



CODE AS AGREEMENT: SHARED PRICING ENGINES, HUB-AND-SPOKE LIABILITY AND THE LIMITS OF SECTION 3 OF THE COMPETITION ACT, 2002

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ABSTRACT :

When rival firms license the same pricing engine, the question whether they have ‘agreed’ on price increasingly turns on facts that engineers, not lawyers, create: what data the engine ingests, whether it pools rivals’ non-public inputs, and whether it recommends prices or executes them. Since the Competition (Amendment) Act, 2023, section 3(3) of the Competition Act, 2002 has carried an express hub-and-spoke proviso that presumes a non-competing enterprise to be part of a horizontal agreement if it ‘participates or intends to participate’ in its furtherance. No reported Indian decision has yet applied that proviso to shared pricing software. This article argues that the proviso supplies the words but not the evidentiary or doctrinal tools to apply them to a software vendor’s design choices. Drawing on the Third Circuit’s July 2026 decision in *Cornish-Adebiyi v Caesars Entertainment*, the Ninth Circuit’s decision in *Gibson v Cendyn Group*, the RealPage consent judgment, California’s AB 325, the Court of Justice’s judgment in *Eturas* and the Competition Commission of India’s 2025 Market Study on Artificial Intelligence and Competition, it proposes a design-based test of the vendor’s intent, paired with a rebuttable safe harbour for tools that run only on a firm’s own or public data. It also argues that the problem of autonomous self-learning agents should be addressed through deployment-based responsibility and audit, not by diluting the agreement requirement.

Keywords: algorithmic collusion; hub-and-spoke cartels; Competition Act 2002; section 3(3); pricing software; information exchange; Competition Commission of India

1. INTRODUCTION

Pricing is increasingly delegated to software. Hotels, airlines, residential landlords and online retailers now license revenue-management engines that ingest demand signals and return a recommended, or automatically executed, price. When several competitors in one market license the same engine, a question that competition law has always answered by looking for human contact (a meeting, a call, an e-mail) has to be answered by looking at code. The decisive facts are design facts: what data the engine ingests, whether it pools the non-public inputs of rival licensees, and whether it merely recommends a price or sets it. Those facts are created by engineers, product managers and data scientists long before any lawyer reviews them.

Three recent developments make the problem pressing for India. First, the Competition Commission of India (CCI) published its *Market Study on Artificial Intelligence and Competition* in October 2025. The study identifies algorithmic collusion as a novel risk and recommends that enterprises carry out self-audits of their AI systems for competition compliance.¹ Second, on 29 July 2026 the United States Court of Appeals for the Third Circuit in *Cornish-Adebiyi v Caesars Entertainment* revived a hub-and-spoke price-fixing claim against Atlantic City casino-hotels. The plaintiffs alleged that the hotels fed non-public, real-time pricing and occupancy data into a common pricing tool whose recommendations they followed about 90 per cent of the time.² Third, since the Competition (Amendment) Act, 2023, section 3(3) of the Competition Act, 2002 (the Act) has carried an express proviso that presumes a non-competing enterprise to be part of a horizontal agreement if it ‘participates or intends to participate in the furtherance of such agreement’.³ Practitioner commentary indicates that no reported Indian decision has yet applied the proviso to shared pricing software.⁴ That gap between statutory text and doctrinal application is where this article sits.

* [Designation], [Institution]. Acknowledgements may be added here.

¹Competition Commission of India, *Market Study on Artificial Intelligence and Competition* (6 October 2025).

²*Cornish-Adebiyi v Caesars Entertainment Inc*, No 24-3006, 2026 WL 2182291 (3d Cir, 29 July 2026).

³Competition Act 2002, s 3(3), second proviso, inserted by the Competition (Amendment) Act 2023.

⁴Aaliya Noorudheen, ‘When Competitors Use the Same Pricing Algorithm: Where Independent Parallelism Ends and Concerted Practice Begins’ (*Khurana & Khurana*, 28 September 2026) <<https://www.khuranaandkhurana.com/when-competitors-use-the-same-pricing>> accessed 12 October 2026; see also Sanjay Vashishtha and Abhay Pratap, ‘Navigating the Hub-and-Spoke Cartel in India: An Analytical Overview of the New Provision’ 2023 SCC OnLine Blog Exp 75.

The research question is this: when competitors adopt a common pricing engine, when does the engine's architecture supply the 'agreement' that section 3(3) requires and, for the vendor, the participation or intention to participate that the 2023 proviso requires?

The problem is best framed through the four-part taxonomy associated with Ezrachi and Stucke.⁵ In the first, the *messenger* scenario, algorithms merely implement a cartel that humans have already agreed; the prosecutions of online poster sellers in the United States and the United Kingdom are the standard examples, and they raise no conceptual difficulty.⁶ In the second, the *hub-and-spoke* scenario, rivals use a common tool supplied by a third party, and coordination runs through the hub. In the third, the *predictable agent* scenario, each firm runs its own algorithm that monitors and reacts to rivals' prices, producing parallel outcomes without express communication. In the fourth, the *autonomous agent* or 'digital eye' scenario, self-learning systems discover supra-competitive pricing strategies by themselves. Simulation research suggests that reinforcement-learning agents can learn to sustain collusive prices without communicating,⁷ and empirical work on the German retail fuel market found that margins rose markedly where both firms in a local duopoly adopted algorithmic pricing.⁸ This article concentrates on the second category, tests its boundary against the third, and treats the fourth as a limiting case.

The argument is that section 3(3) now supplies the words but not the evidentiary or doctrinal tools to apply them to a software vendor's design choices. The workable approach is a design-based test of the vendor's intent, paired with a rebuttable safe harbour for tools that run only on a firm's own data or on public information. Part 2 explains why engineering facts are legal facts. Part 3 sets out the Indian framework. Part 4 compares the experience of the United States and the European Union. Part 5 develops the argument on intent, the agreement gap for autonomous agents, proof, and procedural exposure. Part 6 states proposals and meets the principal counter-arguments, and Part 7 concludes.

