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Does Price Discrimination Increase Social Welfare?

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ABSTRACT

The process of charging a different price to a different group of consumers for similar goods and services is called price discrimination. The relationship between price discrimination and social welfare has been an important topic of research and discussion for many years. The **purpose** of the study is to determine the conditions under which price discrimination improves or reduces social welfare. The authors used a **method** of series of literature reviews to gather information about the relationship between price discrimination and social welfare. The study **showed** that price discrimination can improve social welfare if output is increased. The increase in output increases social benefits and overcomes the loss of welfare due to the inefficient distribution of products. The **key conclusion** is that the social benefits of price discrimination are the availability of essential services to low-income groups and the maintenance of equity in the consumption of public goods. This study has major **implications** for the formulation of a policy that introduces price discrimination to maintain equity among different income groups and ensure the availability of high-cost essential services.

Keywords: price discrimination; consumer efficiency; demand function; market; output; social welfare; price fairness

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ОРИГИНАЛЬНАЯ СТАТЬЯ

Повышает ли ценовая дискриминация социальное благосостояние?

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АННОТАЦИЯ

Процесс установления различных цен для разных групп потребителей на аналогичные товары и услуги называется ценовой дискриминацией. Взаимосвязь между ценовой дискриминацией и социальным благосостоянием является важной темой исследований и дискуссий на протяжении многих лет. **Цель исследования** — определить условия, при которых ценовая дискриминация улучшает или ухудшает социальное благосостояние. Для сбора информации о взаимосвязи между ценовой дискриминацией и социальным благосостоянием авторы использовали **метод** серии обзоров литературы. Исследование показало, что ценовая дискриминация может улучшить социальное благосостояние, если увеличивается объем производства. Увеличение выпуска продукции повышает социальные выгоды и компенсирует потери благосостояния из-за неэффективного распределения продукции. Основной **вывод** заключается в том, что социальными выгодами ценовой дискриминации являются доступность основных услуг для групп населения с низким уровнем дохода и поддержание справедливости в потреблении общественных благ. Данное исследование имеет важное **значение** для разработки политики, предусматривающей введение ценовой дискриминации для поддержания справедливости

среди различных групп населения по уровню доходов и обеспечения доступности дорогостоящих основных услуг.
Ключевые слова: ценовая дискриминация; потребительская эффективность; функция спроса; рынок; объем производства; социальное благосостояние; справедливость цены

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1. Introduction

1.1. Background

Price discrimination is one of the most common marketing strategies. It is a practice in which a homogeneous commodity is sold at the same time to different consumers at different prices [1]. There are three types of price discrimination: first-degree or perfect price discrimination, second-degree price discrimination or nonlinear pricing, and third-degree price discrimination. In first-degree price discrimination, the seller charges a different price for each unit of the good in such a way that the price for each unit is equal to the maximum willingness to pay for the unit product. In this case, all the profit from the trade goes to the monopolist, which is efficient because there is no deadweight loss. The second-degree of price discrimination occurs when a different price is charged for a different number of products bought but not across consumers. This means every consumer gets the same price list, but it depends on the number of products they buy. The third-degree of price discrimination occurs when different customers are charged different prices. This is the most common type of price discrimination we can see in our society [2]. For example, airlines and travel agencies provide identical services but apply varied pricing structures for distinct demographic groups like children, students, and adults. Moreover, discrimination in pricing is prevalent in sectors like telecommunication fees, electricity pricing, and various industries dominated by oligopolistic enterprises [3].

For successful discrimination, there are some conditions. First, the firm should determine different segments of the market, and these different segments should have different price elasticity. Markets must be differentiated based on the nature of use, physical distance, and time. Similarly, the firm should have monopoly power [4].

