spoke." By subscribing to the same platform, competitors effectively share pricing inputs, methodologies and outputs, enabling the platform to coordinate pricing across the market without any direct horizontal communication between them.[12] This is precisely the structure at the heart of the *RealPage* litigation in the United States.[13]

C. The Predictable Agent Algorithm

The third modality occurs when a firm programs its algorithm to adopt a consistently predictable and transparent pricing strategy, effectively signalling to competitors how it will respond to any given market condition. A competitor, observing this predictable strategy, can then calibrate its own algorithm to exploit the resulting equilibrium. This creates a unilateral mechanism for

[10]Ezrachi & Stucke, *supra* note 1, at 32.
[11]Competition Act, 2002, § 3(3) (India).
[12]Ezrachi & Stucke, *supra* note 1, at 45–47.
[13]Complaint, *United States v. RealPage, Inc.*, No. 1:24-cv-00710, ¶¶ 1–5 (M.D.N.C. Aug. 23, 2024).

achieving coordinated outcomes without any communication whatsoever. The legal challenge here is acute: the collusion is entirely endogenous to the market structure, arising from the strategic deployment of transparency rather than from any agreement or concertation.[14]

D. The Digital Eye or Autonomous Collusion

The fourth and most legally challenging modality which addresses the primary focus of this paper arises when algorithms, without any initial human intent to collude, independently learn to coordinate supra-competitive prices through iterative market interaction.[15] This is the realm of reinforcement learning and Q-learning, where algorithms, by repeatedly playing the "market game" against one another, discover and stabilise collusive equilibria as a dominant strategy.[16] Calvano et al.'s seminal empirical demonstration of this phenomenon reveals that such collusion can arise even in thin markets with only two competitors, producing price-cost margins significantly above the Nash equilibrium benchmark.[17]

The importance of this taxonomy goes beyond theoretical discussion. It outlines the varying levels of regulatory challenges and identifies the moment when the current legal system breaks down. Conditions in the marketplace that favor algorithmic collusion exhibit certain common characteristics such as significant market concentration, uniformity of products, clear pricing, frequent price changes, and substantial entry barriers[18].[19] The duopoly in India's ride-hailing sector (Ola and Uber) along with leading e-commerce platforms (Amazon, Flipkart) operate under these precise conditions, making the threat of algorithmic collusion not just a theoretical concern but an immediate reality.[20]

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[14]Michal S. Gal, *Algorithmic-Facilitated Coordination: Market and Legal Solutions*, 2 *Competition Pol'y Int'l* 1, 8 (2019).
[15]Thibault Schrepel, *Computational Antitrust: An Introduction and Research Agenda*, 2021 *Stan. J. Blockchain L. & Pol'y* 1, 12.
[16]Calvano et al., *supra* note 2, at 3270.
[17]*Id.* at 3280–82.
[18]Salil Mehra, *Antitrust and the Robo-Seller: Competition in the Age of Algorithmic Pricing*, 100 *Minn. L. Rev.* 1323, 1345 (2016).
[19]OECD, *supra* note 3, at 10.
[20]CCI AI Market Study, *supra* note 9, at 47.

The Legislative Framework: Section 3 Of The Competition Act, 2002

Section 3 of the Competition Act, 2002 is the cornerstone of India's anti-cartel enforcement regime. Section 3(1) establishes the foundational prohibition by stating that no enterprise or association of enterprises shall enter into any agreement that 'causes or is likely to cause an appreciable adverse effect on competition' (AAEC) within India.[21] Whereas Section 3(3) creates a per se prohibition through the legal device of an irrebuttable presumption of AAEC for four categories of horizontal agreements such as price-fixing, output restriction, market allocation, and bid-rigging.[22]

► The "AGREEMENT" Definitional Structure

In Section 2(b) of the Act, the crucial term "**Agreement**" is defined in purposefully broad terms to include "any arrangement or understanding or action in concert," regardless of whether such an arrangement is formal, in writing, or legally enforceable.[23] This broad formulation was clearly intended by the legislature to capture every form of cartelistic conduct, including gentleman's agreements and informal understandings that evade documentation.