2. A TECHNICAL PRIMER: WHY ENGINEERING FACTS ARE LEGAL FACTS

A revenue-management engine has four stages, and each stage maps onto a distinct legal question. Lawyers do not need to understand the mathematics of the model. They do need to know where data enters, where it is combined, and who decides the final price.

Inputs. The engine first ingests data. In every design this includes the licensee's own inventory, bookings and demand history, and often public information such as rates scraped from booking websites. The contested designs add a third source: non-public data supplied by other licensees who compete with the user. In *Cornish-Adebisi* each casino-hotel allegedly supplied its current, non-public room-rate and occupancy data to the vendor's software, which processed it together with competitors' data.⁹ Whether rivals' confidential inputs are pooled is the single most important design fact. The Ninth Circuit in *Gibson v Cendyn Group* affirmed dismissal of a claim against Las Vegas hotels using the same vendor's software, but noted that its analysis might change if the vendor had shared each hotel's confidential information among licensees.¹⁰

The model. The engine then applies a forecasting or optimisation model, increasingly a machine-learning one. Two engineering choices matter here. The first is *when* pooled data is used: to train a general model, or at inference time to price a specific unit on a specific date. The second is *how* it is used: at what level of aggregation and with what time lag. These choices are not legal abstractions. The final judgment entered against RealPage in May 2026 regulates exactly these variables, limiting the use of non-public competitor data to data more than twelve months old and constraining the granularity of the software's outputs.¹¹

Outputs and execution. The engine returns a recommended price, which the user accepts, overrides, or has executed automatically. The legal question is whether each user keeps independent pricing discretion or has in substance delegated it to the vendor. Formal override rights are not decisive. In *Cornish-Adebisi* recommendations were allegedly uploaded automatically into each hotel's property-management system, overrides required special permissions, and the vendor scored hotels on how often they deviated. The Third Circuit held that retained override authority did not defeat the inference of agreement, treating the recommendation as an agreed starting point for pricing.¹² Override friction is therefore a design feature with legal consequences.

Commercial wrapper. Finally, the vendor markets the tool. Statements that most of the market uses the product, that clients follow recommendations most of the time, or that the tool helps the industry avoid a 'race to the bottom' are evidence that users know rivals use the same engine and that the vendor intends coordination. The Third Circuit treated a former vendor executive's encouragement to avoid such a race as non-economic evidence suggestive of conspiracy.¹³

⁵Ariel Ezrachi and Maurice E Stucke, *Virtual Competition: The Promise and Perils of the Algorithm-Driven Economy* (Harvard University Press 2016).

⁶*United States v Topkins*, No CR 15-00201 (ND Cal 2015) (plea agreement); Competition and Markets Authority, *Online Sales of Posters and Frames* (Case 50223, 12 August 2016).

⁷Emilio Calvano and others, 'Artificial Intelligence, Algorithmic Pricing, and Collusion' (2020) 110 *American Economic Review* 3267.

⁸Stephanie Assad and others, 'Algorithmic Pricing and Competition: Empirical Evidence from the German Retail Gasoline Market' (2024) 132 *Journal of Political Economy* 723.

⁹*Cornish-Adebisi* (n 2); Matthew D Provan and others, 'Algorithmic Price Fixing After *Cornish-Adebisi*: The Third Circuit Revives Hub-and-Spoke Claims Against Shared Pricing Software' (*Mayer Brown*, 3 August 2026) <<https://www.mayerbrown.com/en/insights/publications/2026/07/algorithmic-price-fixing-after-cornish-adebiyi-the-third-circuit-revives-hub-and-spoke-claims-against-shared-pricing-software>> accessed 12 October 2026.

¹⁰*Gibson v Cendyn Group LLC* 148 F 4th 1069 (9th Cir 2025).

¹¹*United States v RealPage Inc*, No 1:24-cv-00710 (MDNC), final judgment as to RealPage Inc entered May 2026; see Grace Dixon, 'NC Judge OKs DOJ, RealPage Deal in Antitrust Suit' *Law360* (19 May 2026); Provan and others (n 9).

¹²*Cornish-Adebisi* (n 2); Provan and others (n 9).

¹³*ibid*.

Table 1 maps each feature to its legal significance and to the authority on which this article builds.

Table 1: Engineering features and their legal significance

Engineering feature	Legal significance	Principal authority
Pooling of rivals' non-public data into one model	Information exchange by design; turns a lawful software licence into a potential conduit for coordination	<i>Cornish-Adebiyi; Gibson</i> (by contrast)
Age and granularity of pooled data	Distinguishes historical, aggregated benchmarking from real-time exchange of strategy	RealPage final judgment (2026)
Recommendation versus automatic execution; override friction	Whether each user retains independent pricing discretion or delegates it to the hub	<i>Cornish-Adebiyi</i> ; DOJ allegations in <i>RealPage</i>
Vendor marketing of adoption and compliance rates	Evidence of users' awareness and of the hub's intent to coordinate	<i>Cornish-Adebiyi; Eturas</i>
Self-learning agents trained on market feedback	Coordination without communication; the agreement requirement strains	CCI Market Study (2025)
Tools using only a firm's own data and public information	Candidate for a rebuttable safe harbour	Indian practitioner commentary

3. THE INDIAN DOCTRINAL FRAMEWORK

A. The Statutory Base

Section 3(1) of the Act prohibits agreements that cause or are likely to cause an appreciable adverse effect on competition (AAEC) in India. 'Agreement' is defined in section 2(b) to include any arrangement, understanding or action in concert, whether or not formal, written or intended to be enforceable.¹⁴ Section 3(3) presumes AAEC for agreements between enterprises engaged in identical or similar trade that (a) directly or indirectly determine purchase or sale prices, (b) limit or control output, (c) share markets or sources, or (d) result in bid rigging. The 2023 Amendment added a further proviso:

Provided further that an enterprise or association of enterprises or a person or association of persons though not engaged in identical or similar trade shall also be presumed to be part of the agreement under this sub-section if it participates or intends to participate in the furtherance of such agreement.¹⁵

A hub-and-spoke case under the proviso therefore has four elements:

- (i) an agreement among enterprises of a kind listed in section 3(3)(a) to (d), that is, the 'rim' among the spokes;
- (ii) a hub that is not engaged in identical or similar trade with the spokes;
- (iii) participation, or intention to participate, by the hub in the furtherance of that agreement; and
- (iv) on those showings, a rebuttable presumption of AAEC that extends to the hub.

