Proceedings of the 10th International Conference on Economic Management and Green Development
DOI: 10.54254/2754-1169/2026.37642

The Economic and Social Effects of Widely Adopted Technology-Driven Personalised Pricing

Jiaxi Miao

Veritas Collegiate Academy, Arlington, Virginia, USA
miaojiaxi@me.com

Abstract. Digital technology enables firms to implement personalised pricing based on consumers' willingness to pay, which is widely recognised as a modern form of first-degree price discrimination. This study explores the multifaceted economic and social consequences of the large-scale adoption of personalised pricing. Adopting a cost-benefit analytical framework, the research conducts a cross-country comparison covering developed and emerging Asian economies, utilising macroeconomic indicators including gross domestic product, unemployment rates and Gini coefficients to analyse relevant market and distributional effects. The results demonstrate that widespread personalised pricing can improve static and dynamic market efficiency by eliminating deadweight loss and stimulating corporate innovation. Nevertheless, without effective regulatory constraints, algorithmic pricing practices may aggravate income inequality due to information asymmetry and inaccurate consumer profiling. In addition, unfair pricing perceptions erode consumer trust and may offset efficiency benefits. This paper concludes that personalised pricing presents an inherent trade-off between market efficiency and social equity. Its final socioeconomic outcomes hinge on robust competition regulatory systems that restrain exploitative pricing behaviour.

Keywords: personalized pricing, algorithmic price discrimination, market efficiency, income inequality, consumer trust

1. Introduction

The advanced technology driven the personalised pricing and allows the firms to set a specific price based on consumers' willingness to pay, which might cause first-degree price discrimination [1]. To understand the socioeconomic implications of this phenomenon, this essay compares developed Asian economies (Japan, China) with rapidly urbanizing cities including Indonesia and the Philippines. This comparison show how personalized pricing works differently across various levels of digital development.

2. Literature review

The implementation of personalized pricing would have several implications for market efficiency and wealth distribution. At the same time, it also brings about issues such as fairness, honesty, and

© 2026 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

DOI: 10.54254/2754-1169/2026.37642

market competition. Personalized pricing is likely to be especially harmful to low-income customers in unregulated markets [2]. Furthermore, personalized pricing in digital economies might exacerbate existing structural inequalities through algorithmic market power [3]. Therefore, in modern developed cities with a high level of digital penetration and advanced mechanisms for regulating competition, personalized pricing is expected to increase market efficiency at the expense of inequality. Conversely, in less developed cities, algorithms might increase economic inequality.

3. Methodology

This essay adopts a cost-benefit framework to evaluate personalised pricing from several perspective. Gross Domestic Product (GDP), unemployment rate, and income inequality is employed to proxy the economic and social effects. Given that these macroeconomic indicators cannot directly measure the localised microeconomic impacts of algorithm pricing as the situations are driven by multiple forces such as global trade, fiscal policy, these variables can establish the institutional and economic "stress level" of these nations.