Since the 1920s, there has been an issue among economists about whether price discrimination increases or decreases social welfare. Social welfare is considered optimal when it is not practicable to make anyone better off from the allocation of goods and services without making anyone worse off [5]. Pigou [2] demonstrated that under restrictive conditions, social discrimination reduces social welfare. He demonstrated that price discrimination reduces social welfare by adopting three assumptions. All markets must have nondiscriminatory prices, surpluses derived from groups of consumers, and profits that contribute equally to social welfare and have linear demand functions [2]. After some time, different academics showed that price discrimination can improve social welfare under a specified condition [6]. For welfare improvement, an increase in total output is the most important condition [7]. In third-degree price discrimination, there is the existence of consumer inefficiency, which means the output is not distributed optimally as their marginal utility is unequal. When there is a transformation from uniform pricing to price discrimination, a higher valuation of goods occurs, and consumers have a lower willingness to pay. The only way to avoid consumer inefficiency is to increase social output, which leads to social welfare [8]. To raise the condition of social welfare, the total output with discrimination should exceed the non-discrimination level [9]. Dwivedi [10] reported that price discrimination can be beneficial if it enhances overall social welfare by enabling lower-income families to afford products that they couldn't at regular market prices. This can lead to an improved standard of living and greater access to a variety of goods.

The relationship between price discrimination and social welfare has been an ongoing debate for many years. The social eligibility of third-degree price discrimination has been a very important research topic since the pioneering analysis of the problem done by Robinson [4]. Many economists consider price discrimination a good policy to improve social welfare, and many economists are raising questions about the consumption ineffi-

ciency resulting from price discrimination. This study focuses on third-degree price discrimination because it is a common strategy in industries like transportation, healthcare, and entertainment. It's relevant for understanding real-world pricing effects on social welfare and informing policymaking on consumer protection, anti-discrimination regulations, and competition policy. This pricing approach involves categorizing consumers based on observable traits, enabling a deep examination of how it affects diverse consumer groups and highlighting potential disparities in access to goods and services, impacting social welfare. This review paper provides a brief overview of the conditions under which price discrimination improves welfare and causes social welfare loss. It also presents the effects of price discrimination on the consumer and society.

1.2. Objectives

1. To determine if consumers are better off from price discrimination.
2. To determine if society as a whole is better off from price discrimination.
3. To determine the condition required for the improvement of social welfare from price discrimination and its social impact.

2. Materials and methods

2.1. Desk study

A desk study was done on the topic of price discrimination and social welfare to collect the relevant information. A brief study was done to find out the relationship between price discrimination and social welfare.

2.2. Collection of articles

After doing a series of literature studies, a number of articles related to price discrimination were collected. Then the most relevant articles were selected and studied thoroughly to generate ideas. A brief study about price discrimination, its types, advantages, and disadvantages was done. Similarly, a brief study of the concept of social welfare was done. The key points derived from these articles were documented, and further study was performed.

2.3. Summarization of ideas from articles

The information and results collected from different articles were written and critically evaluated, and the findings were illustrated in the results and discussion section.

3. Results and discussion

3.1. Real life instances of price discrimination in society

If the seller can readily distinguish between customers with varying degrees of demand elasticity, they may opt for third-degree price discrimination. Numerous examples of third-degree price discrimination exist, such as discounts for senior citizens or students, fluctuating rates for weekends versus weekdays, and variable utility charges. In the past, federal marketing orders for agricultural products have served as illustrations of third-degree price discrimination [11]. For instance, federal milk marketing orders are designed to accommodate disparities in demand for milk used in beverages, soft dairy products (like yogurts and soft cheeses), hard dairy products (including butter and hard cheeses), and dry milk [12].

Consider a cafe that provides senior citizens with a discount on coffee. Even though the cost of producing a cup of coffee remains consistent, they charge 25-year-old customers more than their 75-year-old counterparts. This practice is likely based on the cafe owner's belief that senior citizens have more elastic demands than younger customers, allowing them to profit from varying prices. It's crucial to emphasize that price discrimination involves charging different prices for the same product or service. On the other hand, there are instances, like higher insurance rates for parents of teenage drivers, where certain customers are charged more due to increased risk and costs [11].

3.2. Change in welfare effect while shifting from uniform pricing to price discrimination

Any policy or economic change, in Kaldor's view, improves social welfare because the gainer can make up for the losers while still benefiting. Hicks asserts that a change is socially beneficial if it causes some people to gain and others to lose, and the losers are unable to compensate the winners in a way that would prevent them from supporting the change. The Hicks' criterion offers an exact definition of compensation. According to Mukoyama [13], the major critique

of the Kaldor-Hicks' criterion is that the compensation from winners to losers does not have to take place: the transfer is purely hypothetical. Thus, if, for example, a social welfare function places more weight on the losers' loss than the winners' gain, the Kaldor-Hicks criterion may not be compatible with maximizing social welfare. Such an issue does not occur if we stick to the Pareto criterion, which imposes a higher bar on conducting a policy.