Two features deserve emphasis. The proviso does not relieve the CCI of proving the rim: the hub is presumed to be part of *an agreement under this sub-section*, which must first exist. And the presumption is rebuttable, so the hub and spokes may contest both the existence of the agreement and the AAEC by reference to the factors in section 19(3).

B. Agreement and Parallel Conduct in the CCI's Practice

Indian decisional practice requires more than parallel pricing to establish an agreement, but the threshold has not been applied consistently. In the air-cargo fuel surcharge case the CCI inferred concerted action from near-simultaneous and parallel revisions of a fuel surcharge for which the airlines offered no persuasive independent explanation, and imposed penalties despite the absence of direct evidence of meetings.¹⁶ In the tyre cartel the CCI relied on a richer 'parallelism plus' record: closely parallel price increases, together with the collection and circulation of price, production and dispatch data through the manufacturers' trade association.¹⁷

¹⁴Competition Act 2002, s 2(b).

¹⁵Competition Act 2002, s 3(3), second proviso (n 3).

¹⁶*Express Industry Council of India v Jet Airways (India) Ltd* 2018 SCC OnLine CCI 11.

¹⁷*In re Alleged Cartelisation in the Tyre Sector* (Reference Case No 08 of 2013, CCI, 31 August 2018); see Nishith Desai Associates, 'Tyre Cartel: The CCI Rolls-on with Price Parallelism "Plus" Against Tyre Manufacturers' (*Competition Law Hotline*, 29 April 2022).

The most directly relevant decision is *Shikha Roy v Jet Airways*, concerning fare increases on northern routes during the 2016 Jat agitation. The CCI ordered an investigation precisely because it considered that algorithmic pricing could enable collusion without human intervention. The Director General (DG) found no price parallelism, and the CCI noted that the airlines used different software for different fare buckets. Finding no evidence of any agreement, it closed the case.¹⁸ The Supreme Court has likewise cautioned that parallel conduct in an oligopolistic market, there identical bids to a single buyer, does not by itself prove a cartel.¹⁹

The lesson for shared pricing engines is double-edged. The CCI has shown willingness to investigate algorithms, and it has treated the use of *different* software as part of the explanation for independent conduct. But the fuel surcharge reasoning shows that unexplained parallelism can, at least at the CCI stage, carry an inference of concert. In markets where rivals run the same engine, parallel prices will often have an apparently ‘natural’ explanation (the common model) that is also the very mechanism under suspicion.

C. Samir Agrawal: What the Ola and Uber Matter Does and Does Not Decide

In *Samir Agrawal* the informant alleged that the ride-hailing platforms’ fare algorithms enabled a hub-and-spoke cartel among drivers. The CCI rejected the allegation because there was no evidence that drivers had agreed among themselves to delegate pricing to the platform, or that the platform coordinated drivers’ prices on their behalf; each driver simply accepted a price set by the platform’s own algorithm.²⁰ The NCLAT affirmed on the merits while holding that the informant lacked standing. The Supreme Court corrected the standing point, holding that ‘any person’ may provide information to the CCI, but declined to interfere with the finding of no contravention.²¹

The decision should not be read as holding that the use of a common pricing tool is lawful. Its facts involved a single platform’s proprietary algorithm setting prices for drivers who were not, in any meaningful sense, independent price-setters, and there was no allegation that rival platforms used a common tool or pooled data. A case in which competing hotels, airlines or retailers each license one vendor’s engine and feed it their confidential data is structurally different. The Supreme Court’s broad view of standing is, however, important in the opposite direction: it lowers the barrier for any person to trigger CCI scrutiny of shared pricing tools (Part 5C).

D. The Legislative Choice in the Proviso

The drafting history shows a deliberate choice. The Competition Law Review Committee recommended in 2019 that hub-and-spoke arrangements be expressly brought within section 3(3), without any requirement of knowledge or intent.²² The draft Bill of 2020 and the Competition (Amendment) Bill, 2022 instead proposed that a non-competitor be presumed part of the agreement if it ‘actively participates’ in its furtherance.²³ Industry bodies told the Standing Committee on Finance that ‘actively participates’ was vague, and the Committee recommended that the presumption arise only if it is proved that the person ‘intended to actively participate’.²⁴ Parliament adopted neither formulation. It enacted the broader disjunctive wording: ‘participates or intends to participate’.

Two consequences follow. First, by dropping ‘actively’, Parliament signalled that the hub need not take a step inside the cartel; intention alone suffices. Second, by not requiring that intention be *proved* as a precondition of the presumption, it left the evidential route to intention unspecified. Commentators have warned that, read broadly, the provision could reach a hub that merely knows of, or fails to stop, coordination among its clients, and have suggested that a hub wishing to rebut an inference of intent may need to have recorded its disapproval of the collusion.²⁵ That suggestion echoes the European doctrine of public distancing discussed in Part 4. The statute, in short, supplies a standard without telling the CCI, vendors or users how intention is to be shown in the case of a software product.

