UNLOCKING MANUFACTURER UTOPIA: AI'S ROLE IN PERFECT PRICE DISCRIMINATION

Conference paper

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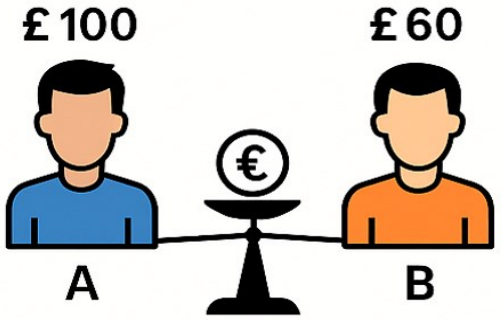
Understanding Price Discrimination

Definition:

- Price discrimination occurs when a firm charges different prices to different customers for the same product or service, not due to cost differences, but based on differences in willingness or ability to pay.

Why do firms use it?

- To stimulate demand and maximise profit.



How does it work?

- Customer A (high willingness-to-pay) → £100
- Customer B (low willingness-to-pay) → £60
- Cost to supply = £40 ➡ Total profit = 160-80= **£ 80**

➡ Firm earns more by charging each customer differently than by setting a single price (e.g. £80). Customer A buys → Profit = 80 – 40 = £40 Customer B does not buy → Profit = £0 Total profit = **£40**

Types of Price Discrimination

Type	Description	Example
1st-Degree	Charging each customer their exact willingness to pay (perfect price discrimination).	Difficult to be achieved in practice (pre-digital era)
2nd-Degree	Price varies by quantity or product version; consumers self-select based on preference.	Subscription plans, bundle deals.
3rd-Degree	Prices differ across identifiable groups with differing demand elasticities.	Student/senior discounts, geographic pricing.

Where Does Algorithmic Pricing Fit?

Definition:

- Algorithmic pricing refers to the use of automated systems, often driven by artificial intelligence, to set prices based on large volumes of consumer data, such as browsing history, purchase activity, login and device data, as well as external variables like market trends and competitive dynamics.

- To be distinguished from dynamic pricing: A subset of algorithmic pricing: adjusting prices in response to real-time market demand, supply fluctuations, or competitor actions (Uber, online tickets), which does not necessarily involve consumer-specific targeting.

Algorithmic pricing draws elements from both first-degree and third-degree discrimination. When algorithms segment users based on identifiable characteristics (e.g., device type, location, browsing behaviour), they function as a more refined version of traditional third-degree pricing.

Enabling Price Discrimination in Digital Markets

Traditional conditions for successful price discrimination:

(1) The ability to segment the market based on willingness to pay.

(2) The ability to prevent or limit arbitrage between consumers (i.e., resale from low-price to high-price segments).

(3) Some degree of market power to set differentiated prices.

- While AI-driven algorithms now enable firms to personalise prices, effective price discrimination still depends on arbitrage prevention.

In digital markets, this might be achieved through:

(1) Account-based access.

(2) Device-locked content.

(3) Non-transferable licences.

(4) VPN and geolocation controls.

- Key point: AI can segment consumers, but arbitrage prevention is essential to sustain price discrimination.

Consumer Welfare and Fairness in Algorithmic Pricing

Traditional economic view:

- Price discrimination can enhance welfare (increase total output).

Behavioral perspective:

- Empirical studies show consumers strongly oppose unexplained price differentiation.
- Non-transparent and unexplained price discrimination is perceived negatively by consumers.
- Harm arising from consumers' negative perceptions of fairness.
- This dissatisfaction becomes a part of their preferences, reducing overall consumer welfare.
- **Even where there is no consumer harm from traditional economic analysis of price discrimination, there may nevertheless be harm to consumer welfare from the perception of unjustified discrimination.**

Algorithmic Price Discrimination under Article 102(a) TFEU

- Article 102(a) prohibits dominant firms from imposing unfair selling prices or trading conditions.

- Traditionally applied to excessive prices (price too high and unfair: unfairness is a core element of the legal test).

Challenge for algorithmic pricing:

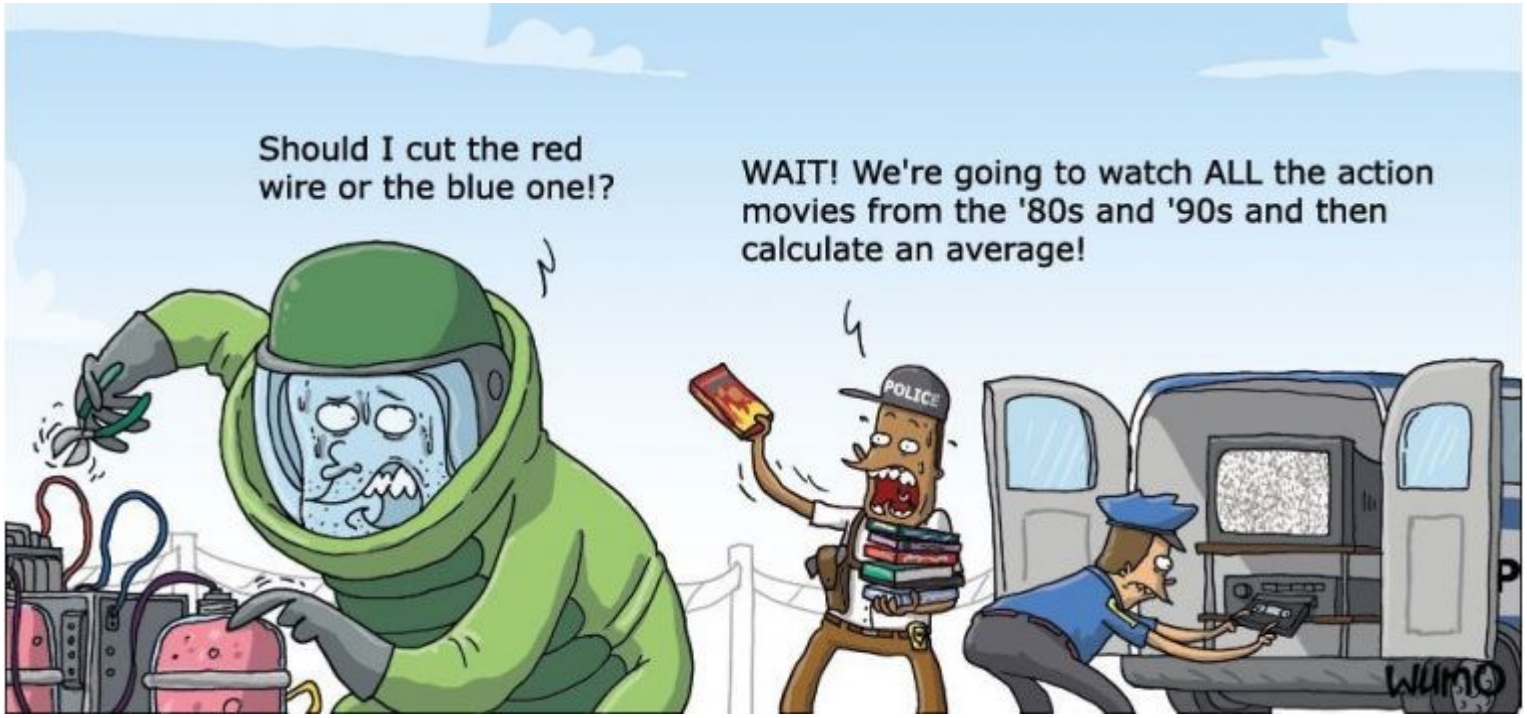
- The harm in algorithmic price discrimination lies not necessarily in the price level, but in the process of price determination, particularly where non-transparent data-driven pricing exploits behavioural biases or information asymmetries in ways consumers cannot detect or challenge.
- Consumers perceive price discrimination negatively, especially where they cannot understand or anticipate the reasons for the price differences.

Is algorithmic pricing already here?

- Amazon attempted (2000) to experiment with price discrimination for online DVD sales, but consumers reacted very negatively to this.
- Behavioural economists suggest that consumers' notion of fairness does not tolerate price discrimination because they perceive it as unfair.
- While personalized pricing is technically possible in digital markets, many firms will refrain from employing such strategies due to concerns about consumer pushback and brand reputation.

DG COMP position

- DG COMP appears confident in its ability to react against price discrimination and personal pricing under Article 102 TFEU. Not only in submission to OECD (2018) but also when presenting the *Discussion Paper* (2005), recital 141



Perfect price discrimination is exploitive abuse

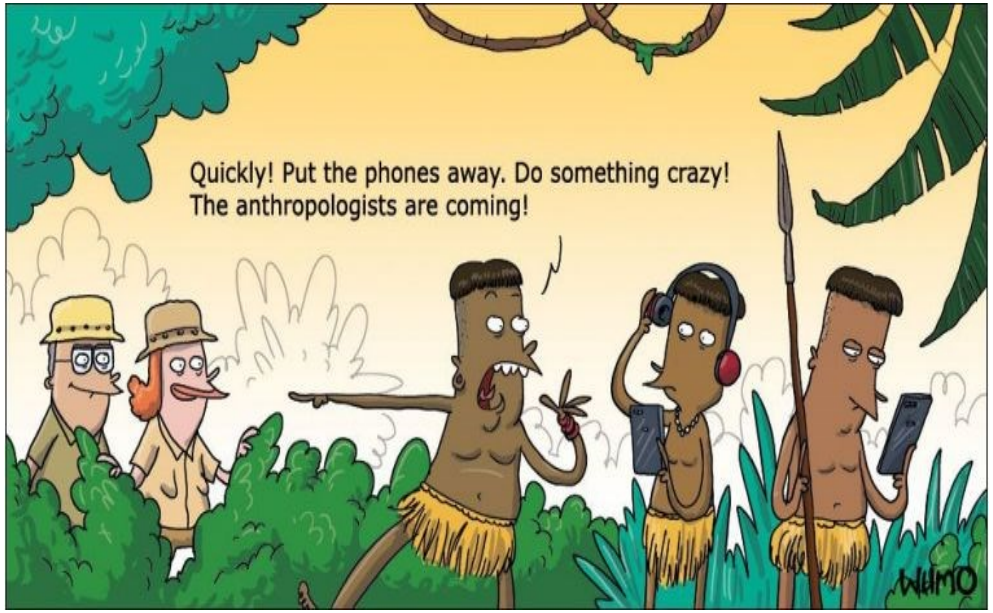
- *BdKEP/Deutsche Post AG,* (2004) recital 93 has established that discriminatory abuse with an exploitive nature must be evaluated as exploitive abuse under Article 102(a) TFEU.
- *United Brands,* (1978) para 250-252 has established a two-pronged test (could also be two different tests) that is difficult to apply:
  i. the difference between the cost incurred and the price charged for a product or service is found to be excessive (price-cost test), and
  ii. the price is unfair in itself or when compared with competing products.
- Case law shows a great deal of inconsistency in applying *United Brands*