3.2.1. Welfare effects of price discrimination

According to Aguirre [14], the assumptions are:

Consider good is sold in the two different markets.

The demand function is given by $D_i(p_i)$ in market i (where i = 1,2).

Where pi is the price taken in the market.

The inverse demand function is given by $p_i(q_i)$.

Where qi is the sold quantity.

For market 1

$$\text{Welfare } (W1) = \int_{q1}^{q2} \left[p_1(q_1) - c \right] dq_1 . \quad (1)$$

For market 2

$$\text{Welfare } (W2) = \int_{q1}^{q2} \left[p_2(q_2) - c \right] dq_2 . \quad (2)$$

Then, the change in welfare while converting from uniform pricing to price discrimination is given by:

$$\Delta W = W1 + W2. \quad (3)$$

The welfare effect of third-degree price discrimination is shown in *Fig. 1*. The figure shows the calculation of the welfare effect of third-degree price discrimination by adding the positive and negative changes in the total surplus in the market. When there is a move from uniform pricing to price discrimination, then the change in welfare is the sum of the cumulative difference between the price and marginal cost for individual markets between the outputs under price discrimination [12]. Chung [15] studied the effect of price discrimination on welfare in cases where firms differ in the costs associated with improving product quality. The study demonstrated that, when there is a significant cost difference between the firms, price discrimination can enhance social welfare when compared to uniform pricing.

3.2.2. Use of misallocation effect and output effect on social welfare

Figure 2 depicts the breakdown of the effect of social welfare into the misallocation effect and the output effect. The misallocation effect demonstrates the reduction in welfare caused by the transfer of q units of production from a market with lower elasticity to one with higher elasticity. The output effect illustrates the impact of changes in total output on social welfare [16]. Third-degree price discrimination's contribution to total output plays a crucial role in the effect of total output on social welfare. As the misallocation effect is always negative, the output effect should be positive to increase total social welfare [14]. To improve social welfare, an increase in output is required [9]. If total output remains constant, price discrimination in linear demand reduces social welfare. Similarly, when total output is increased, there would be no misallocation effects and a positive output effect [14].

Third-degree price discrimination leads to allocative inefficiency because it causes consumers with the same marginal utility to pay different prices based on how the market groups them. So, for third-degree price discrimination to improve social welfare, it must lead to a big increase in total output to make up for the way the market is misallocating resources [17]. Galera [18] studied how price discrimination affects welfare when quality disparities exist. Their findings indicate that when local firms' product qualities are identical, price discrimination consistently leads to an increase in welfare, primarily driven by a positive allocation effect associated with price discrimination.

3.3. The effect of price discrimination on welfare using the demand function

Consider the market to be strong if the discriminatory price is higher than the non-discriminatory price, and weak if it is lower. It is assumed that social welfare is proportional to the magnitude of discrimination. Likewise, it was assumed that both markets were supplied with positive quantities at non-discriminatory prices [19]. There is a reduction in social welfare if the direct demand function is at least convex in the strong market than that in the weak market (when the price rises with discrimination). For example, the demand curve has the same curvature, or

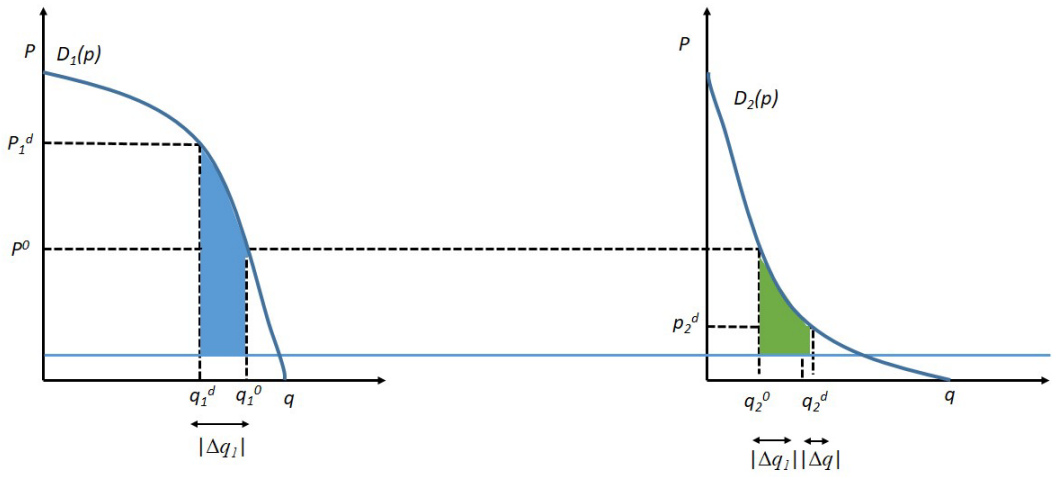

Fig. 1. **Welfare effects of price discrimination**

Source: Aguirre, 2012 [14].