E. The CCI’s 2025 Market Study

The CCI’s Market Study classifies algorithmic risks into monitoring, hub-and-spoke, signalling and self-learning algorithms. It observes that self-learning systems can produce tacit coordination without human intervention, which blurs the line between explicit and tacit collusion.²⁶ Its recommendations are self-audits of AI systems (documenting decision logic, periodically reviewing outputs for inadvertent collusion, and reviewing AI-driven pricing strategies), algorithmic transparency, capacity-building, and inter-regulatory coordination.²⁷ It does not propose binding rules. Commentators have

¹⁸*Shikha Roy v Jet Airways (India) Ltd* 2021 SCC OnLine CCI 31.

¹⁹*Rajasthan Cylinders and Containers Ltd v Union of India* (2020) 16 SCC 615.

²⁰*Samir Agrawal v ANI Technologies Pvt Ltd* 2018 SCC OnLine CCI 86.

²¹*Samir Agrawal v Competition Commission of India* 2020 SCC OnLine NCLAT 811; *Samir Agrawal v Competition Commission of India* (2021) 3 SCC 136.

²²Ministry of Corporate Affairs, *Report of the Competition Law Review Committee* (July 2019).

²³Competition (Amendment) Bill 2022, cl 4; Vashishtha and Pratap (n 4).

²⁴Standing Committee on Finance (2022–23), *Fifty-Second Report: The Competition (Amendment) Bill, 2022* (Lok Sabha Secretariat, 13 December 2022); Vashishtha and Pratap (n 4).

²⁵Bharat Budholia, Anmol Awasthi and Khushi Agarwal, ‘The Intent Dilemma in Hub and Spoke Offences’ (April 2025) *India Business Law Journal* 58; AZB & Partners, ‘Hub-and-Spokes Cartels: Codification and Challenges’ (12 February 2024) <<https://www.azbpartners.com/bank/hub-and-spokes-cartels-codification-and-challenges/>> accessed 12 October 2026.

²⁶CCI, *Market Study* (n 1).

²⁷*ibid*; Economic Laws Practice, ‘CCI Publishes a Market Study on Artificial Intelligence and Competition’ (October 2025) <<https://elplaw.in/wp-content/uploads/2025/10/CCI-publishes-a-market-study-on-Artificial-Intelligence-and-Competition.pdf>> accessed 12 October 2026.

described the approach as ‘light touch’, noting that the self-audit recommendation is voluntary and carries no reporting obligation.²⁸ That restraint is defensible for a market study, but it leaves the proviso without any published interpretive guidance.

4. COMPARATIVE EXPERIENCE

The comparative question is whether other regimes have found a workable line between lawful common use of a vendor and unlawful coordination through it. The answer emerging from the United States and the European Union is that the decisive variable is not the common vendor but what the tool does with data and what its users know.

A. United States: The Courts

American hub-and-spoke doctrine has long held that competitors who knowingly accept an invitation to act in concert, knowing that rivals have received the same invitation, may be found to have agreed even without direct contact.²⁹ Later appellate decisions confirm that a hub-and-spoke conspiracy requires a ‘rim’ of horizontal agreement among the spokes.³⁰ At the pleading stage, parallel conduct alone is insufficient; it must be accompanied by plus factors that make independent action implausible.³¹ District courts applying these principles to pricing software divided. Claims against residential landlords using RealPage and Yardi software survived motions to dismiss, while claims against hotel operators were dismissed.³²

The Ninth Circuit’s August 2025 decision in *Gibson* was the first appellate ruling. The plaintiffs had abandoned their hub-and-spoke theory on appeal and did not allege that the vendor shared one hotel’s confidential data with another. The court treated each licence as an ordinary software contract that required no particular rate and imposed no restraint, and held that the independent adoption of the same tool, even with knowledge of rivals’ use, did not state a claim. The Supreme Court denied certiorari in April 2026.³³

The Third Circuit’s decision in *Cornish-Adebiyi* eleven months later reversed a dismissal on materially different allegations. The court found parallel conduct in the hotels’ continuous delegation of pricing to a shared pricing agent and in synchronous movements of room rates (up 22 to 25 per cent) and occupancy (down 5 to 8 per cent) during the class period. It identified plus factors including motive in a concentrated market, conduct contrary to self-interest (casino-hotels traditionally use rooms as loss leaders), a de facto exchange of confidential data through the software, and each hotel’s knowledge of rivals’ use. It held that plaintiffs need not plead the mechanics of a proprietary algorithm before discovery, and that staggered adoption over many years did not defeat parallelism because AI tools evolve after adoption. The court also adopted an analogy attributed to former FTC Acting Chair Maureen Ohlhausen: if it would be unlawful for a human intermediary to collect confidential pricing strategy from every competitor and tell each how to price, it is no more lawful when an algorithm does so.³⁴ At the same time, the court stressed that merely using the same independently operated software is not necessarily unlawful. Read together, *Gibson* and *Cornish-Adebiyi* are largely reconcilable: the pooling of non-public competitor data is the dividing line.³⁵

B. United States: Enforcement and Legislation

The Department of Justice (DOJ) sued RealPage and several large landlords in 2024, alleging that the software pooled landlords’ competitively sensitive, non-public data to generate aligned rent recommendations. The landlords settled in stages, and RealPage agreed a consent judgment that a federal court in North Carolina entered in May 2026. The judgment contains no admission of liability and no monetary penalty. It restricts RealPage’s use of non-public competitor data (permitting only data more than twelve months old), limits the granularity of outputs, and installs a court-appointed monitor.³⁶ In May 2026 a senior DOJ official went further, stating that competitors who knowingly agree to use software that relies on their non-public data to set prices may face criminal, per se liability.³⁷

California has legislated. Assembly Bill 325, signed on 6 October 2025 and in force from 1 January 2026, amends the Cartwright Act to prohibit the use or distribution of a ‘common pricing algorithm’ as part of a contract, combination or conspiracy in restraint of trade, and separately prohibits coercing

²⁸Talwar Thakore & Associates, ‘AI Market Study: CCI Adopts “Light Touch” Approach, Recommends Self-Regulation’ (*Competition Update*, October 2025) <<https://tta.in/?p=12914>> accessed 12 October 2026; *MediaNama* (October 2025) <<https://www.medianama.com/2025/10/223-india-competition-regulator-ai-driven-market-concentration/>> accessed 12 October 2026.