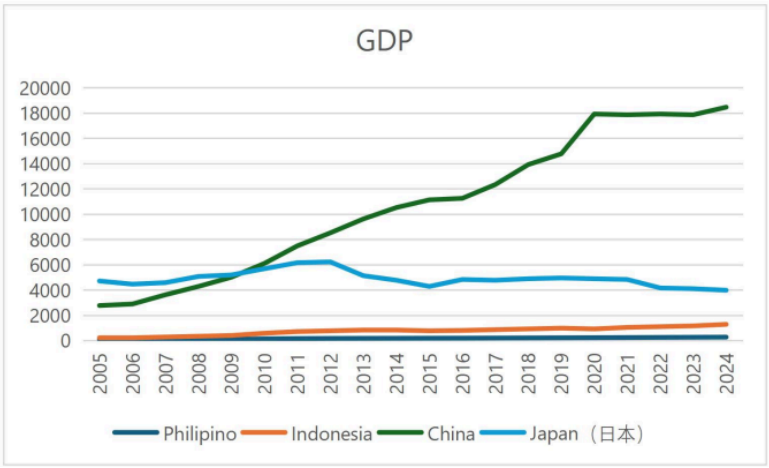

Figure 1. Gross Domestic Product of selected countries from 2005 to 2024

Source: World Bank Database

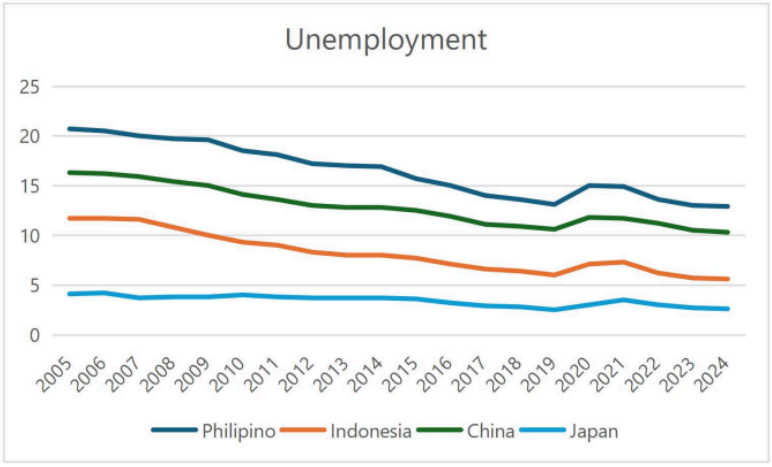

Figure 2. Unemployment rate of selected countries from 2005 to 2024

Source: World Bank Database

DOI: 10.54254/2754-1169/2026.37642

China's GDP grew substantially from 2005 to 2024, while unemployment did not change much. Within these rapidly growing digital economics, personalized pricing act as a micro-level mechanism that enhance the access to the product and increase consumer spending through allowing consumers to obtain goods at different levels. For Chinese firms, algorithms allow them to capture more revenue from different types of consumers, raising consumption and encouraging investment from firms, resulting in greater aggregate demand. For Bangladesh, accelerated digitalising adoption via personalized pricing can help retailers better appreciate foreign markets, thereby allowing small producers to harness pricing tools in entering new foreign markets.

4. Results and discussions

4.1. Market efficiency outcomes of personalised pricing: static and dynamic efficiency

Unlike traditional uniform pricing market, personalised pricing uses technology to identify exactly consumer willingness and ability to pay, allowing individuals with lower purchasing power to access the product that they cannot afford at uniform pricing, advantage both consumers and producers by removing the deadweight loss and maximizing the market efficiency. For the producer, personalized pricing is a strategy that can maximize profit and gain market monopoly power. Firms can effectively estimate the consumer' s exact maximum willingness to pay and sell to everyone at their reservation price, resulting like first-degree price discrimination [4].