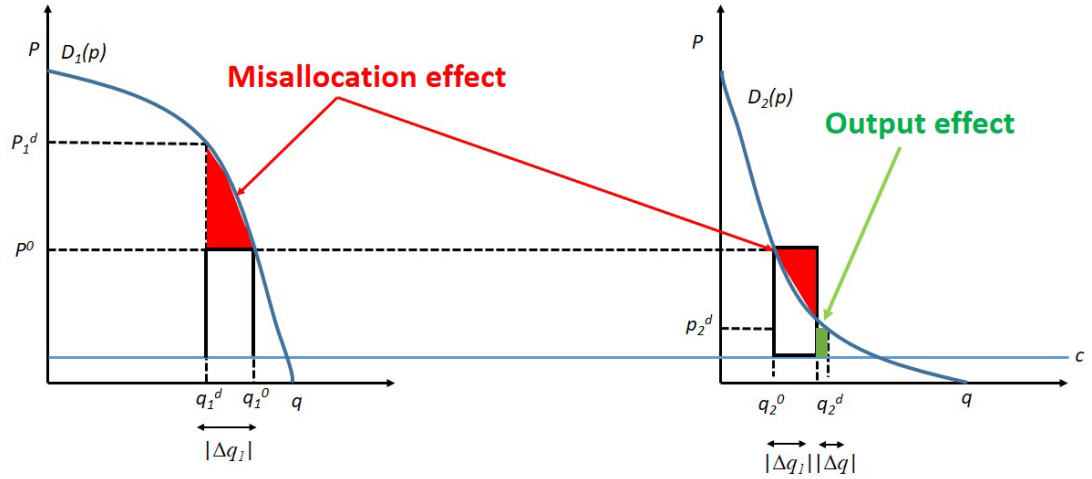

Fig. 2. **Misallocation and output effect**

Source: Aguirre, 2012 [14].

the demand curve is linear, so the curvatures are zero. There is improvement in social welfare if the inverse demand function in a weak market is more convex than in a strong market and the prices of discrimination are close to each other. When total output increases, societal welfare improves. When discriminatory prices are close together, there is a decrease in social welfare, which is also known as the misallocation effect. A strong market, for instance, possesses a linear demand function, whereas a weak market possesses an exponential demand function [20].

Certain conditions must be met for price discrimination to increase social welfare. A small amount of price discrimination increases welfare when direct demand in a strong market is less convex than direct demand in a weak market when the market is initially priced without discrimination. When prices are initially discriminatory, marginal reductions in discrimination increase welfare when the inverse demand function in a strong market is less convex than in a weak market. Examples include demand functions with constant elasticity. Price increases that occur when demand is concave have a negligible effect on welfare. If a price falls in convexity, there is a substantial increase in output and welfare. When the price was increased in a market with concave demand and decreased in a market with convex demand, the output rose in a similar fashion [20]. When the weak market has convex demand and the strong market has concave demand, and one of the markets has strict convexity and concavity, it guarantees an increase in total output due