²⁹*Interstate Circuit Inc v United States* 306 US 208 (1939).

³⁰*Toys ‘R’ Us Inc v Federal Trade Commission* 221 F 3d 928 (7th Cir 2000); *United States v Apple Inc* 791 F 3d 290 (2d Cir 2015).

³¹*Bell Atlantic Corp v Twombly* 550 US 544 (2007).

³²*In re RealPage Inc, Rental Software Antitrust Litigation (No II)* 709 F Supp 3d 478 (MD Tenn 2023); *Duffy v Yardi Systems Inc*, No 2:23-cv-01391 (WD Wash, 4 December 2024); for the hotel cases, see *Gibson* (n 10) and *Cornish-Adebiyi* (n 2) (reversing the District of New Jersey).

³³*Gibson* (n 10), cert denied, No 25-1109 (US, April 2026); *Provance and others* (n 9).

³⁴*Cornish-Adebiyi* (n 2); *Provance and others* (n 9); Covington & Burling, ‘Third Circuit Reinstates Algorithmic Pricing Antitrust Lawsuit: *Cornish-Adebiyi v Caesars Entertainment, Inc*’ (August 2026) <<https://www.cov.com/en/news-and-insights/insights/2026/08/third-circuit-reinstates-algorithmic-pricing-antitrust-lawsuit-cornish-adebiyi-v-caesars-entertainment-inc>> accessed 12 October 2026.

³⁵*Provance and others* (n 9).

³⁶*RealPage* (n 11).

³⁷*Provance and others* (n 9), reporting remarks of Acting Deputy Assistant Attorney General Daniel Glad, ‘Old Crime, New Code’ (14 May 2026); Arnold & Porter, ‘Algorithmic Pricing: Navigating Antitrust and Consumer Protection Risks’ (Advisory, June 2026) <<https://arnoldporter.com/en/perspectives/advisories/2026/06/algorithmic-pricing-navigating-antitrust-and-consumer-protection-risks>> accessed 12 October 2026.

another person to adopt an algorithm's recommended price or commercial term. A common pricing algorithm is any methodology used by two or more persons that uses competitor data to recommend, align, stabilise, set or otherwise influence a price or commercial term. The definition does not distinguish public from non-public competitor data, and the statute relieves Cartwright Act plaintiffs of the need to plead facts excluding independent action.³⁸ New York has enacted a narrower prohibition focused on residential rents.³⁹ The Californian model shows the risk of over-breadth: a definition keyed to any 'competitor data' captures tools that use only public prices, the very category this article would place in a safe harbour.

C. European Union

The EU has approached the problem through the concept of a concerted practice under Article 101 TFEU. In *Eturas* the administrator of a Lithuanian online travel-booking system sent agencies a system message announcing a cap on discounts and implemented a technical restriction. The Court of Justice held that agencies aware of the message could be presumed to have participated in a concerted practice unless they publicly distanced themselves from it, reported it to the authorities, or adduced other evidence such as the systematic application of discounts above the cap. The Court also held that the presumption of innocence precludes inferring awareness from the mere dispatch of the message.⁴⁰ Two further judgments matter for the hub. In *AC-Treuhand* the Court held that a consultancy not active on the affected market could be liable for facilitating a cartel, and in *VM Remonts* that an undertaking may be liable for a concerted practice implemented through an independent service provider where it was aware of, or could reasonably have foreseen, the provider's anti-competitive conduct.⁴¹ The Commission's 2023 Horizontal Guidelines add that exchanges of competitively sensitive information through third parties, including shared algorithms, are assessed as information exchanges between competitors.⁴²

Table 2: Comparative authorities

Jurisdiction	Authority	Trigger for liability	Status (October 2026)
United States (federal courts)	<i>Cornish-Adebiyi</i> (3d Cir 2026); <i>Gibson</i> (9th Cir 2025)	Pooling of rivals' non-public data through a common tool can support an inference of agreement; parallel use of a common vendor alone does not	<i>Gibson</i> final (certiorari denied April 2026); <i>Cornish-Adebiyi</i> remanded for discovery
United States (DOJ)	<i>United States v RealPage</i>	Shared algorithm running on competitively sensitive non-public data alleged to be a hub-and-spoke conspiracy	Final consent judgment entered May 2026
United States (California)	AB 325, amending the Cartwright Act	Use or distribution of a 'common pricing algorithm' as part of a conspiracy; separate coercion offence; lower pleading threshold	In force from 1 January 2026
European Union	<i>Eturas</i> ; <i>AC-Treuhand</i> ; <i>VM Remonts</i>	Awareness of the practice plus failure to distance can ground a rebuttable presumption of participation; facilitators outside the market can be liable	Settled case law
India	Section 3(3), second proviso; <i>Samir Agrawal</i>	Participation or intention to participate in furtherance of a section 3(3) agreement	No reported application to shared pricing software

5. ANALYSIS: THE CORE ARGUMENT

A. Design-Based Intent for the Vendor

The argument begins with the vendor. Because Parliament chose 'participates or intends to participate' over 'actively participates', intention can ground the presumption without proof that the vendor took any step inside the cartel. But the proviso does not say how a software company's intention is to be shown, and two readings are available. On a broad reading, a vendor that knows its licensees compete with one another, and sells to them anyway, intends

³⁸Assembly Bill 325 (California, 2025), amending Cal Bus & Prof Code § 16729; WilmerHale, 'California Zeroes in on Common Pricing Algorithms' (14 November 2025).