The term "**Action in Concert**" is drawn from the SEBI (Substantial Acquisition of Shares and Takeovers) Regulations and adapted for competition law purposes.[24] In the securities law context, "acting in concert" refers to persons who, pursuant to an agreement or understanding, whether formal or informal, act cooperatively with a view to acquiring or consolidating control over a company. This transplantation of a term from a context where human agency is assumed into the competition law domain has created significant interpretive ambiguities.

The critical interpretive question is whether an algorithm, an autonomous computer system enters into an arrangement, reach an understanding, or engage in an action in concert. The plain textual reading of Section 2(b) strongly suggests that these are intentional concepts requiring a conscious decision-maker. An algorithm, operating through probabilistic computations and reward-

[21]Competition Act, 2002, § 3(1) (India).

[22]Competition Act, 2002, § 3(3) (India); Competition Comm'n of India v. Steel Auth. of India Ltd., (2010) 10 SCC 744 (India).

[23]Competition Act, 2002, § 2(b) (India).

[24]Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeovers) Regulations, 2011, reg. 2(1)(q) (India).

maximisation functions, does not "understand" anything in a legally meaningful sense. It simply computes; it does not intend.[25]

This textual analysis is reinforced by the penal structure of the Act. Section 27 provides for heavy financial penalties for contravention of Section 3,[26] and the individual liability provisions of Section 48 hold directors and persons in charge of and responsible for the conduct of business liable for their company's contraventions.[27] These provisions are premised on human agency and decision-making power that are fundamentally inapplicable to autonomous algorithmic systems operating beyond the immediate control of their human principals.

► The AAEC Analysis and Its Algorithmic Limits

The AAEC analysis under Section 19(3) of the Act poses further difficulties even if the agreement requirement were successfully overcome. Market share, the degree of countervailing buying power, entry restrictions, and the potential for price increases are among the variables listed in Section 19(3) for determining competitive injury. In theory, algorithmically generated results can be subjected to these structural and outcome-focused requirements. However, their application in the absence of a validated agreement would essentially change Section 3 from an agreement-based prohibition to a de facto dominance clause, which would go against the basic architecture of the Act.

► The Presumption Under Section 3(3) and Its Algorithmic Inapplicability

Section 3(3) establishes a special evidentiary procedure for per se horizontal restraints. The CCI is presumed to have established AAEC upon proof of an agreement falling into one of the four listed categories. However, this enforcement instrument is entirely dependent on the earlier establishment of an agreement. The Section 3(3) presumption never takes effect if no agreement can be demonstrated, which is the structural reality in circumstances of autonomous algorithmic collusion. Ironically, the per se regime, which is intended to increase the effectiveness of

[25]Mehra, *supra* note 18, at 1330.
[26]Competition Act, 2002, § 27 (India).
[27]Competition Act, 2002, § 48 (India).

punishment for the most serious cartel behaviour, provides a safe harbour for the most technologically advanced variant of the same conduct.[28]

The CCI's jurisprudence on this point is instructive, albeit limited. In ***Samir Agrawal v. ANI Technologies Pvt. Ltd.***, the CCI was presented with an argument that Ola's surge pricing algorithm effectively coordinated the prices charged by nominally independent driver-partners, constituting an agreement in restraint of trade under Section 3. The CCI rejected this argument, holding that the driver-partners were not 'enterprises' in the relevant sense and that the algorithmic pricing mechanism did not constitute an agreement between competitors.[29] This decision reveals the CCI's resistance to extending the agreement concept to algorithmic price-setting contexts.

Similarly, in ***In Re: Cartelization in the Sale of LPG Cylinders***, the CCI emphasised that even circumstantial evidence of parallel conduct, absent a discernible "meeting of minds", is insufficient to establish an agreement under Section 2(b).[30] The CCI's adherence to a traditional intent-based conception of agreement thus creates a structural immunisation for algorithmic collusion. This position is supported by academic commentary identifying the resulting accountability gap.[31]

The Competition (Amendment) Act 2023 introduced significant procedural reforms, including deal value thresholds for merger control and the capacity to issue commitment decisions, but remained entirely silent on the question of algorithmic liability.[32] This legislative gap, coming in the wake of widespread international scholarly and regulatory attention to algorithmic collusion, represents a missed opportunity of considerable significance.[33]

[28]OECD, *supra* note 3, at 25.