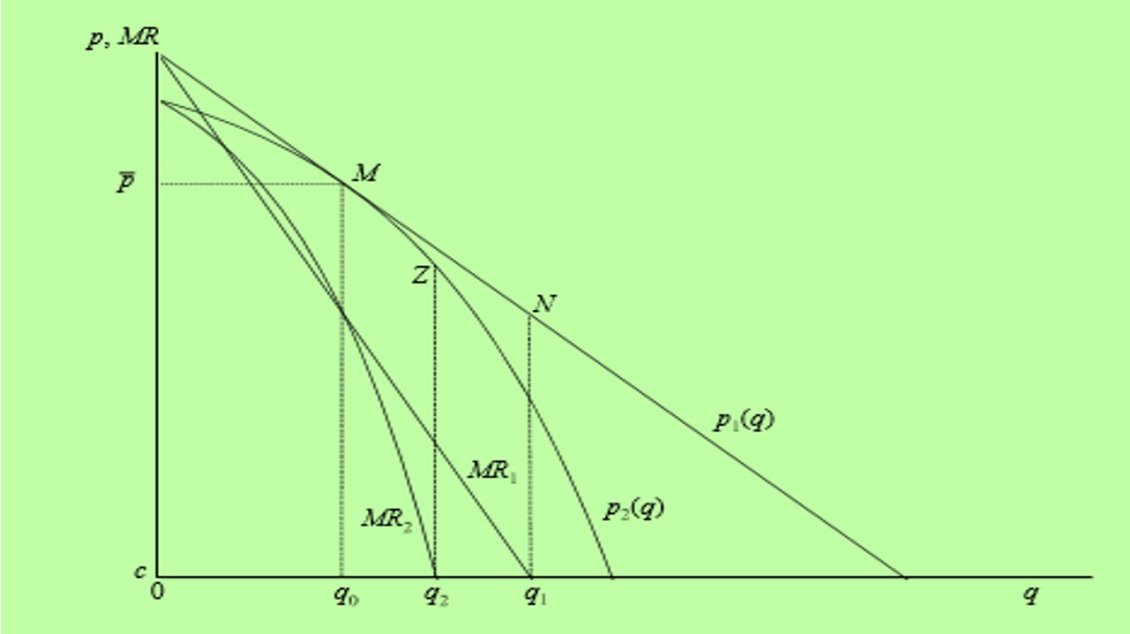

Fig. 3. **Relationship of marginal revenue curve associated with demand curve that have point of tangency**

Source: Based on Cowan, 2008 [20].

to price discrimination of the third degree [21]. While considering input costs based on prior research, Miklos and Shaffer [22] discovered that implementing price discrimination is less likely to result in an overall increase in total output if competition is more intense in strong markets compared to weak markets.

Suppose inverse demand is $p_1(q)$ and transform inverse demand is $p_2(q)$. As price, demand slope and quantity are the same, the marginal revenues (*MR*) for two demand functions are equal to quantity $q0$. Marginal revenue with $p_2(q)$ is always below $p_1(q)$ because of the price reduction. The discrimination output is determined by the intersection of *MR* and *MC*. Here, the welfare gain in a weak market due to discrimination is lower than the transformed function. For every quantity, the price is lower because the output increase is lower. In *Fig. 3*, $MNq_1\ q_0$ shows the welfare gain from price discrimination with a linear demand function, and MZq_2q_0 shows the welfare gain from discrimination with a concave demand curve [20].

3.4. Price discrimination in homogeneous and heterogeneous firms

The most important condition for the improvement of welfare is an increase in total output. In third-degree price discrimination, there is no optimum distribution of output to the consumer because of their unequal marginal utility. In homogeneous firms, while changing from uniform pricing to price discrimination, units of the product are withdrawn from consumers with higher good valuations and offered to consumers with low willingness to pay. Increasing output is the only way to prevent consumer inefficiency [8].

In the case of heterogeneous firms, to prevent consumer surplus inefficiency, better redistribution of output can be done. In this condition, a fall in output may not be responsible for the decrease in welfare caused by introducing price discrimination. When there are consumption externalities, the assumption of an increase in total output to improve social welfare may not hold [8]. For example, some bars give discounts on drinks to women to attract more women, and they also hope to attract more men too. With the increase in the number of women, the willingness to pay for men also increases. Positive externalities help to improve welfare [23].

3.5. Price discrimination and consumer welfare

The contribution of price discrimination to the better of consumers as a whole depends on whether the total output of the good increases or not. When the output effect is not considered, the inefficient distribution of goods under price discrimination can affect social welfare negatively [24]. Under price discrimination, the condition of the same marginal rate of substitution

for any of the two goods for all consumers is violated. This occurs because different consumers are charged different prices. Here, the welfare of one consumer can be increased without affecting the welfare of other consumers. However, third-degree price discrimination for any given level of output will have a negative effect on the efficiency of the distribution of goods and reduce consumer welfare [25]. So when output is increased due to price discrimination, it has social benefits and overcomes the loss of welfare due to the inefficient distribution of products. Similarly, price discrimination is adopted by sellers to capture the market's consumer surplus. Sellers can get higher total revenue from price discrimination than from uniform pricing.