³⁹DLA Piper, 'Antitrust and AI: Plaintiffs, Enforcers and Legislatures Take Aim at Alleged AI-Driven Collusion' (4 November 2025) <<https://www.dlapiper.com/insights/publications/2025/11/antitrust-and-ai-plaintiffs-enforcers-and-legislatures-take-aim-at-alleged-ai-driven-collusion>> accessed 12 October 2026.

⁴⁰Case C-74/14 *Eturas UAB v Lietuvos Respublikos konkurencijos taryba* EU:C:2016:42.

⁴¹Case C-194/14 P *AC-Treuhand AG v Commission* EU:C:2015:717; Case C-542/14 *SIA 'VM Remonts' v Konkurences padome* EU:C:2016:578.

⁴²Commission, 'Guidelines on the Applicability of Article 101 of the Treaty on the Functioning of the European Union to Horizontal Co-operation Agreements' [2023] OJ C259/1, ch 6.

to further whatever they do with its product. That reading converts the proviso into near-strict liability for every vendor of revenue-management software to more than one firm in a market, and is inconsistent with the statutory words ‘in the furtherance of such agreement’. The object of the required intention is the furtherance of the horizontal agreement, not the sale of software.

The narrower and better reading is that a vendor’s intention should be inferred from objective features of its design and commercial conduct. A corporation’s ‘mind’ is found in what it builds and how it sells it, and for a software vendor the contemporaneous engineering record (architecture documents, data-flow diagrams, product requirement documents, release notes, configuration defaults and marketing material) is more reliable evidence than after-the-fact testimony. The following indicators, drawn from the authorities in Parts 2 and 4, would support an inference of intention to participate:

- (i) **Pooling of non-public inputs.** Rival licensees’ confidential prices, occupancy, inventory or strategy enter the model that prices each of them, particularly at inference time, at fine granularity, or with little time lag.
- (ii) **Override friction.** Defaults that auto-accept recommendations, permissions required to deviate, or monitoring and scoring of deviation rates.
- (iii) **Coordination-oriented marketing.** Promotion of market-wide adoption and compliance rates, or of the tool’s capacity to impose ‘pricing discipline’ or avoid price wars.
- (iv) **Knowledge of the competitive relationship.** Onboarding or account records showing that the vendor knew licensees competed in the same relevant market.
- (v) **Failure to mitigate.** Continued pooling after the risk was flagged, where segregation, aggregation, ageing of data or firewalls were available.

Indicators pointing the other way would include siloed data, reliance only on the licensee’s own data and public information, documented and frequent independent overrides, and the absence of any compliance tracking.

The same engineering record also does work on the rim. The proviso presumes the hub to be part of an agreement among the spokes, which must still be shown. Section 2(b) includes an ‘understanding’ or ‘action in concert’ in the definition of agreement.⁴³ Where each competitor supplies confidential data to an engine knowing that the engine will use it to price rivals, and accepts recommendations derived from rivals’ data, there is an indirect exchange of competitively sensitive information through a common intermediary. That is the conduct the *Interstate Circuit* line, *Eturas* and *Cornish-Adebiyi* treat as capable of constituting concerted action.⁴⁴ The design-based approach therefore has an economy that a purely intent-based approach lacks: one body of evidence answers both whether the spokes have an understanding and whether the hub intended to further it.

The approach also distinguishes *Samir Agrawal*. A single platform setting prices for its own suppliers through a proprietary algorithm does not pool the confidential data of rival price-setters, and the indicators above would not be present.⁴⁵

B. The Agreement Gap for Autonomous Agents

The harder case is a self-learning agent that converges on supra-competitive prices without any shared tool or communication, the third and fourth categories of the taxonomy. The CCI’s study observes that such systems blur the line between explicit and tacit collusion.⁴⁶ The concern is not fanciful. Reinforcement-learning agents in simulated markets have learned to sustain collusive prices,⁴⁷ and fuel margins in Germany rose where both firms in local duopolies adopted algorithmic pricing.⁴⁸

Three responses appear in the literature. The first would presume a concerted practice where competing firms knowingly deploy a shared or substantially similar AI pricing engine and prices remain supra-competitive, with one Indian proposal suggesting an irrebuttable presumption and a new per se category of ‘algorithmic coordination’.⁴⁹ The second would prohibit algorithms with specific collusion-enabling properties, such as strategies that reward rivals’ high prices and punish price cuts.⁵⁰ The third would extend liability to deployers on a foreseeability standard.⁵¹

The first response should be rejected. A presumption triggered by ‘substantially similar’ engines and sustained high prices collapses lawful conscious parallelism into cartelisation, contradicts the requirement of an understanding in section 2(b), and is inconsistent with the Supreme Court’s caution in

⁴³Competition Act 2002, s 2(b).

⁴⁴*Interstate Circuit* (n 29); *Eturas* (n 40); *Cornish-Adebiyi* (n 2).

⁴⁵*Samir Agrawal* (n 20).

⁴⁶CCI, *Market Study* (n 1).

⁴⁷Calvano and others (n 7).

⁴⁸Assad and others (n 8).

⁴⁹Gaurav Kumar Singh and Soumya Manish Bohra, ‘Algorithmic Collusion and the Competition Act, 2002: Is India’s Antitrust Framework Equipped to Detect and Penalise AI-Driven Price Coordination?’ (*CPLAN*, NUSRL Ranchi, 23 December 2025) <<https://cplan.nusrlranchi.ac.in/?p=294>> accessed 12 October 2026.

⁵⁰Joseph E Harrington Jr, ‘Developing Competition Law for Collusion by Autonomous Artificial Agents’ (2018) 14 *Journal of Competition Law & Economics* 331.

⁵¹OECD, *Algorithms and Collusion: Competition Policy in the Digital Age* (OECD 2017); cf *VM Remonts* (n 41).

