Proceedings of ICMRED 2025 Symposium: Effective Communication as a Powerful Management Tool
DOI: 10.54254/2754-1169/2025.BL23774

Anchoring Bias: The Power of First Impression on Economic Decision-making

Yichen Zhao

School of Social Science, University of Manchester, Great Manchester, United Kingdom
zhaoyichen825@gmail.com

Abstract: The anchoring bias refers to an individual's cognitive tendency to rely heavily on initial information, or 'anchors', when making judgement and decisions. This bias is particularly important in behavioral economics because it systematically affects consumer behavior, financial decisions, and negotiations. Unlike traditional economic models that assume rational decision-making, anchoring often leads to systematic and predictable errors that affect the full range of individual decisions and market outcomes. This paper explores the psychological mechanisms of anchoring and presents experimental evidence on the broad impact of anchoring on decision-making by examining three main applications:(1) consumer pricing strategies, where anchoring affects willingness to pay and perceived value; (2) arbitrary reference values, where investors' financial market forecasts influence expectations; and (3) the outcome of negotiations where the initial offer strongly influences the final contract. These examples illustrate how anchoring errors distort rational economic decisions, increase price rigidity and lead to market inefficiencies. To alleviate anchoring effects, several techniques are proposed, including enhancing awareness, modifying reference points, and instituting regulatory measures to promote more equitable pricing and market stability.

Keywords: Anchoring bias, Behavioral Economics, Cognitive Heuristics

1. Introduction

Traditional economic models assume that individuals make rational decisions based on complete information and maximize utility. But behavioral economics challenges that assumption by showing that human decision-making is systematically influenced by intelligence and heuristics. These mental shortcuts help you make quick decisions, but they often lead to predictable errors of judgment. One of the most influential biases in this field is bias, which has a profound impact on consumer behavior, financial decision making and negotiation.

Anchor bias, first introduced by Tversky and Kahneman in their seminal paper Judgment Under Uncertainty: Heuristics and Biases, has been extensively studied in several areas including consumer behavior, financial decision-making and negotiation [1]. Their experiment showed that people's numerical evaluations are systematically affected at the starting point of the intervention. In a classic study, for example, participants were asked to estimate the percentage of an African country in the UN after turning a wheel of luck that fell randomly at 10 or 65. Those who scored 10 received significantly lower ratings than those who scored 65, showing that even unrelated numbers affect decision making at all.

DOI: 10.54254/2754-1169/2025.BL23774

The economic significance of anchoring bias is rooted in its extensive practical implications. In consumer markets, firms leverage anchoring effects by displaying high original prices alongside discounts, thus enhancing perceived value and influencing consumer purchasing decisions. The fact that investors lived in the financial market in the past has led to a second round of buying decisions. Similarly, in negotiations, initial salary or price offers create powerful reference points that shape final agreements. Even in public policy, governments use the anchor to influence public opinion on taxes, tariffs and financial regulation. Collectively, these examples underscore the prevalence of irrational decision-making guided subconsciously by arbitrary reference points.

The purpose of this paper is to explain our bias from psychological mechanisms together with Tversky and Kahneman [1] and subsequent studies. Next, this paper will systematically analyze three major economic applications of anchoring bias: consumer pricing strategies, financial market forecasting, and negotiation outcomes. Finally, the paper will discuss practical strategies to mitigate the negative effect of anchoring bias, including raising awareness, targeted debiasing interventions, and policy-level solutions. Developing an understanding of the anchor is important for individuals, businesses, and policymakers alike because it has a huge impact on political decisions. By understanding how anchors affect judgments, participants can make more rational, evidence-based decisions, and ultimately contributing to improved economic efficiency and market outcomes.

2. Anchoring bias: concept and mechanism

Anchoring bias is a cognitive tendency where individuals rely excessively on an initial piece of information, the anchor, when making decisions, even if the anchor is arbitrary or unrelated to the context at hand. People fail to adjust sufficiently due to insufficient judgements from this initial reference point, leading to systematic errors in judgment. This bias is a fundamental feature of human cognition and plays a significant role in shaping economic and financial behavior, contradicting traditional economic assumptions of rational and fully informed decision-making.

The psychological basis of anchoring bias is rooted in dual-process theory, which distinguishes between System 1 and System 2 [2]. System 1 represents rapid, intuitive, and automatic judgments, while System 2 involves deliberate, analytical, and effortful processing. When individuals encounter an anchor, System 1 quickly assimilates this reference point, shaping subsequent intuitive judgments. System 2, responsible for analytical reasoning, attempts to adjust these initial judgments logically. The insufficient adjustment hypothesis suggests that even when people attempt to revise their estimates away from the anchor, they do so inadequately, remaining too close to the original reference point. This results in distorted perceptions and flawed decision-making across various domains, including pricing, investing, and policy evaluation.