But DG COMP's confidence might be misplaced

- *United Brand,* (1978) para 228, opened a window for taking non-cost factors into consideration when evaluating the value of a product or service
- This was embraced more clearly in *Deutsche Bahn* (1997), para 91 which considered but ultimately rebutted that the observed differences in terms and prices could be attributed to the downstream competition density
- The same conclusion emerges from *Scandlines Sverige AB v Port of Helsingborg* (2004), recital 241, accepting that demand-related conditions could explain (and justify) price differences
- None of these cases dealt directly with exploitative or perfect price discrimination (and some clearly predates the internet), but they do mud DG COMP's confident position

DG COMP position

- In a recent Amicus Brief (2019), DG COMP appears very interested in managing the damage suggesting that to much a been read into *Scandlines Sverige AB v Port of Helsingborg*



IN THE COURT OF APPEAL — Case No. C3/2018/1847 and C3/2018/1874

ON APPEAL FROM THE COMPETITION APPEAL TRIBUNAL

BETWEEN

(1) FLYNN PHARMA LIMITED
(2) FLYNN PHARMA (HOLDINGS) LIMITED

Appellant C3/2018/1847
Respondent C3/2018/1874

and

(1) PFIZER INC.
(2) PFIZER LIMITED

Respondent C3/2018/1874

v

THE COMPETITION AND MARKETS AUTHORITY

Appellant C3/2018/1874
Respondent C3/2018/1847

EUROPEAN COMMISSION

Intervener

EUROPEAN COMMISSION'S SKELETON ARGUMENT

OF 14 JUNE 2019, FOR HEARING ON 26-28 NOVEMBER 2019

DG COMP's should have delivered on its promises

- DG COMP had initially planned to provide a separate paper on discriminatory and exploitative abuse, but never delivered on this

And it's unlikely that the current reform of the *Enforcement Paper* will remedy this, making another missed opportunity

IP/05/1626

Brussels, 19th December 2005

Competition: Commission publishes discussion paper on abuse of dominance

The European Commission has published a Staff Discussion Paper on the application of EC Treaty competition rules on the abuse of a dominant market position (Article 82). The Discussion Paper is designed to promote a debate as to how EU markets are best protected from dominant companies' exclusionary conduct, conduct which risks weakening competition on a market. The paper suggests a framework for the continued rigorous enforcement of Article 82, building on the economic analysis carried out in recent cases, and setting out one possible methodology for the assessment of some of the most common abusive practices, such as tying and rebates and discounts. Other forms of abuse, such as discriminatory and exploitative conduct, will be the subject of further work by the Commission in 2006. The Commission is inviting comments on the present discussion paper by 31 March 2006.

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So, in conclusion

- Algorithmic price discrimination, enabled by AI and big data, has raised significant concerns about its potential impact on consumer welfare.
- AI will potentially allow companies to personalize prices for each consumer, maximizing producer welfare at the expense of consumers.
- The legal position is unclear, and in my opinion, DG COMP's confidence is misplaced without making it entirely mute.
- Consumers might represent a bigger restraint than Article 102.
- DG COMP should deliver on its promise to provide guidance on price discrimination and be more open about its attempt to do damage control.

Would you like to know more?

Unlocking Manufacturer Utopia: AI's Role in Perfect Price Discrimination

Christian Bergqvist[1] and Miroslava Marinova[2]

Abstract

The development of Artificial Intelligence and the growing use of algorithms to optimize prices have generated significant debate about their benefits and potential adverse effects on competition and consumers. Two key issues dominate this discussion: algorithmic price discrimination through personalized pricing and algorithmic tacit collusion. While the risks and opportunities of algorithmic tacit collusion have been extensively studied, the potential harm from algorithmic price discrimination remains underexplored. Notably, no legal cases have yet addressed abusive algorithmic price discrimination. This article examines whether the current competition law framework is adequate to tackle algorithmic price discrimination that harms consumers. It argues for robust competition law enforcement under Article 102(a) TFEU to ensure that algorithmic pricing does not become a tool for exploitative abuse in the digital economy. However, it also outlines how case law is underdeveloped and, in some aspect, hostile to submitting personalized pricing under Article 102(a) TFEU.