

# ***Asymmetric Information: Insights Across Economic and Market Contexts***

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**Abstract:** Asymmetric information seeks to explain how uneven knowledge among different parties distorts markets, leading to inefficiency and even market failure. This essay examines asymmetric information as a key factor of influence in the market and explores some theoretical solutions, such as signaling and screening. The study demonstrates the benefits and limitations of these remedies through real-world examples, such as the quality gaps in the tourism industry and the reliance of e-commerce on product disclosures. Signaling helps the informed parties convey credibility, while screening assists the uninformed in obtaining crucial information. However, these mechanisms are not perfect and can have their own shortcomings. While signaling and screening mitigate the effects of asymmetric information, neither can fully resolve its consequences. The study also underscores that the problem of achieving efficient market outcomes persists due to asymmetric information.

**Keywords:** asymmetric information, signaling, screening, economic inefficiency

## **1. Introduction**

Markets function through informed exchanges between different parties. However, in some situations, one party may possess more information than another, creating asymmetric information, which distorts prices. This imbalance creates inefficiencies, distorts prices and in extreme circumstances, causes market failure, where the market fails to allocate resources efficiently to meet the needs of different parties. The concept of asymmetric information, proposed by George Akerlof in his 1970 paper entitled *The Market for Lemons*[1], has become a central way of understanding the influence of information gaps on economic outcomes.

This essay reviews the practical effects of asymmetric information across tourism, e-commerce, and insurance based on the model by Akerlof. The essay examines two important solutions aimed at mitigating these effects: signaling and screening, invented by Michael Spence [2] and Joseph Stiglitz [3], respectively. These mechanisms, though effective in some contexts, create a number of economic issues, like high costs, inefficiencies, and complications for consumers.

The goal of this essay is to explore the application of these solutions for asymmetric information, examining their effectiveness while highlighting their limitations when applied in certain industries. By bridging theory to real-world examples, this essay emphasizes the persistent relevance of asymmetric information while reflecting the complexity of building efficient market outcomes when faced with asymmetric information.

## 2. Methodology

In chapter 5, The Inside Story of his book “*The Undercover Economist*”, Tim Harford, extends asymmetric information into various domains such as the healthcare industry to explain the consequences and associated moral hazards [4]. This study is mainly a conceptual framework that applies the concept in various categories to obtain the larger picture, with the intention of focusing on theoretical solutions that aim to mitigate the consequences of asymmetric information across different markets. Therefore, pure empirical analysis and conventional data collection methods are not required in this context.

Beyond the focused literature “The Undercover Economist,” this study also analyzed various online research papers on specific industries deeply influenced by asymmetric information, using this information to distill perspectives regarding how asymmetric information influences decision-making, pricing strategies, and overall market efficiency. Furthermore, the study integrated asymmetric information with economic concepts such as choice overload to obtain evaluations beyond apparent observation and ensure an in-depth review that provides holistic understandings of the subjects. By analyzing the application of solutions within industries, the paper aimed to gain insight into the success and limitations of these solutions and evaluate how they function to improve asymmetric information.

## 3. Asymmetric information

### 3.1. George Akerlof's market for lemon

In August 1970, George A. Akerlof first proposed the idea of asymmetric information in his revolutionary research, “*The Market for 'Lemons'*”. He stated that in certain markets, buyers judge the product quality based on market statistics [1]. This provides an incentive for sellers to sell poor-quality goods, because the long-term consequences are borne not by the individual seller, but mainly by the entire group of the market, whose statistics are affected.

### 3.2. The automobile example

This model categorizes second-hand automobiles into good cars and bad cars (lemons). It is assumed that sellers, having possessed the car for a period, have a better understanding of their own car being sold. Individual buyers of cars, on the other hand, have no way of finding out whether the car they are purchasing is good or a lemon. However, they possess the information that for the probability  $q$ , the car will be good, and while the probability of it being a lemon is  $(1-q)$ . The issue within this market is that because buyers cannot differentiate between good cars and lemons, they will all sell at the same expected value, roughly the average of the real value of a good car and that of a bad car.

Assuming all buyers and sellers are rational individuals who maximize their utilities with their given probabilities, sellers who have information that their car is a good car want to sell at a value higher than the owner of bad cars and will not be satisfied by the low market price, and they will choose to exit the market. When this situation occurs,  $q$ , the probability of buying a good car, decreases. This further reduces the expected value of a car, which drives out potential buyers or lowers the single price that buyers are willing to pay, which once again drives away more sellers of good cars, forming a vicious cycle.