Leslie [26] studied the impact of third-degree price discrimination on a Broadway theater performance, specifically the 50% discount offered at the ticket discount booth. His findings revealed that implementing this discount led to a 5% increase in profits compared to a uniform pricing strategy. However, Leslie [26] also discovered that the current 50% discount is excessively generous, resulting in a significant shift of customers away from full-price tickets. By reducing the discount to 30%, profits would actually increase by 7% compared to the uniform pricing strategy. Additionally, Leslie quantifies the overall consumer welfare effects of price discrimination and determines them to be relatively small.

3.6. Price discrimination and the betterment of society as a whole

It is difficult to determine the desirability of price discrimination for a society as a whole. Price discrimination is considered desirable if it can increase the total output, but it is a fact that it causes the inefficient distribution of resources. In some cases, no output of a product is produced at a single price, and it only becomes profitable under price discrimination. In such cases, price discrimination is socially justified [27]. In the agricultural sector, farmers can increase their earnings by applying distinct prices to various consumer segments. This stimulates greater output, innovation, and technology investment. The ensuing efficiency leads to reduced costs, making food more accessible and affordable for all consumers. Furthermore, this approach optimizes supply and demand alignment, minimizing waste and enhancing resource distribution. For instance, farmers can offer varying quality produce at varying prices to cater to different consumer preferences [28].

However, price discrimination can also result in negative effects on the betterment of society as a whole. It can lead to inequality and unequal access to goods and services, as some consumers may be excluded from certain markets or may not be able to afford higher-quality produce. The reduced market competition can lead to higher prices for consumers in the long run [29].

Besanko [30] studied a scenario where ketchup was sold at a fixed price for everyone. They then looked at what would happen if companies could figure out which customers might be more or less willing to pay for their product. Surprisingly, they discovered that when companies could charge different prices to different types of customers, it didn't lead to a fierce price war. It not only improved social benefits but also effectively boosted the companies' profits.

Brenkers and Verboven [31] examined a situation where car manufacturers were charging different prices to customers from different countries. However, in the future, they wouldn't be able to do this because of improved market integration. We may assume that this would lead to intense competition because domestic and foreign firms have opposite strengths and weaknesses in their respective markets. Surprisingly, their findings showed that eliminating price discrimination didn't result in an all-out price war. Instead, it caused prices for domestic firms to go down while prices for foreign firms went up. The impact on industry profits and overall social welfare was relatively modest unless high prices in the United Kingdom were a result of collusion among companies.

Some of the benefits of price discrimination for the whole society are illustrated below.

3.6.1. Availability of high-cost essential services

For goods and services that are essential to society as a whole but whose production is not profitable because of falling long-run average costs much above the average demand curve, price discrimination is socially justifiable.

In most public services, such as transportation services and post office services, this kind of

condition arises. In this kind of situation, higher-paying groups subsidize the lower-paying groups. The production of these essential goods and services is possible only because of the subsidy provision provided to lower-income groups by higher-income groups [10].

3.6.2. Maintaining equity in the consumption of public goods

In our society, there is an unequal distribution of income. So, the unequal distribution of goods may have a positive effect on lower-income people. When the higher price is charged to the higher income group and the lower price is charged to the lower-income group, the redistributed effect benefits the poor at the expense of the rich. For instance, when hydroelectricity projects are initiated, industry owners benefit more than households, and European countries benefit more than African nations from the uniform pricing of pharmaceuticals. Under these circumstances, uniform pricing cannot be socially justified [10].

In the agricultural sector, public goods may include farming extension services, efforts to conserve soil and water, and research and development projects that benefit both farmers and society. In order to ensure that all farmers, regardless of their level of income or the size of their operation, can access these public commodities, price discrimination is a necessary step. For example, the agriculture extension service may offer training programs or workshops with sliding scale fees so that farmers with limited resources can still attend. Similar to this, study organizations might provide small farmers with discounted rates for seeds or plant materials, ensuring that they have access to the newest varieties and innovations.

To maintain equality among different income groups, price discrimination plays a great role. As it promotes social equity, price discrimination is justified socially. However, in the absence of optimal allocation of resources and distributive efficiency, price discrimination is not desirable [28].