Rajasthan Cylinders and with the CCI's own reasoning in *Shikha Roy*.⁵² An irrebuttable version would penalise firms for oligopolistic interdependence they cannot avoid, and would sit uneasily with the quasi-penal character of section 27 penalties. The second response has analytical merit but presupposes regulatory capacity to identify prohibited strategies inside opaque models, which India does not yet have (Part 5C).

The more defensible route is to attach responsibility to the act of deployment where the design makes coordination a foreseeable and unmitigated outcome, and to do so first within the hub-and-spoke framework. When rivals use a common engine, foreseeability properly informs the vendor's intention under the proviso: a vendor that designs a learning system on pooled rival data, observes that it converges on aligned prices, and does nothing has moved from accident to intention. Where firms deploy *independent* agents, by contrast, section 3 should not be stretched. Pure algorithmic parallelism belongs on the market-study and audit track, with section 4 available where a firm is dominant, until Parliament chooses to legislate expressly.

C. Proof: Forensic Capacity and the Section 26(1) Threshold

Investigating a shared engine requires source-code review, reconstruction of data flows, examination of training data and logs, and in some cases replication of outputs. The DG has extensive powers to compel the production of documents and records, but commentators observe that the CCI, unlike some peer authorities, has no specialist algorithmic investigation unit or the technical infrastructure for deep audits of deployed AI systems.⁵³ The Market Study's own emphasis on capacity-building is a tacit acknowledgement of the same gap.⁵⁴

Meanwhile, the threshold for ordering an investigation is low. A direction under section 26(1) requires only a *prima facie* opinion and has been characterised by the Supreme Court as an administrative direction rather than an adjudication.⁵⁵ After *Samir Agrawal*, any person may supply the information that triggers it.⁵⁶ Firms in sectors with visible price convergence and a common vendor (hotels, airlines, online marketplaces using repricing tools) can therefore face investigation even where independent algorithmic responsiveness explains the pattern. This asymmetry of heavy process risk and thin technical capacity is itself a strong argument for published guidance. Guidance would allow the CCI to screen information against concrete design indicators at the section 26 stage, and would tell firms what records to keep so that an investigation can be resolved quickly on the engineering evidence.

D. Exposure and Procedure

The stakes of getting this right are high. Since the 2023 Amendment, 'turnover' in section 27(b) means global turnover derived from all products and services, legislatively displacing the Supreme Court's relevant-turnover reading in *Excel Crop Care*. For cartels, the ceiling is the higher of three times profit or ten per cent of turnover for each year of continuance.⁵⁷ The CCI's 2024 Penalty Guidelines begin from up to thirty per cent of average relevant turnover but permit recourse to global turnover where relevant turnover cannot feasibly be determined.⁵⁸ For a software hub, relevant turnover is genuinely hard to identify: is it licence revenue from the affected market, from the affected customers, or something else? If that difficulty pushes the CCI towards global turnover, a multinational vendor with a small Indian footprint faces disproportionate exposure.

Procedurally, the settlement and commitment mechanisms in sections 48A and 48B apply only to proceedings concerning section 3(4) or section 4.⁵⁹ A hub-and-spoke case framed under section 3(3) is therefore excluded. The result is a paradox. The remedy that best fits a design problem is a design remedy of the kind embodied in the *RealPage* consent judgment: data segregation, ageing, output granularity limits and a monitor.⁶⁰ Yet in India that remedy can be reached only through a final order after a full investigation. Finally, leniency under section 46 is available to a 'producer, seller, distributor, trader or service provider included in any cartel'.⁶¹ A software vendor is plausibly a 'service provider', but whether a hub that is only *presumed* to be part of the agreement is 'included in' the cartel for leniency purposes is untested, and the point was flagged when the Bill was introduced.⁶² These procedural points shape how a vendor or a user can realistically respond to an investigation, and they should be checked against the current regulations before being relied on in any particular matter.

6. PROPOSALS AND ANTICIPATED COUNTER-ARGUMENTS

A. Proposals

Five proposals follow from the analysis. The first three can be implemented by the CCI under its existing powers; the last two require regulatory or

⁵²*Rajasthan Cylinders* (n 19); *Shikha Roy* (n 18).

⁵³Singh and Bohra (n 49).

⁵⁴CCI, *Market Study* (n 1).

⁵⁵*Competition Commission of India v Steel Authority of India Ltd* (2010) 10 SCC 744.

⁵⁶*Samir Agrawal* (2021) 3 SCC 136 (n 21).

⁵⁷Competition Act 2002, s 27(b) and the Explanation thereto, as amended by the Competition (Amendment) Act 2023; *Excel Crop Care Ltd v Competition Commission of India* (2017) 8 SCC 47.

⁵⁸Competition Commission of India (Determination of Monetary Penalty) Guidelines 2024 (6 March 2024), para 3.

⁵⁹Competition Act 2002, ss 48A(1) and 48B(1); Competition Commission of India (Settlement) Regulations 2024; Competition Commission of India (Commitment) Regulations 2024.

⁶⁰*RealPage* (n 11).

⁶¹Competition Act 2002, s 46; Competition Commission of India (Lesser Penalty) Regulations 2024.

⁶²'Competition (Amendment) Bill, 2022 – A Critical Examination' [2022] 141 taxmann.com 321.

legislative change.

First, published guidance on the proviso. The CCI should issue guidance explaining what ‘participates or intends to participate’ means for a software vendor, built around the design indicators set out in Part 5A. The guidance should state expressly that knowledge that licensees compete is not, on its own, sufficient to infer intention, and that the object of the intention must be the furtherance of a horizontal agreement. Practitioner commentary has made a similar call.⁶³

Second, a rebuttable safe harbour. The guidance should recognise a rebuttable safe harbour for tools that rely only on the licensee’s own data and on genuinely public information, that leave pricing discretion with the user, and that are not marketed by reference to market-wide adoption or compliance. The harbour would be lost on evidence of a human agreement to use the tool as a coordination device, or of coordination-oriented design or marketing. It would also avoid the over-breadth of the Californian definition, which captures any use of competitor data, public or not.⁶⁴ Between the safe harbour and the zone of clear risk lies the use of pooled data that is aged and aggregated. Here the guidance could describe lower-risk parameters, drawing on the twelve-month benchmark in the RealPage judgment, without treating them as a safe harbour.⁶⁵

Third, content for the self-audit. The Market Study’s self-audit recommendation should be given content by specifying what an audit record contains.⁶⁶ Table 3 sets out a proposed minimum. The value of specifying it is that the record becomes evidence for the firm as well as for the regulator: a user or vendor that can produce it at the section 26 stage can rebut an inference of concert quickly, and the CCI can screen information against it.