### 3.3. The consequences of asymmetric information

The consequences of this problem are extremely dramatic and worrying. As Tim Harford stated, the market isn't simply about consumers being ripped off or taken advantage of by the information they

do not possess. Rather, Akerlof is describing “a market that should exist and simply doesn’t because of the corrosive force of inside information” [4]. The vicious cycle eventually leads to zero transactions occurring in the market, as price keeps getting driven down while buyers and sellers continue to leave the market. No value is being generated from transactions, and neither the sellers nor the buyers are gaining any profit. In this situation, although sellers have more information than the buyers and are intuitively expected to be in an advantageous position, the resulting consequences are unfavorable for both parties.

### 3.4. Example of asymmetric information in restaurants near tourism attractions

As previously mentioned, the issue extends beyond the secondhand car markets and can impact various markets to varying degrees. Take the restaurant industry, specifically the restaurants near tourist attractions, for example. David Ricardo’s Law of Rent states rent is price determined since “rent of land arises because the different plots of land have different degrees of productive power” [5]. Accordingly, restaurant owners near tourist attractions pay high rent and sell at high prices due to the tourism-heavy area that brings many potential customers. Yet, owners put little dedication into the actual food they are serving. Because their target audience are tourists who are likely to visit once despite if the food tastes good or not, tourist attraction restaurants focus on maximizing the major profits from one-time services for tourists, at the cost of losing local customers.

The situation is worsened by information asymmetry. Hungry tourists visiting the location for the first time are willing to pay high prices for mediocre food due to the lack of information on local restaurant qualities. They lack information on restaurant qualities and are unable to find better alternatives. In this example, asymmetric information, although it does not eliminate the market completely, creates a truncated market. Asymmetric information eliminates the possibility of competition and product differentiation; thus, restaurants have no incentive to provide high-quality food as the outcome will be similar despite service and food quality.

Tim Harford points out that the situation may be improved by the fast-evolving world of the internet, as consumers can see transparent reviews online, giving them a better idea of restaurants’ quality and reducing the information asymmetry. Yet, the online review system is flawed and requires improvements. One 2020 study discovered that online platforms may often be biased when creating ratings. In May 2019, researchers collected and analyzed published restaurant reviews in Franklin County, Ohio, and found a positive correlation between the number of reviews and the score of the review. Reviewing platforms have an inherent bias towards large, popular restaurants, while restaurants with initial lower ratings often turn customers away, causing the restaurant rating to stagnate. Moreover, a more serious issue is that restaurants can manipulate their positive reviews, which are very difficult to identify. For example, they may offer discounts in exchange for positive reviews, even if those reviews do not accurately reflect the customers’ actual experiences. Furthermore, they may choose to fabricate entirely false reviews.

This is perfectly exemplified by the well-known restaurant “*The Shed*.” Oobah Butler, an online content creator, started a restaurant named *The Shed*, which was essentially just the Butler’s backyard. After months of fabrications, such as writing false positive reviews for the non-existent restaurant and pretending to be always fully booked, *The Shed* made it to “the top spot on TripAdvisor with not a single real customer review.” The specific case demonstrated how easily the public can be deceived by the information found on the internet. The internet not only failed to reduce information asymmetry but created new misleading impressions and more confusion for the consumers.

Additionally, these resources invested to maintain positive online ratings do not bring any direct benefits to the customers but further fortify a market providing mediocre products. To conclude, the development of the internet alone is not sufficient to improve problems caused by asymmetric information of restaurants in tourism sites, as it faces severe uncertainties that may exacerbate the

customers' challenges when making choices. With the existing asymmetric information, the truncated market lacks high-quality restaurants. Only the low-quality restaurants, often referred to as the 'lemons' of the restaurant industry, continue to attract the uninformed tourists, while good restaurants move to locations that are more likely to be visited by well-informed locals.

#### 4. Signaling in E-commerce

Two partial solutions were proposed for the problem of asymmetric information. The first is called "signaling," proposed by Michael Spence, who argued that the party with the information might be able to communicate the information in an honest and trustworthy way to the party without the information. Yet, the seller of good cars cannot simply say, "My cars are good," because talking alone is cheap. An effective signal must be one that lemon sellers could not, or could not afford to, make.

