Market Failures Within Algorithmic Pricing: The Information Asymmetry Ethics Behind Surveillance Pricing and Consumer Privacy

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1.1 Abstract:

As companies increasingly favor algorithmic pricing methods to maximize profits, surveillance based information asymmetry is becoming prevalent for consumers among the realms of data privacy. Personalized pricing has various trade-offs, as demonstrated by the model's ability to benefit certain groups (like companies or individuals willing to pay less). However, algorithmic pricing also attains the inability to enforce purchasing parity among all groups of shoppers while creating negative externalities for shoppers due to the seemingly undisclosed nature of the information these models utilize. After studying the frameworks behind how algorithmic pricing models cause market inefficiencies, the most effective ways to improve triadic governance and socio-economical disequilibriums between shoppers, companies, and regulators are nestled in balancing profit optimization with market integrity. This can be achieved through a multi-disciplinary approach involving legal systemic transparency methods for surveillance pricing (like petitioning a federal Algorithmic Pricing Disclosure Act already being implemented within certain states). It can also involve companies branding these bills as a part of their Corporate and Social Responsibilities to incentivize brand loyalty within shoppers, and allow more equitable methods for untapped consumers to enter the market by implementing lower entry barriers. This model and approach reduces negative externalities caused by surveillance pricing, including possible data shielding methods used by consumers which further hurt a company's profits, and allow for untapped consumers to enter new markets without

existing consumers being unknowingly impacted, thus further stimulating brand loyalty and eroding market failures in the long run.

Keywords: Surveillance Pricing, Market Failures, Consumer Transparency,
Profit Maximization, Price Opacity, Information Asymmetry,

2.1 Introduction: Personalized pricing models, driven by AI software through predictive analysis, is a system that incorporates various aspects like the user's location and past purchases to determine the largest amount one will want to pay for an item. The algorithmic pricing system is driven by the corporate need to increase profit, but also expand equity for those who could not pay the same amount for a product as others. This model can effectively benefit profit margins for companies, and reduce entry barriers for previously untapped consumers, improving allocative efficiency. However, this model also encompasses various drawbacks, particularly within concerns of inequitable measures taking place that inherently cause certain consumers to have to pay more. The AI model being used to predict a consumer's maximum willingness to pay also may lack accuracy, which if not detected can create buyer uncertainty and erode brand loyalty and trust. To better present the best cost for an individual , it is granted that software will need to incorporate certain data. However, the ethical dilemma of data sharing to AI and software without a user's consent can impose great roadblocks, as the sentiment of privacy for a user will diminish.

An array of suggestions and acts have been proposed and enforced to protect the privacy of users impacted by the incorporation of algorithmic pricing. States, including New York have mandated an Algorithmic Pricing Disclosure Act, enforcing companies to disclose when a surveillance pricing model is taking place (*Algorithmic Pricing Disclosure Act*, 2025).

As the approach's utilization becomes more known to shoppers, the negative externalities caused by first-degree price discrimination have intensified. One example of these are the implications of data shielding, where populations aware of algorithmic pricing systems implement measures to avoid costs they can possibly incur from personalized pricing. A nontraditional pricing system removes price anchoring, an economic tool used to gauge a good or services average cost. These measures can be acted upon through secondary resources like private browsing or VPN's. This can escalate transactional friction, worsen business forecasting for consumer preferences, which can hurt company profit margins. To effectively satisfy consumer needs, companies drive for profit, and improve transaction transparency, a method that incorporates legal recommendations with corporate framework that invites and accommodates newer or more unwilling customers while incentivizing existing demand to remain.

3.1 Thesis

To prevent market failures that can be caused by information asymmetry, data surveillance, and price opacity, an Algorithmic Pricing Disclosure Act can be implemented alongside strategic corporation pricing transparency methods to preserve consumer trust, enforce data privacy, and incentivize sustainable economic monetization methods.

4.1 Literature Review:

As personalized pricing increases its prevalence and utilization, several articles examine the impacts of its usage on both companies and customers. An article by Contentful explores the depths in how a personalized pricing model has grown in popularity due to the disconnect felt between retailers and customers, with over 63% of marketing executives struggling with creating meaningful encounters for clients, and 61% feeling their experience was not tailored enough (Artug, 2025). While surveillance pricing aims to improve personalization, it inherently does the

opposite, as algorithmic pricing can reduce demand through irrelevant offers and a decrease in loyalty rewards.

A report by Statista projects the personalized pricing industry will grow far beyond 11.6 billion, its impacts will be felt with greater emphasis across a depth of diversified categories (Navarro, 2025).

The University of Chicago forecasts the disparities that may occur with this model with over 60% paying less than a uniform pricing system would have enforced, and the other 40% being forced to pay these additional costs ((Dubé & Misra, 2023). Currently, the Federal Trade Commission (2025) has identified over 250 companies that use measures of personalized pricing for their consumers.

Surveillance pricing systems often use Large Language Models (LLM) to calculate the maximum an individual is willing to pay for a good or a service. The UChicago Law Review indicates that personalized pricing has been used in the past in a more generalized manner, but is now being used on a more accurate, user-focused scale. Corporations have used LLM's and browser fingerprinting methods like urgency tracking, segmentation and wealth indicators to gauge how much a user is willing to pay, and to examine current demand in the market for a product (Bar-Gill, 2025). However, personalized pricing can also be manipulated to increase company profit margins, notes The Wall Street Journal, which conducted a review of Staples and discovered that algorithmic pricing systems were reliant on price opacity (Valentino-DeVries et al., 2012). By using price optimization, companies have also internally been alleged to misuse secret algorithms to experiment with price altercations by determining how other corporations planned to price their items, as highlighted in the FTC's investigation of "Project Nessie" by Amazon, (Carnegie Mellon University, 2023).