Tversky and Kahneman's seminal studies [1] provide empirical evidence for anchoring bias. High school students judged the product of a series of numbers presented in either ascending order ($1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$) or descending order ($8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$) in their traditional numerical estimating course. Since the first few numbers in each sequence serve as an anchor, students given the descending sequence (starting with $8 \times 7 \times 6$) provided significantly higher estimates than those given the ascending sequence. Although the actual answer in both cases is 40,320, students who anchored to a higher starting number produced greater numerical estimates, while those who saw the lower sequence provided smaller estimates. This experiment confirmed that even when individuals attempt to make numerical calculations, their judgments remain biased by initial reference points. The arbitrary nature of anchoring was further demonstrated by another groundbreaking experiment called the "Wheel of Fortune" research. Participants were asked to spin a rigged wheel that was designed to land on either 10 or 65. After spinning the wheel, they were asked to estimate the percentage of African countries in the United Nations. Despite having no logical connection, those

DOI: 10.54254/2754-1169/2025.BL23774

who landed on 10 provided significantly lower estimates than those who landed on 65, showing that even completely unrelated numerical anchors affect people's judgments.

Anchoring bias also influences probability assessment, where people systematically misjudge risk by anchoring their estimations to optimistic reference points. This often leads to an overestimation of conjunctive events (multiple independent events happening simultaneously, such as winning multiple rounds of a lottery) and an underestimation of disjunctive events (at least one failure occurring, such as the likelihood of a business deal falling apart due to multiple factors). Such errors illustrate anchoring's broader implications, extending beyond numerical estimation tasks to complex probabilistic judgments and decision-making under uncertainty.

Anchoring bias is a fundamental cognitive distortion that influences decision-making in numerical estimation, probability judgment, and risk assessment. Understanding its mechanism and manifestation is crucial for recognizing systematic errors and improving economic decision-making. By recognizing and mitigating the influence of anchors, individuals and organizations can enhance their decision-making accuracy and improve economic outcomes.

3. Influence and application of anchoring bias in decision-making

3.1. Application of anchoring in consumer behavior and pricing

Shaping how individuals perceive value and make purchasing decisions. Consumers tend to rely on initial price points as reference anchors, leading to systematic deviations from rational decision-making. Retailers exploit this cognitive bias by using pricing strategies such as displaying inflated "original prices" before discounts, utilizing multi-unit pricing techniques, and setting artificial purchase limits to increase sales. These tactics manipulate price perception, often causing consumers to spend more than they originally intended.

One of the most well-documented effects of anchoring in consumer behavior is the use of reference prices. Studies by Furnham and Boo [3]demonstrate that consumers' willingness to pay is influenced by irrelevant anchors, such as social security numbers. In an experiment, participants who were asked to list the last two digits of their social security number before bidding on items in an auction tended to place significantly higher bids when their digits were higher, illustrating how arbitrary numerical anchors can influence valuation. Similarly, Jia [4] found that real estate agents' price appraisals are influenced by listing prices, leading to systematic biases in property valuation. When listing prices were artificially increased, agents consistently provided higher appraisals, reinforcing the role of anchoring in perceived value

A classic example of anchoring in business strategy is multi-unit pricing, a technique where retailers frame prices in a way that encourages bulk purchases. Wansink et al. [5] found that advertising "2 for $3.98" instead of "1 for $1.99" increased sales by 32%, as consumers anchored to the total cost rather than considering the per-unit price. Another pricing strategy involves purchase limits, where retailers place artificial constraints such as "Limit 12 per customer." Research shows that such limitations create perceived scarcity, leading consumers to anchor their purchasing decisions around the limit. Wansink et al. [5] reported that imposing purchase limits increased sales by 112% compared to unrestricted purchases, as consumers bought more simply because of the imposed anchor.

While anchoring techniques benefit businesses by boosting sales, they pose risks for consumers, particularly in the form of irrational spending and over-reliance on reference prices. Biswas et al. [6] argue that when consumers rely too heavily on externally provided anchor prices rather than actual product value, they are more likely to make suboptimal purchasing decisions. Over-reliance on reference prices can lead to excessive spending on discounted items that may not truly offer value.

To mitigate the negative effects of anchoring, several strategies can be implemented. On an individual level, consumers can use price-comparison tools to counteract anchoring effects and make

DOI: 10.54254/2754-1169/2025.BL23774

more informed purchasing decisions [6]. On a policy level, regulations against fictitious reference pricing can help prevent businesses from inflating original prices to create deceptive discounts. Research by Wolk and Spann [7] found that exaggerated anchor prices significantly influence consumer price perception and willingness to purchase, suggesting that regulatory oversight could improve transparency in pricing .