[29]Samir Agrawal v. ANI Techs. Pvt. Ltd., Case No. 37 of 2018 (Competition Comm'n of India 2018), ¶¶ 13–16.

[30]In re: Cartelization in the Sale of LPG Cylinders Through Tenders by Pub. Sector Oil Cos., Case No. 63 of 2012 (Competition Comm'n of India 2013).

[31]Anna Tzanaki, *The Spectrum of Algorithmic Collusion and the Adequacy of Competition Law Responses*, 13 *Competition L. Int'l* 11, 22 (2019).

[32]Competition (Amendment) Act, 2023 (India).

[33]Schrepel, *supra* note 15, at 20.

The Evidentiary Void: Anatomy Of The Accountability Gap

This gap represents a crisis that is evidentiary, conceptual, and philosophical in nature. It renders the current enforcement regime obsolete and produces an accountability vacuum that outpaces the meeting of minds doctrine.

► **The Evidentiary Layer:** The Death of the Paper Trail

Traditional cartel enforcement depends upon evidence of communication between competitors. Whether investigating global air cargo markets or domestic LPG cylinder supply, the CCI has relied on panicked emails, secret diary entries, encrypted messages, or whistleblower confessions. To uncover such communication evidence, the CCI uses investigative tools such as dawn raids.[34]

Algorithmic collusion leaves no such trail. There is no meeting, no message, no document. The coordination happens entirely inside the algorithm like in weights, parameters and reward functions that no dawn raid can meaningfully uncover.[35] Even if the CCI obtained access to an algorithm's training data and architecture, proving that these technical features caused the observed market outcomes would require a level of economic and computational expert analysis that Indian competition proceedings have never seriously engaged with.[36]

► **The Conceptual Layer:** The Problem of Intent

Competition law everywhere, including India, has always treated collusion as a human choice. An agreement requires parties who consciously decide to coordinate. Even the broad language of "action in concert" under Section 2(b) assumes that real persons knowingly aligned their behaviour with someone else.

An algorithm makes no such choice. It simply computes the most profitable response to its market environment. If that response mirrors what a price-fixing cartel would have done, that is an emergent outcome of computation, not a deliberate decision. Punishing the algorithm is legally

[34]Competition Act, 2002, § 41 (India); OECD, *supra* note 3, at 25.
[35]Mehra, *supra* note 18, at 1345.
[36]Gal, *supra* note 14, at 18.

incoherent. But punishing the firm that deployed it raises an equally uncomfortable question: can liability attach to harm that was never intended and perhaps never even known?[37]

Other areas of Indian law have already answered this question affirmatively. Product liability under the Consumer Protection Act, 2019 imposes responsibility for defective products without proof of intent.[38] Environmental law, since *M.C. Mehta v. Union of India*, imposes strict liability for hazardous activities regardless of fault.[39] The question is therefore not whether Indian law is capable of moving beyond intent, but whether competition law is ready to make the same leap for algorithmic conduct.[40]

► **The Philosophical Layer:** The Problem of Legal Personality

Indian law, like all legal systems, recognises only two kinds of legal persons: human beings and corporate entities. Algorithms are neither. The firm that deployed the algorithm may have had no intention of colluding.[41] The developer who built it may have had no idea it would ever be used in this way. And yet consumers are paying higher prices because of it. Someone has caused harm, but the law cannot find anyone to blame.