3.6.3. Availability of essential services to low-income groups

When a single price is applied uniformly to everyone, it can lead to low-income individuals being unable to afford essential goods and services. This is particularly true when there is a monopoly on the product or service, such as in the case of electricity, where higher-income individuals can afford to use more while lower-income individuals are unable to use any. This results in a waste of resources, particularly in the case of hydroelectricity, causing social harm. Therefore, price discrimination can help improve social welfare by ensuring that everyone can access essential goods and services at a price they can afford [10].

Price discrimination in agriculture can enhance affordability for low-income consumers. Farmers markets might provide discounts or sliding-scale pricing, making healthy food accessible. This approach aids small and local farmers against bigger competitors and caters to niche markets, potentially boosting profitability through premium pricing for sustainable or locally sourced goods [28].

4. Conclusion and policy implications

The most common type of price discrimination seen in our society is third-degree price discrimination. The social eligibility of third-degree price discrimination has been an important topic of discussion and research for many years. Some economists consider it a good policy, and others disagree. Price discrimination has both social benefits and harm. Price discrimination is harmful to society when there is an ineffective distribution of resources in society between different consumers or users, which results in a minimization of the output, employment, and income. It causes a deviation of the resources from social optimum utilization. Similarly, there will be a waste of resources, and people should pay more for a small quantity. In most cases, price discrimination results in a loss of social welfare because, for most consumers, the price of the product is more than the marginal cost of supply. When discrimination occurs in a situation of falling average costs, it becomes advantageous to consumers and gives a larger output to the market. Some of the consumers benefit because they can buy the product at a lower price. Consumers with lower incomes are priced into the market if the suppliers charge them less money.

The study of price discrimination and its role in social welfare gives an idea about introducing price discrimination in the formulation of policy that helps in ensuring the adequate supply of

high-cost essential services, making the availability of high-cost essential services available to low-income groups, and ensuring cost-benefit equity in the consumption of public goods. Its study helps us formulate policies to improve social welfare.

REFERENCES

1. Machlup F. Characteristics and types of price discrimination. Buisness Concentration and Price Policy. 1955:397–440.
2. Pigou A.C. The Economics Welfare. 4th ed. MacMillan and Co Limited. 1932:1–323.
3. Zhang Z., Wang Y., Meng Q. and Han Q. Impact of Third-Degree Price Discrimination on Welfare under the Asymmetric Price Game. Mathematics. 2022;10(8):1215. DOI: 10.3390/math10081215
4. Anam M., Chiang S.H. Price discrimination and social welfare with correlated demand. *Journal of Economic Behaviour and Organization*. 2006;61(1):110–122. DOI: 10.1016/j.jebo.2004.10.006
5. Dean E., Elardo J., Green M., Wilson B. and Berger S. Utility and Pareto Optimality: The Orthodox Economic View of Social Welfare. In: Principles of Microeconomics: Scarcity and Social Provisioning; 2016:251–254.
6. Lichtenberg F.R. Pharmaceutical price discrimination and social welfare. *Capitalism and Society*. 2010;5(1):1–32. DOI: 10.2202/1932–0213.1066
7. Chen Y., Schwartz M. Differential pricing when costs differ. a welfare analysis. *The RAND Journal of Economics*. 2012;46(2):442–460. DOI: 10.1111/1756–2171.12091
8. Galera F., Zaratiegui J.M. Welfare and output in third-degree price discrimination: A note. *International Journal of Industrial Organization*. 2005;24(3):605–611. URL: https://hdl.handle.net/10171/7022
9. Varian H.R. Price discrimination. In: Schmalensee R, Willig RD, editors. A Handbook of Industrial Organization. Elseiver Science Publishers; 1989:598–647. URL: https://sites.bu.edu/manove-ec101/files/2017/11/VarianHal PriceDiscrimination1989.pdf
10. Dwivedi D.N. Price and output determination under monopoly. In: Microeconomics Theory and Applications. 3rd ed. Vikas publishing house; 2016:345–89.
11. Thomsen M.R. Third degree price discrimination. In: An Interactive Text for Food and Agricultural Marketing. 2023:1–285.
12. Chouinard H.H., Davis D.E., LaFrance J.T. and Perloff J.M. Milk Marketing Order Winners and Losers. *Applied Economic Perspectives and Policy*. 2010;32(1):59–76. DOI: 10.22004/ag.econ.21238
13. Mukoyama T. In defense of the Kaldor-Hicks criterion. *Economic Letter*. 2023;224. DOI: 10.1016/j.econlet.2023.111031
14. Aguirre I. Welfare effects of third-degree price discrimination: Ippolito meets Schmalensee and Varian. In: Laratta R, editor. Soc Welfare. InTech; 2012. DOI: 10.5772/38089
15. Chung H.S. Welfare impacts of behavior-based price discrimination with asymmetric firms. *Asia-Pacific Journal of Business Administration*. 2020;11:17–26.
16. Aguirre I., Cowan S., Vickers J. Monopoly price discrimination and demand curvature. *American Economic Review*. 2010;100(4):1601–1615. DOI: 10.1257/aer.100.4.1601
17. Adachi T.A. Sufficient statistics approach for welfare analysis of oligopolistic third-degree price discrimination. *International Journal of Industrial Organization*. 2023;86. DOI: 10.1016/j.ijindorg.2022.102893
18. Galera F., Mendi P., Molero J.C. Quality differences, third-degree price discrimination, and welfare. *Economic Inquiry*. 2017;55:339–351. DOI: 10.1111/ecin.12368
19. Cowan S. The welfare effects of third-degree price discrimination. *Economics Series Working Papers*. 205. 2004;3–27. URL: https://www.researchgate.net/publication/5218259_The_welfare_effects_of_third-degree_price_discrimination
20. Cowan S. When does third-degree price discrimination reduce welfare, and when does it raise it? *Economics Series Working Papers*. 410. 2008;1–21. URL: https://ora.ox.ac.uk/objects/uuid:35b5c185–659d-42d5–9651–40585a7d56df
21. Aguirre I. Output and misallocation effects in monopolistic third-degree price discrimination. *Economics Bulletin*. 2007;4(11):2–24. URL: https://www.researchgate.net/publication/4805075_Output_and_misallocation_effects_in_monopolistic_third-degree_price_discrimination
22. Miklós-Thal J., Shaffer G. Third-degree price discrimination in oligopoly with endogenous input costs. *International Journal of Industrial Organization*. 2021;79:102713. DOI: 10.1016/j.ijindorg.2021.102713