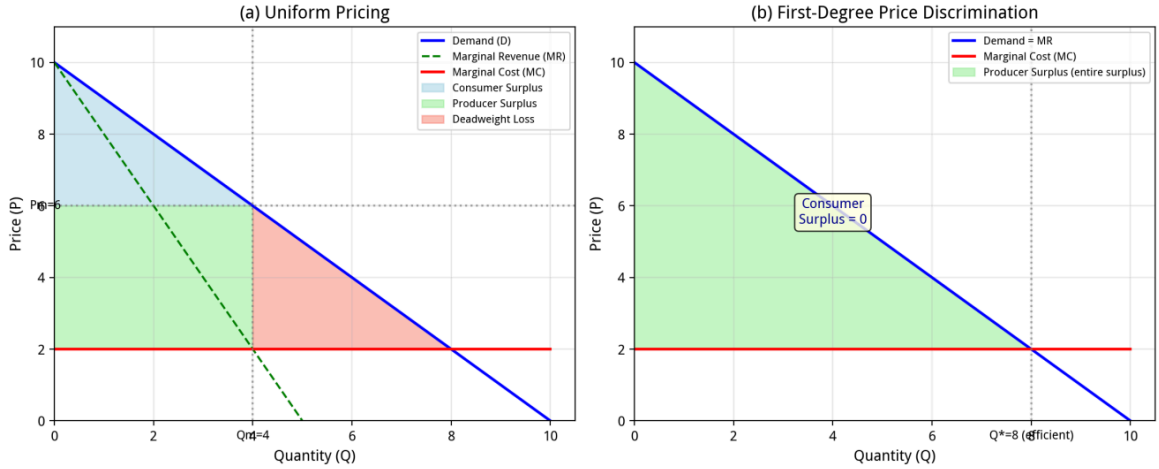

Figure 3. Consumer surplus and producer surplus

Under first-degree price discrimination, firm abandons the market equilibrium price, p1 and charge each individual exactly the maximum amount (as shown on demand curve), leading to the elimination of deadweight loss and convert entire consumer surplus to producer surplus. Traditionally, imperfect market firms' maximum profit by pricing consumer at a lower price that still covered production costs, resulting in a measurable loss of overall economic value.

When technology enables perfect price discrimination, the traditional downward-sloping demand curve essentially becomes the firm's marginal revenue curve. Every transaction that yields a positive net benefit (where the buyer values the good more than it costs to produce) takes place. Thus, this results in static efficiency where there is no waste of any kind of resource and the market economy works at full throttle. Even though consumers suffer from this practice whereby they are deprived of their "surplus" (meaning they can make no deals), the welfare of the market is enhanced since there

DOI: 10.54254/2754-1169/2026.37642

are more people engaging in the market economy. Although these results have been empirically proven, the wide acceptance will mean the changing of individual practices into market practices. The gains made from the huge profits are not limited to the present alone. The savings of additional profits will help firms develop products without increasing their average costs. This results in dynamic efficiency since short-run exploitation of consumers' surplus is used to produce better products [5, 6].

4.2. Personalised pricing and income inequality: cross-country comparative analysis

To some extent, personalized pricing could reduce inequality. Under a traditional uniform pricing model, the market equilibrium price is determined by market forces in a classical model and the uniform pricing method could exclude the vulnerable group who unable to afford to price. Personalized pricing can make things more affordable by charging low prices to customers with low willingness to pay, so they can have more access to goods and services. Some economists even argued that personalized pricing may function as a 'progressive system' for consumers where the rich pay more and poorer consumers pay less. Personalized pricing may thus improve welfare and expand access to basic goods, potentially reducing real-income inequality by improving living standards. This form of personal pricing is, in effect, a market version of redistribution without government intervention.

However, if personalized pricing is implemented without suitable regulations, it could risk inequality because personalized pricing is simply extracting consumer surplus but not redistribute income, so it cannot resolve the underlying inequality. Information asymmetry further weakens the benefit of personalized pricing when firms unable to obtain the real consumer incomes level to decide an accurate pricing, while consumers have little information about price settings and does not realise that there is a price discrimination.

The primary objective of algorithms is identifying the consumer's maximum willingness to pay (WTP), rather than establishing a fair market value. This dynamic becomes dangerous when this algorithmic blind spot is applied to lower-income demographics, especially where it comes to basic necessity they have to consume (basic food, rent, medicine). The personalised pricing might misinterpret that this user to be "less price sensitive" (because he buys bread anyway) and willing to pay more, resulting in a highly inelastic demand curve. Although the algorithm has detected the low-price sensitivity due to low substitute availability, allowing the firm to exploit it and set the price exact at the consumer's high reservation price for necessities. The pricing mechanism crosses the line from market efficiency into economic extraction. Failing to differentiate between a wealthy consumer who prefers to pay without checking the price and a vulnerable consumer who must pay to survive would worsen income inequality. Consumers with less ability to avoid data tracking may end up paying more. Price mistakes come from customers' browsing behaviour wrongly depicting their incomes, which ends up leading to charging them more by low-income groups. Moreover, personalized pricing is not an effective mechanism because of information asymmetry. Companies don't have full information about consumers' true income and income, so pricing decisions are inaccurate. Another issue at play here is that some low-income consumers may actually get charged a higher price if their online activities reflect their higher willingness to pay.