Schrepel's concept of 'computational antitrust' offers a way out of this deadlock by arguing that competition law should stop asking who intended the harm and start asking what function the algorithmic system actually performed in the market. If the function is anti-competitive, liability should follow.[42]

► **The Market Reality:** India's Algorithmic Frontier

The accountability gap is not a future risk but a present reality in Indian markets. Amazon India and Flipkart use real-time dynamic pricing algorithms that constantly monitor and respond to each other's prices.[43] Ola and Uber's surge pricing algorithms have already attracted CCI scrutiny,

[37]Calvano et al., *supra* note 2, at 3280.
[38]Consumer Protection Act, 2019, § 84 (India).
[39]M.C. Mehta v. Union of India, (1987) 1 SCC 395 (India).
[40]Tzanaki, *supra* note 31, at 22.
[41]Schrepel, *supra* note 15, at 25.
[42]*Id.*
[43]Competition Commission of India, *Market Study on E-Commerce in India* (2020) [hereinafter CCI E-Commerce Study].

though without any definitive finding of algorithmic collusion.[44] The airline, hotel and financial services sectors are rapidly moving in the same direction.

The CCI's Market Study on E-Commerce (2020) acknowledged algorithmic pricing as a competitive concern but stopped well short of recommending any new legal standards.[45] This caution is understandable, but meanwhile the accountability gap keeps widening as algorithmic deployment across Indian markets accelerates.

Comparative Jurisprudence

► THE EUROPEAN UNION: ETURAS AND THE DOCTRINE OF DIGITAL CONCERTED PRACTICE

The most important judicial contribution to this debate from the European Union comes from the Court of Justice's ruling in *Eturas UAB v. Lietuvos Respublikos Konkurencijos Taryba* (2016).[46] While not a case about algorithms, its legal principles have proven remarkably useful for understanding how digital platforms can facilitate anti-competitive coordination.

The facts of *Eturas* involved a Lithuanian online travel booking platform that quietly sent a system notification to all travel agencies using it, informing them that discounts available through the platform would be technically capped at three percent. The agencies never explicitly agreed to this; they simply continued using the platform. The Lithuanian Competition Council treated this as a concerted practice.[47] The Court of Justice of the European Union held that this passive acceptance was sufficient: an agency that received the notification and did not publicly distance itself from it could be presumed to have participated in a concerted practice.[48] This became known as the doctrine of "digital acquiescence", silence in the face of an anti-competitive mechanism is itself treated as participation.[49]

[44]Samir Agrawal v. ANI Techs. Pvt. Ltd., *supra* note 29.
[45]CCI E-Commerce Study, *supra* note 43, at 65.
[46]Case C-74/14, Eturas UAB v. L,ietuvos Respublikos Konkurencijos taryba, ECLI:EU:C:2016:42 (Eur. Ct. Justice 2016).
[47]*Id.* ¶ 28.
[48]*Id.* ¶¶ 37–42.
[49]*Id.* ¶ 44.

Advocate General Szpunar's Opinion added a useful nuance, drawing a clear line between the algorithmic system itself, which cannot legally be a party to anything, and the human undertakings that deploy it.[50] This distinction makes sense within the EU framework, but it begins to break down in the "Digital Eye" scenario where no human ever consciously decided to coordinate at all.

There are also real limits to how far the *Eturas* framework can travel. It worked because there was a single shared platform connecting all parties through a common medium. That feature is absent when each competing firm independently operates its own algorithm. Additionally, EU law uses the concept of "concerted practice" under Article 101 TFEU,[51] which carries a meaningfully lower threshold than India's requirement of a formal "agreement" under Section 2(b). What the EU can capture under "concerted practice," Indian law may not reach at all.

The ***T-Mobile Netherlands* case**[52] adds a further dimension: the Court of Justice confirmed that even a single exchange of information between competitors can constitute a concerted practice if it reduces uncertainty about future conduct. Some scholars have extended this to algorithmic markets, arguing that observing a competitor's real-time pricing output is itself a form of information exchange. The Crémer, de Montjoye and Schweitzer report[53] recommended that EU competition law move towards capturing algorithmic coordination based on its functional economic harm rather than the presence of a traditional agreement—a direction India would do well to follow.