23. Adachi T. Third-degree price discrimination, consumption externalities and social welfare. *Economica*. 2005;72(285):171–178. DOI: 10.1111/j.0013–0427.2005.00407.x
24. Adachi T. A note of third degree price discrimination with interdependent demands. *The Journal of Industrial Economics*. 2002;50:235–236. URL: https://www.semanticscholar.org/paper/A-Note-on-%27Third-Degree-Price-Discrimination-with-Adachi/eb698eb1df2589e6d6d85f8a0530b9f718f6152d
25. Nalebuff B. Price discrimination and welfare: A comment on tying, bundled discounts, and the death of the single monopoly profit by Einer Elhauge. *Competition Policy International*. 2009;5(2):221–241. URL: https://spinup-000d1a-wp-offload-media.s3.amazonaws.com/faculty/wp-content/uploads/sites/8/2019/06/PriceDiscriminationWelfare_CPI2009.pdf
26. Leslie P. Price discrimination in Broadway theatre. *The RAND Journal of Economics*. 2004;35:520–541.
27. Bertoletti P. On the output criterion for price discrimination. *Economics Bulletin*. 2010;29(4):2951–2956. URL: https://www.researchgate.net/publication/46547308_On_the_output_criterion_for_price_discrimination
28. Fennell L.A. Optional Price Discrimination. Coase-Sandor Working Paper Series in Law and Economics. 2022. URL: https://chicagounbound.uchicago.edu/cgi/viewcontent.cgi?article=2693&context=law_and_economics
29. OECD. *E xecutive Summary of the Roundtable on Price Discrimination held at the 126 th meeting of the C ompetition Committee of the OECD*. 2018;1–5. URL: https://one.oecd.org/document/DAF/COMP/M(2016)2/ANN 5/En/pdf#:~: text=Price discrimination can benefit consumers, of consumers that are served
30. Besanko D., Dube J.P. Gupta S. Competitive price discrimination strategies in a vertical channel using aggregate retail data. *Management Science*. 2003;49:1121–1138.
31. Brenkers R., Verboven F. Liberalizing a distribution system: The European car market. *Journal of the European Economic Association*. 2006;4:216–251.

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