Personalization can even decrease consumer welfare by allowing firms to charge higher prices when competition declines [7]. Information asymmetries and data limitations also limit fair personalised pricing. Firms have full access to consumer data, consumers have no information about how pricing decisions are made, and both sides of this transaction are disadvantaged. This increases inequality instead of lowering it. Put differently, personalised pricing might change how prices are

DOI: 10.54254/2754-1169/2026.37642

allocated, but it will not solve the root causes of inequality in income. Indeed, this could deepen existing disparities, making personalized pricing not just a tool for efficiency, but a way for widening economic divides. This gap reduces social mobility, as unequal access to education, and healthcare opportunities traps individuals in a cycle of poverty, preventing them from improving their economic status regardless of talent or effort.

The implication of personalised pricing also lies in the institutional safeguards whereas developed Asian countries such as Japan and China has a mature competition law that can prevent predatory algorithm behaviour, least developed countries such as Indonesia and the Philippines often lack of regulatory framework to avoid personalised pricing from exploiting existing structural wealth divides.

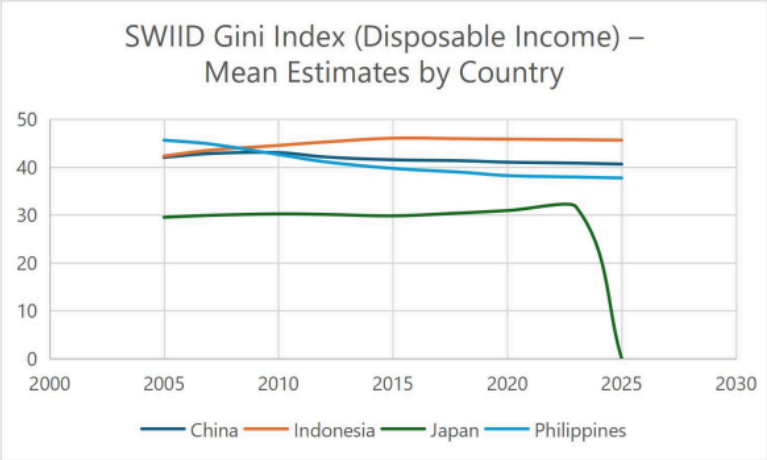

Figure 4. Gini coefficient of selected countries from 2005 to 2025

Note: Solid lines indicate mean estimates; shaded regions indicate the associated 95% uncertainty intervals.
Source: Standardized World Income Inequality Database v9.91

For instance, in countries with massive digital divide such as Indonesia, firm might use the digital data to target the surplus of the wealthy, but if the algorithm misapplies those same high-price premium to the vulnerable group, this widens the gap. In Table 1.3, Indonesia remains the most unequal country throughout the period, with a peak of 49.2 in 2016. Japan is the most equal and stable, with its lowest point at 27.2 in 2013, indicate that, the society is highly consensus on market prices. The Philippines experiences the greatest volatility, dropping from 47.2 in 2006 to 39.3 in 2023. This economic volatility could be correlates with unstable consumer spending habits. While, China shows a steady downward trend, falling from 49.0 in 2005 to 36.0 in 2022.

In summary, personalized pricing will hardly reduce income inequality because income inequality mainly comes from factors of different structure, including level of education, level of skills, access to capital, rather than consumption. Personalized pricing works only at the level of consumption. The price is adjusted to the consumer's willingness to pay, not his/her income. Some of the low-income consumers would receive lower prices, but low-income consumers' income does not increase. Low-income consumers' real situation does not change, so inequality between rich and poor still exists [8, 9].