► The United States: RealPage and the Hub-and-Spoke Paradigm

The United States' antitrust action against RealPage Inc., filed by the Department of Justice in August 2024 and still proceeding through 2025, is the most consequential enforcement action against algorithmic pricing coordination anywhere in the world to date.[54]

The facts of the case states, RealPage operated a software product called YieldStar, an algorithmic revenue management tool used by landlords across the US residential rental market. Competing

[50] *Id.* ¶ 55.
[51] Treaty on the Functioning of the European Union art. 101, Oct. 26, 2012, 2012 O.J. (C 326) 47.
[52] Case C-8/08, T-Mobile Neth. BV v. Raad van bestuur van de Nederlandse Mededingingsautoriteit, 2009 E.C.R. I-4529, ¶ 33.
[53] Jacques Crémer, Yves-Alexandre de Montjoye & Heike Schweitzer, *Competition Policy for the Digital Era* (Eur. Comm'n 2019).
[54] Complaint, United States v. RealPage, Inc., No. 1:24-cv-00710-LCB-JLW (M.D.N.C. Aug. 23, 2024).

landlords who subscribed to the platform fed their confidential, non-public pricing data into the system. RealPage's algorithm then used this pooled data to generate rent recommendations for each subscribing landlord. The Department of Justice alleged that this structure made RealPage the "hub" of an illegal price-fixing conspiracy under Section 1 of the Sherman Act,[55] with each subscribing landlord acting as a "spoke."

What makes this theory particularly notable is that the DOJ did not need to prove that the landlords ever communicated with each other directly. The horizontal coordination was alleged to arise simply from the structural fact that they were all feeding sensitive pricing information into the same central system and all receiving pricing recommendations shaped by each other's data. The DOJ also drew on the hub-and-spoke doctrine from ***United States v. Apple Inc.***, which established that a platform orchestrating price coordination among horizontal competitors can itself be held liable as a co-conspirator.[56]

If the DOJ prevails, it would establish that sharing competitively sensitive data with a common algorithmic platform is itself illegal horizontal coordination and that both the platform and the subscribing competitors can be held liable without any direct communication between them.

This maps directly onto Indian market structures. Common repricing platforms used by third-party marketplace sellers, shared pricing engines in aviation and hospitality, and algorithmic intermediaries in financial services all present the same hub-and-spoke configuration. The CCI's 2025 Market Study flagged precisely these as competitive risks.[57] However, Section 3 still requires proof of an "agreement." Even under a hub-and-spoke analysis, the CCI would need to show that subscribing firms knew their shared platform use was creating an implicit horizontal arrangement between them a knowledge requirement that would be extraordinarily difficult to satisfy. Doctrinal borrowing alone is therefore insufficient, structural legislative reform is necessary.

[55]Sherman Antitrust Act § 1, 15 U.S.C. § 1 (2018).
[56]United States v. Apple Inc., 791 F.3d 290 (2d Cir. 2015).
[57]CCI AI Market Study, *supra* note 9, at 65.

The CCI's Market Study on Artificial Intelligence and Competition

The CCI's Market Study on Artificial Intelligence and Competition, released in October 2025, is the most authoritative Indian regulatory statement on algorithmic pricing to date.[58] It marks a clear shift in the CCI's institutional posture from cautious observation to genuine regulatory concern.

The Study identified several key risk vectors:

(a) Discriminatory personalised pricing by platforms with market power;[59]

(b) Deployment of common algorithmic pricing tools across competitors enabling de facto horizontal coordination;

(c) Use of algorithms to monitor and punish competitive deviations in real time; and

(d) Algorithmic predatory pricing designed to exclude smaller rivals.[60]

Critically, the Study acknowledged for the first time in any official CCI document that self-learning pricing algorithms can produce coordinated market outcomes without any communication between competitors, and that the definition of "agreement" may be inadequate to capture such coordination. It also referenced the *Eturas* framework[61] and the US hub-and-spoke doctrine,[62] recommending sector-specific guidelines for algorithmic pricing.