Sellers of good cars expect their high-quality products to make satisfied customers return, build a good reputation, and attract new future customers. Meanwhile lemon sellers aim to rip off their customers during short-term transactions, selling them low-quality products and will move to new places where their bad reputations won't follow. Therefore, sellers of good cars can make investments that only those expecting to recoup these investment by long-term transactions can afford.

Tim Harford explained this scenario using the banking industry. Banks build magnificent buildings not just to impress their customers, but also to signal to their depositors that their money is placed in a trustworthy organization that will not easily collapse. Yet some economists view investments like these to be socially wasteful because signaling can be costly, but it does not offer any real benefits to the consumers, ultimately making the economy less efficient [6].

E-commerce is arguably one of the industries with the most severe information asymmetry in contemporary society. The online markets have been booming since the 1990s, and the e-commerce businesses still have a projected annual growth rate of 9.49% in 2024 [7]. Yet, one of the biggest issues faced by online trades is that the sellers and buyers, in many cases, are in different locations, cities, or even nations. Thus, buyers cannot rely solely on seller reputation and are unable to examine or inspect the products by hand before making their purchase decisions [8]. This creates information asymmetry in the online markets where the sellers possess private information on their products, forcing the buyers to rely on the information provided on the platform. Like Akerlof's "lemon model," online sellers with high-quality goods are unable to effectively convey the quality of their products and thus cannot easily sell at their requested price.

Despite its development in 1973 [9], Spence's Signaling Model finds effective application in online markets. Online sellers can bridge the information gap by providing detailed information about their products in a reliable way to their customers. Some basic information is standardized and mandatory. However, most details are voluntarily disclosed by sellers in the product description, which can be in the form of text, photos, videos, certificates, size charts, and ingredients. This information may assist consumers in making adequate decisions, maximizing their satisfaction, and reducing the problem of consumers returning goods, reducing its "high costs to the Internet economy, carbon pollution to the environment, and waste of social resources" [10].

Yet, the disclosure of such information is charged on platforms such as eBay [11] and the opportunity cost may be even higher, as it is time consuming to write descriptions or upload photos [11]. Research in 2012 confirmed that there is a difference in the signaling strategy employed by low- and high-quality online sellers: "Low-quality sellers are likely to avoid expensive, easy-to-verify signals and tend to use fewer signals than do high-quality sellers" [12]. Yet, these expensive signals for high-quality sellers increase their cost of production, which reduces their supply and drives up the market price. Furthermore, complex procedures such as registrations and verifications hinder the development of certain sellers, such as those in rural e-commerce. Ultimately, consumers need to pay a much higher price for good-quality products. Thus, with signaling, sellers of good-quality products

may not be much better off if the benefit from improved transactions after conveying product information to the buyers through signaling is less than the cost to signal this information. This aligns with the previously outlined view, suggesting that signaling may incur costs that render it socially wasteful. Harford points out that although “Spence’s ideas suggest that the lemons problem is not insoluble,” they are not reassuring. In some variations of Spence’s model, such as the online markets, it is possible that everyone would be better off without the wasteful spending on signals.

Another significant consequence of product information signaling is information overload, which can be “described as a scenario in which the amount of information being processed by decision-makers is greater than their ability to handle it.” [12]. A questionnaire in 2022 revealed that customers become overwhelmed when trying to process substantial descriptive information. The finding indicated that information overload “causes consumers to experience stress, frustration, and perceived risk.” [13]. This supports Malhotra’s research in 1982, which provided empirical evidence, showing that situations with too much information result in ‘dysfunctional’ outcomes [14]. Consumers are more likely to select correctly the “best” brand when information load is at an intermediate level, while choices are poorer at both low and high levels of information load [15]. Therefore, when sellers of good quality products are trying to convey honest signals, not only can these signals be costly, but they must also consider the extent of information they’re providing. When online markets are filled with excessive information, consumers are faced with information overload and with consequences such as impulsive purchasing. This behavior serves as an effective stress-relieving mechanism to resolve the frustration caused by information overload.

In conclusion, Spence discovered strategies to counteract the impact of asymmetrical information, promoting mutually beneficial trade. However, he recognizes that the process of facilitating these trades may incur significant expenses. This is demonstrated by the example of online markets where signaling can lead to unfavorable results such as wasteful social resources and information overload, emphasizing the difficulty of effectively solving the lemons problem.