DOI: 10.54254/2754-1169/2026.37642

4.3. Consumer fairness perception, trust and long-term market consequences

Additionally, given this pricing model offers undeniable theoretical benefits on market efficiency, it might deeply disrupt thee behavioural and psychological dynamics of the market, raise serious concerns of fairness and consumer trust [10]. Consumer naturally operate with an internalise concept of "reference price", which is a standard they consider reasonable base on past experiences, market norms, and perceived production costs. When algorithms utilize personal data such as past purchasing behaviour to increase price for specific individuals, this is against marketplace equity. Consumers trust reduces when they find out that they are being sold a certain good at different prices due to consumer data. Transaction shifts from mutually beneficial exchange to an adversarial interaction, making the consumers feel being manipulated. Although from a neoclassical economic perspective, personalised pricing is efficient and effective in eliminating deadweight loss under first degree price discrimination, the distribution of welfare transfers almost entirely to producers and consumer surplus disappear. The consumers would feel worse-off because they are paying more for the same good and received zero net economic utility from the utility [11]. If widely adopted, such perceptions of unfairness will erode consumer trust and market participation, leading to weaken the efficiency gains of personalised pricing. Perceptions of unfairness may trigger negative demand responses to a negative thought towards the brand by consumers and begin searching for the alternatives

5. Conclusions

In conclusion, personalised pricing shows a transformative shift in market dynamics and helpful in eliminating deadweight loss, ensuring that every consumer with a valuation above marginal cost can participate in the market. However, these gains are not distributed equity. While the social welfare is maximized, the consumer surplus is removed, individual buyers capture zero net utility from the transaction even though market operates at maximum capacity. Furthermore, the dependent on consumer willingness to pay rather than actual income would risk income inequality. While personalize pricing might work as progressive redistribution, it still a mechanism of extraction instead of equity. Finally, the erosion of consumer trust would threaten the sustainability of digital marketplaces. Overall, personalised pricing shows a classic trade-off and its effect therefore not only depends on the efficiency gain, but on the strength of regulatory.

References

[1] Combe, E. (2019). *Towards personalized pricing in the digital era*. Foundation pour innovation politique.
[2] OECD. (2025). *Personalized pricing in the digital era*. https://www.oecd.org/en/publications/personalised-pricing-in-the-digital-era_db4d9c9c-en.html
[3] Ezrachi, A., & Stucke, M. E. (2016). *The rise of behavioral discrimination*. https://link.wtturl.cn/?target=https%3A%2F%2Fwww.cmu.edu%2Ftepper%2Fnews%2Fstories%2F2025%2F0602-ai-driven-personalized-pricing-may-not-help-consumers&scene=im&aid=582478&lang=zh
[4] Botta, M., & Wiedemann, K. (2020). To discriminate or not to discriminate? Personalized pricing in online markets as exploitative abuse of dominance. *European Journal of Law and Economics, 50*(3), 381–404.
[5] De Streel, A., & Jacques, F. (2019). *Personalized pricing and EU law*. [Unpublished manuscript].
[6] Shiller, B. R. (2013). *First degree price discrimination using big data* (p. 32). Brandeis University, Department of Economics.
[7] Carnegie Mellon University. (2025, June 2). AI-driven personalized pricing may not help consumers. *Carnegie Mellon News*. https://www.cmu.edu/tepper/news/stories/2025/0602-ai-driven-personalized-pricing-may-not-help-consumers

DOI: 10.54254/2754-1169/2026.37642

[8] Carey, G., Crammond, B., & Malbon, E. (2019). Personalization schemes in social care and inequality: Review of the evidence and early theorizing. *International Journal for Equity in Health, 18*(1), 170.
[9] Kallus, N., & Zhou, A. (2021). Fairness, welfare, and equity in personalized pricing. In *Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency* (pp. 296–314). https://link.wtturl.cn/?target=https%3A%2F%2Fwww.oecd.org%2Fen%2Fpublications%2Fpersonalised-pricing-in-the-digital-era_db4d9c9c-en.html&scene=im&aid=582478&lang=zh
[10] Larsson, S., & Haresamudram, K. (2023). Consumer trust and platformed retail personalization. In *The future of consumption: How technology, sustainability and wellbeing will transform retail and customer experience* (pp. 77–94). Springer International Publishing.
[11] Victor, V., Nathan, R. J., & Fekete-Farkas, M. (2021). Consumer response towards personalized pricing strategies in online marketing. *International Journal of Technology Marketing, 15*(2–3), 223–265.