However, the Study's recommendations stopped well short of fundamental reform. Increased monitoring, inter-agency coordination with the Ministry of Electronics and Information Technology, and sector-specific guidelines are useful but insufficient. They do not address the structural legal deficit at the heart of the problem. Liability reform was deferred entirely to future legislative consideration, leaving an enforcement vacuum in the interim.[63]

[58] CCI AI Market Study, *supra* note 9.
[59] *Id.* at 53.
[60] *Id.*
[61] *Eturas*, ECLI:EU:C:2016:42.
[62] *RealPage*, No. 1:24-cv-00710.
[63] CCI AI Market Study, *supra* note 9.

The Structural Limits Of Ex Post Enforcement

The accountability gap examined throughout this paper is not simply the result of cautious interpretation by the CCI or the courts. It is a structural problem: the inevitable outcome of applying an ex-post, intent-based enforcement framework to a phenomenon that is prospective, autonomous and outcome-generating.[64] Four distinct mismatches explain why the current framework fails.

a) **Temporal Mismatch:** CCI enforcement moves slowly: complaints are filed, investigations opened, evidence gathered, and decisions rendered, often years after the harm occurred.[65] Pricing algorithms operate at millisecond intervals. By the time any investigation concludes, the algorithm will likely have been retrained multiple times, market conditions will have changed, and consumer harm will be long done and irreversible.

b) **Expertise Mismatch:** Investigating algorithmic collusion requires a combination of competition economics, machine learning and statistical analysis that the CCI's current enforcement machinery is not equipped to handle. The CCI acknowledged this gap in its 2025 Market Study and recommended the creation of specialised technical units, but building that institutional capacity will take years.

c) **Jurisdictional Mismatch:** Many pricing algorithms operating in Indian markets are developed and maintained by multinational technology firms based outside India.[66] Questions of jurisdictional reach, data sovereignty and cross-border regulatory cooperation remain largely unresolved under the current framework.[67]

d) **Conceptual Mismatch:** The requirement of an agreement assumes that competitive harm is caused by a human decision to coordinate. As Posner observed, even traditional tacit collusion among rational oligopolists escapes antitrust liability for this reason.[68] Algorithmic collusion goes further still: the coordination is not even the product of rational

[64]OECD, *Algorithms and Collusion: Competition Policy in the Digital Age* (2017).
[65]Tzanaki, *supra* note 31.
[66]Avirup Bose & Murali Kallummal, *The Jio Effect: An Analysis of Indian Competition Policy*, 16 *Competition L. Rev.* 23, 35 (2020).
[67]OECD, *Ex Ante Regulation and Competition in Digital Markets* (2021).
[68]Richard Posner, *Oligopoly and the Antitrust Laws: A Suggested Approach*, 21 *Stan. L. Rev.* 1562 (1969).

human calculation, but of automated iterative optimisation that operates entirely below the level of human deliberation.

Towards A New Framework: Functional Liability And The Plus Factors Standard

➢ Pillar I: Functional Liability for Algorithms

The foundational reform proposed is the introduction of functional liability into the Competition Act, 2002. The core idea, drawn from Ezrachi and Stucke's framework,[69] is straightforward: if an algorithm produces market outcomes that are functionally identical to those of an illegal price-fixing cartel, the deploying enterprise should be held liable regardless of whether any agreement, arrangement or intent existed.

This shifts the legal question from *"did they agree?"* to *"what did the algorithm actually do to the market?"*

This is not unprecedented in Indian law. The Consumer Protection Act, 2019 imposes liability on manufacturers for defective products irrespective of fault.[70] The Supreme Court in ***M.C. Mehta v. Union of India*** imposed strict liability for harm caused by hazardous activities without any requirement of negligence or intent.[71] Extending the same logic to algorithmic conduct is both conceptually coherent and legally consistent with existing principles.

Under functional liability, the CCI would need to prove only three elements:

(i) The algorithm produced supra-competitive price coordination;

(ii) The firms deploying it were competitors in the same market; and

(iii) The coordination cannot be explained by independent responses to common market signals.[72]

[69] Ezrachi & Stucke, *supra* note 1.
[70] Consumer Protection Act, 2019, § 84 (India).
[71] M.C. Mehta v. Union of India, (1987) 1 SCC 395 (India).
[72] *Eturas*, ECLI:EU:C:2016:42.