To solve these issues, various methods have been tested, including those of Ban and Parity (Chen & Liu, 2025). It can be found that utilizing price parity means among various groups can also be effective in reducing bias and improving equity.

5.1 Analysis

Currently, New York's Algorithmic Pricing Disclosure Act has been a catalyst for corporation scrutiny and changing pricing strategies, with companies switching to dynamic or tier based pricing to avoid full disclosure, or ultimately avoiding the method to avoid operational or transactional inefficiencies, ensuring that customer privacy is prioritized (Algorithmic Pricing Disclosure Act, 2025).

With the Algorithmic Pricing Disclosure Act, various market trends have evolved, primarily with the shift from general dynamic pricing to personalized pricing. General dynamic pricing, which is driven by market forces, incentivizes companies to maximize profit through the allowance of implementing supply and demand measures to influence prices. The Algorithmic Pricing Disclosure Act does not restrict this pricing model. Instead, it restricts personalized pricing, which specifically uses consumer data to gauge prices for each consumer. With the act, companies have been prompted to shift their pricing strategies to avoid eroding consumer security. The enforcement of The Algorithmic Pricing Disclosure Act has been perpetrated recently by government officials, particularly within the realms of civil investigative demands and inquiries. The policy has also received pushback from foundations like the National Retail Federation, but was dismissed in October 2025, and has been appealed to the Second Circuit Court of Appeals.

The algorithmic opacity contained within a personalized pricing model has also been investigated. Due to the model having Machine Learning and LLM's foundations, it becomes

increasingly opaque for regulators to determine the rationale behind the methods of personalized pricing while implementing more equitable measures.

Beyond algorithms, consumers also induce the impacts of personalized pricing. The model directly addresses consumer welfare, with surplus extraction occurring for certain consumers and market expansion broadening for others. Market forces also shift from this, as perfect competitions may strive for consumer appeal and inherently reduce overall costs in the market, and monopolies may profit from these systems due to their prevalence.

6.1 Method and Results

To further understand consumer perspectives on how personalized pricing impacts current markets, an informal original pilot study was conducted within a youth-focus group consisting of students from Grades 6-8. Participants were questioned (questions are listed in Appendix A) on their outlook on the ethicalities of personalized pricing. Within the questions asked, it could be determined that participants were concerned with sharing excessive amounts of personal data, despite being promised additional loyalty benefits , and that participants believed a personalized pricing system was more likely to aid companies rather than individual consumers. Participants were also asked how much they would pay for certain items (e.g. clothing), and whether or not their perceptions of an item's value would change based on the price anchoring techniques implemented. With a loss of price anchoring, participants seemed more uncertain on how much they would be willing to pay for an item, as compared to their perspectives on an item's price with price anchoring. This informal pilot study confirms that consumers value price transparency, which is precisely what The Algorithmic Pricing Disclosure Act aims to provide and establish.

7.1 Solutions

With the current implications, it is significant to develop more equitable ways for companies to acquire profit maximization while ensuring transparency is maintained with consumers.
As more states begin to adopt an Algorithmic Pricing Disclosure Act, it is increasingly evident that these acts can inherently increase consumer confidence and bridge information asymmetry gaps between shoppers and corporations. By reducing adverse selection through a more widely incorporated model (such as petitioning for and implementing a federal Algorithmic Pricing Disclosure Act), consumer transparency and the negative externalities caused by practices like data shielding are reduced.

Companies want to preserve their institutional credibility, and disclosure of algorithmic pricing may raise concerns about their ethical footprint being reduced. To comply with federal rules while preserving their organizational accountability, corporations can use strategic advertising methods to showcase their transparent pricing approaches about companies charging for items in an equitable manner. This method can improve consumer confidence and preserve or initiate brand loyalty, as it has been utilized before in the realms of ethical measures of production (eg. companies advertising their involvement with ethical labor and wage practices, although they are generally mandated by law).

An Algorithmic Pricing Disclosure Act will also cause companies to innovate and strategize in unique ways. Corporations will be incentivized to improve consumer trust through methods like consistency, post-purchase satisfaction, and predictive pricing methods based on buyer loyalty. This, in turn, incentivizes consumers to stay loyal to a company, improving brand loyalty.

8.1 Conclusion

As personalized pricing grows in its prevalence and methodologies, it is vital that surveillance focused information asymmetry is bridged to prevent market disequilibriums and sustain consumer trust through a variety of measures. By incorporating an Algorithmic Pricing Disclosure Act with strategic corporation-based advertising models to showcase their transparent pricing approaches, companies can balance their profit-maximization methods while preserving consumer loyalty and stimulating the economy.

9.1 References:

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10.1 Appendix:

Figure A: Participants in the informal pilot survey were questioned on topics regarding personalized pricing and information asymmetry, including,

10. 2 If you didn’t know the price of a shirt, how much would you be willing to pay for it?

10. 3 Now, if you knew the price of the shirt, how much would you be willing to pay for it?

10. 4 How does personalized pricing impact the consumer surplus compared to a uniform pricing model? Who benefits more?

10.5 Would you let a store track every single thing you buy if it meant you got special discounts just for you, or is your privacy worth more than the savings?

10. 6 Do you think a personalized pricing model (a model where everyone pays a different price for the same product) is fair?