Table 3: Proposed minimum content of an algorithmic pricing audit record

Layer	What the record should document	Legal question it answers
Design parameters	Objective function; model class; whether the model learns from market feedback; override defaults and permissions	Does the design make coordination foreseeable? Does the user keep discretion?
Data inputs	Data-flow map; sources and provenance; whether any rival licensee’s non-public data is used, at what aggregation and with what time lag; segregation controls	Is there an indirect exchange of competitively sensitive information?
Market outputs	Recommendation acceptance and override rates; monitoring of price dispersion and alignment across licensees	Do outputs show unexplained convergence?
Governance	Who approved design changes; legal review; vendor contract terms on data use; customer-facing marketing	Who knew what, and when? Did anyone fail to mitigate a known risk?

Fourth, forensic capacity. The DG’s capacity to examine code and data must be built in parallel. Section 17(3) already permits the CCI to engage experts and professionals,⁶⁷ and a standing technical unit, supplemented by empanelled experts, would let the DG test an engine’s data flows rather than infer them from price outcomes.

Fifth, procedural fit. Parliament should consider extending the commitment mechanism to hub-and-spoke proceedings in which the alleged harm flows from a design feature and can be cured by a design remedy. The Lesser Penalty Regulations should also clarify whether a vendor presumed to be part of an agreement may apply for leniency. Without these changes, the most efficient remedy for a design problem is available only after a full investigation, and a vendor that discovers misuse of its product has an uncertain incentive to report it.

B. Anticipated Counter-Arguments

Efficiency and over-deterrence. Shared pricing tools can be efficiency-enhancing. They give small firms access to forecasting capability that only large firms could otherwise afford, and benchmarking can reduce information asymmetries. Over-deterrence could chill adoption.⁶⁸ The response is that the design-based approach targets a specific architecture, the pooling of rivals’ non-public data with features that suppress independent pricing, and not the use of software as such. The safe harbour is designed to protect exactly the efficiency-enhancing uses.

Foreseeability and lawful parallelism. It may be objected that importing foreseeability into the vendor’s intention penalises lawful parallelism. The objection would be strong if foreseeability were used to create liability for firms deploying independent agents. Part 5B confines it to the hub’s intention

⁶³Noorudheen (n 4).

⁶⁴Assembly Bill 325 (n 38).

⁶⁵RealPage (n 11).

⁶⁶CCI, *Market Study* (n 1).

⁶⁷Competition Act 2002, s 17(3).

⁶⁸OECD (n 51).

in common-tool cases, where an agreement among the spokes must still be shown, and leaves independent algorithmic parallelism outside section 3.

Administrability. A design-based test may seem hard to administer given the DG's limits. But design indicators are largely documentary: data-flow maps, contracts, configuration settings and marketing material are easier to obtain and assess than the hidden intentions of human cartelists. A specified audit record reduces the burden further.

An ex ante alternative. Finally, it may be argued that an ex ante regime would regulate algorithms better than section 3. The Committee on Digital Competition Law proposed a draft Digital Competition Bill in 2024.⁶⁹ The government was reported in August 2025 to have withdrawn the draft pending a market study, which the Ministry of Corporate Affairs then launched,⁷⁰ and in May 2026 it was reported that a bill could be introduced in the next financial year.⁷¹ The status of the Bill is therefore unsettled. In any event, the draft was directed at 'systemically significant digital enterprises' and would not reach most vendors of revenue-management software to hotels, airlines or retailers. Section 3 will remain the principal instrument for shared pricing engines for the foreseeable future.

7. CONCLUSION

The question in the shared-engine cases is an engineering one: what the tool does with data, and what users and vendors know about it. The American and European authorities converge on that answer. Common use of a vendor is not collusion; the pooling of rivals' confidential data in a tool that each rival knows its competitors use, combined with features that discourage independent pricing, can be.

India has the statutory language to ask the question. The 2023 proviso, read against its drafting history, makes a vendor's intention to further a horizontal agreement sufficient to presume it part of that agreement. But the Act and the CCI's practice do not yet say how that intention is to be shown for a software product, and the procedural framework (global-turnover penalties, the exclusion of section 3(3) cases from commitments, and uncertain leniency for hubs) raises the cost of getting the answer wrong. Without published guidance, forensic capacity and a safe harbour, the proviso risks being either unused or over-applied.

A design-based approach to intent offers a principled middle path. It reads the proviso's words in light of their object, uses the engineering record that already exists, proves the rim and the hub's role with the same evidence, and leaves genuinely independent algorithmic pricing to the audit track rather than stretching the concept of agreement past breaking point. It also gives engineers something lawyers rarely can: a clear account of which design choices carry legal risk, made before the code ships rather than after the CCI arrives.

⁶⁹Ministry of Corporate Affairs, *Report of the Committee on Digital Competition Law* (February 2024).

⁷⁰'Withdrawal Symptoms: The Briefing for 12 August 2025' *Global Competition Review* (12 August 2025); Freny Patel, 'Betting on Digital Competition Bill, Indian Ministry Launches Study to Test Scope' *MLex* (10 November 2025).

⁷¹'Govt to Introduce Digital Competition Bill in Next Fiscal, Likely to Amend IBC First' *Outlook Business* (1 May 2026).