- **Pillar II: The Plus Factors Evidentiary Standard**

The second pillar addresses the evidentiary void directly. Borrowed from US antitrust jurisprudence, the "Plus Factors" doctrine holds that parallel pricing combined with additional structural or behavioural indicators can ground a finding of illegal coordination.[73]

The following five Plus Factors are proposed for the algorithmic context:

Plus Factor	What It Means
Supra-competitive pricing	Prices significantly above the competitive benchmark
Algorithm-specific market structure	Competing firms using similar algorithms with shared data inputs
Anomalous pricing synchrony	Simultaneous price movements that cannot be explained by common external market signals
Common third-party intermediary	Shared algorithmic platform pooling competitors' sensitive pricing data
Algorithmic opacity	A firm's refusal or inability to explain its algorithmic pricing outcomes to the CCI

Where multiple Plus Factors are present in combination, a rebuttable presumption of anti-competitive coordination under Section 3 should arise.[74] This structure mirrors the existing presumption mechanism under Section 3(3)[75] and is consistent with the EU's approach to information exchange as concerted practice.

[73]Interstate Circuit, Inc. v. United States, 306 U.S. 208 (1939).

[74]Competition Act, 2002, § 3 (India); *In re: Cartelization in the Sale of LPG Cylinders*, Case No. 63 of 2012 (Competition Comm'n of India 2013).

[75]Competition Act, 2002, § 3(3) (India).

- **Pillar III: Ex Ante Transparency and Algorithmic Audit Obligations**

Rather than waiting for harm to occur and then attempting to investigate it, this pillar establishes proactive obligations on firms deploying algorithmic pricing in concentrated markets:

Obligation	Details
Advance notification	Notify CCI before deployment in markets above a specified HHI threshold
Mandatory algorithmic audits	Regular third-party audits of algorithm design, training data, and market outcomes
Data access rights	CCI access to training data and pricing logs during formal investigations
Kill-switch obligation	Firms must be able to immediately suspend algorithmic pricing on CCI direction

These obligations are modelled on the EU's Digital Markets Act[76] and the OECD's ex ante regulatory recommendations.[77] The CCI's 2025 Market Study supported algorithmic transparency in principle but stopped short of mandating algorithmic audits.[78]

[76]Regulation (EU) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on Contestable and Fair Markets in the Digital Sector (Digital Markets Act), 2022 O.J. (L 265) 1.
[77]OECD, *supra* note 67, at 15.
[78]CCI AI Market Study, *supra* note 9.

Conclusion

The deployment of self-learning pricing algorithms in India's digital markets has produced what this paper has called a "silent conspiracy". Competitive harm that is structurally identical to illegal price-fixing, but leaves none of the evidentiary traces that existing competition law enforcement depends upon. It is silent in two senses, no communication occurs between competitors, and the law offers no effective response.

The accountability gap is a structural problem as the inevitable consequence of applying a legal framework built around human intentionality and explicit agreement to a phenomenon that is autonomous, non-intentional and emergent. Section 2(b), Section 3(3) per se framework, and Section 48 individual liability provisions all presuppose that competitive harm is caused by human choices. Algorithmic pricing confounds that presupposition entirely.

The comparative analysis of *Eturas* and *RealPage* demonstrates that even the most sophisticated competition law jurisdictions are still struggling with this challenge. No jurisdiction has yet produced a comprehensive legislative solution. India, as a rapidly digitising economy with high concentration in its key digital markets, has both the necessity and the opportunity to be a first-mover in this space.

The three-pillar framework addresses in this paper offers a principled and evidence-based response. It builds on existing Indian legal principles, highlights the specific evidentiary challenges of algorithmic markets, and aligns with the direction of international regulatory thinking reflected in the OECD's work, the EU's Digital Markets Act, and the CCI's own 2025 Market Study.

The digital economy cannot be permitted to become a space where harm is real but legal accountability is absent simply because the speed and complexity of algorithmic conduct exceed the conceptual horizon of a pre-digital legal framework. The silent conspiracy must not be allowed to remain silent in the eyes of the law.

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