## 5. Screening in the market for insurance

While Spence discussed ways in which the informed party could communicate private information with credible signals, Stiglitz explored what the uninformed party could uncover about the private information they lack. This is known as screening. He explicitly focused on the markets of insurance, where the customers hold private information that the insurers do not possess. This creates the problem of adverse selection before the parties have made an agreement, where one party can take advantage of their private information of the risk factors involved in the transaction to “maximize their outcomes, at the expense of the other parties,” engendering inefficiency in the market [16].

Higher-risk individuals are more likely to purchase insurance, which may lead to an imbalance in the risk pool for the insurer. The high risk of coverage drives the cost of insurance company payouts, thus pushing up their insurance premium. As the premium for an average client increases, the number of people who can or are willing to purchase insurance will continue to fall, and those who stay are likely to be most at risk, further raising the cost of insurance company payouts. This vicious cycle continues, yet, unlike Akerlof’s market for lemons, asymmetric information does not make the market completely destroy the insurance market. This is because some customers find the payment for accidents so worrying that they are willing to “pay substantially more than an actuarially fair premium.” As a result, after many have been driven out of the market, the cycle stops.

It is also for this reason that insurance companies do not provide insurance for events that may be arranged, such as unemployment and pregnancy. Many people plan to have children or leave their job. If insurance companies offered associated insurances, then such people would be very eager to buy an insurance policy that would pay them for putting their plans into action. Such insurance cannot

function due to adverse selections, as customers can manipulate their own “risk,” which, upon consideration, cannot be considered risk as there are no uncertainties [4].

Stiglitz applied his screening technique in the market of insurance to demonstrate that an uninformed price-setting insurer was not completely helpless. Insurance companies could use screening techniques such as historical records, health conditions, and demographic characteristics to assess each customer’s risks and uncover their information [17]. Furthermore, they could predict the consumers’ risks by offering different deals, “a little like the self-targeting strategy” [4], to persuade the customers themselves to reveal their inside information. With reduced premiums, and increased excess, or vice versa, insurance companies attract customers of all risk levels. When making decisions, customers reveal their inside information about how many insurance claims they anticipate filing.

Yet Stiglitz did not conclude that screening techniques can solve Akerlof’s lemon problem effortlessly. The predictive power of screening tools inherently depends on the quality and scope of the available data. Therefore, the predictions, though useful, are not always faultless. They may lead to misclassification, perceiving low-risk individuals as high-risk, hindering their participation in the market, or allowing high-risk individuals to obscure their true risk, undermining screening efficiency.

Screening mechanisms also require high administrative costs. The procedure of analyzing data and assessing each customer can be resource intensive. Ultimately, these are the costs of production that get passed on to the consumers in the form of higher premiums.

Despite these limitations, screening remains an integral tool to address asymmetric information in certain markets. By uncovering certain inside information, the impact of asymmetric information is largely reduced, enhancing market efficiency and promoting fairer risk allocation. It ensures the functionality and sustainability of certain markets affected by information asymmetries.

## 6. Conclusion

Analysis of asymmetric information highlights its fundamental effects on market dynamics and efficiency. Solutions like signaling and screening have helped solve problems. However, these methods also bring about certain costs and inadequacies, which, in most circumstances, cannot completely remove the inefficiency or inequity from the market. On one side, signaling is susceptible to social waste and raises costs for consumers, whereas screening is limited by data quality and administrative costs that might exclude low-risk individuals.

Both approaches are nevertheless crucial in creating functional markets where asymmetric information might lead to complete failure. These mechanisms, though imperfect, make the markets more inclusive and efficient. These solutions enable us to reduce the “bitter effects” of lemons, yet the inherently “acidic aftertaste”. Dealing with asymmetric information in the future will require both refinement of traditional approaches and integration of innovative strategies. Advancements in technology may assist scholars to enhance predictive analytics, leading to better solutions.

Future studies could explore behavioral economics and consumer psychology, leading to improved signaling and screening mechanisms that reduce information overload and enhance decision-making. While a perfectly efficient market may remain elusive, continuous innovation and empirical study offer pathways to significantly enhance both fairness and functionality, ultimately benefiting all participants in society.

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