Understanding how anchoring bias shapes consumer behavior is essential for both businesses and policymakers. While retailers leverage this bias to enhance sales, awareness of its influence can help consumers make more rational decisions and prevent market inefficiencies caused by misleading pricing strategies.

3.2. Application of anchoring in financial markets and forecasting

Anchoring bias plays a significant role in financial markets and economic forecasting, often leading to systematic errors in predictions and investment decisions. Investors, analysts, and policymakers frequently rely on past stock prices, economic indicators, and historical data as anchors when making financial forecasts. This tendency causes them to underweight new information, resulting in persistent biases that can distort market predictions and influence investment strategies.

One major impact of anchoring bias is its effect on macroeconomic forecasting. Research by Campbell and Sharpe [8] found that forecasts of GDP growth and inflation tend to be anchored to previous data, leading to predictable errors. For instance, if inflation was 3% last month, analysts are likely to predict inflation rates close to 3% for the upcoming period, despite new economic data suggesting otherwise. This underweighting of new information creates forecast inertia, making it difficult for markets to adjust accurately to changing conditions. Moreover, financial markets anticipate these errors, meaning that bond yields often respond only to the unpredictable component of forecast errors, as investor already discount anchoring bias in analyst predictions [8].

Anchoring bias also affects investment decisions, as investors tend to rely on historical stock prices when evaluating their portfolios. Eroglu and Croxton [9] found that investors often anchor to past stock values, causing them to hold on to losing investments for too long or misjudge future price movements [9]. For example, if a stock was trading at $100 a few months ago but has since fallen to $80, investors might hesitate to sell, believing the stock should eventually return to its former price, even if market conditions suggest otherwise. This reluctance to accept losses leads to suboptimal portfolio adjustments and increased financial risk.

While anchoring bias can lead to inefficiencies in financial markets, several strategies can help mitigate its effects. On the technological front, dynamic models and machine learning tools can be used to reduce reliance on historical data. Lieder et al. [10] suggest that real-time sentiment analysis tools, such as Bloomberg Terminals, can help investors and analysts adjust their expectations based on evolving market trends rather than outdated reference points [10]. These technologies reduce the impact of anchoring by incorporating real-time data and predictive analytics.

From a policy perspective, central banks and regulatory agencies play a crucial role in mitigating anchoring bias in financial forecasts. Campbell and Sharpe [8] emphasize that central banks should disclose anchoring risks in economic forecasts to enhance market transparency and reduce distortions. By explicitly acknowledging the potential biases in their projections, policymakers can help market participants make more informed decisions and adjust their expectations accordingly.

Understanding the role of anchoring bias in financial markets is essential for improving investment strategies, economic forecasting, and monetary policy. While anchoring provides a useful heuristic for processing complex financial information, its overuse can lead to systematic errors that undermine market efficiency. By integrating advanced analytical tools and increasing transparency in forecasting, investors and policymakers can reduce the negative effects of anchoring bias and enhance decision-making accuracy.

DOI: 10.54254/2754-1169/2025.BL23774

3.3. Application of anchoring in negotiations and legal decisions

Anchoring bias plays a crucial role in business negotiations, salary discussions, and legal settlements, significantly affecting outcomes. In negotiations, the first number mentioned serves as an anchor that subconsciously influences the opposing party's counteroffer. Even when the initial offer is arbitrary or extreme, research shows that subsequent adjustments tend to be insufficient, leading to biased final agreements. Similarly, in legal settings, judges, lawyers, and juries are often influenced by damage claims, sentencing requests, or suggested penalties, even when these numbers lack an objective basis.

One of the most well-documented effects of anchoring in legal decisions is seen in damage claims and settlement negotiations. Furnham and Boo [3] found that higher initial damage claims in lawsuits often result in higher final settlements, as legal professionals unconsciously adjust toward the suggested figures. This effect is particularly pronounced in cases where plaintiffs demand excessive compensation—defendants' lawyers tend to negotiate from this inflated starting point, resulting in higher-than-expected settlements. Similarly, Jia [4] demonstrated that real estate pricing negotiations are susceptible to anchoring effects, where higher listing prices lead to systematically inflated appraisals and purchase prices. This finding suggests that anchoring influences not just monetary settlements in legal cases but also contract negotiations and pricing agreements in various industries.

Anchoring bias also plays a significant role in salary negotiations. Research by Galinsky and Mussweiler found that job applicants who set higher initial salary expectations tend to secure better compensation offers [11]. The study demonstrated that even ambitious or extreme salary demands influenced employers' final offers, as they anchored to the initial request. Employers, even when aware of the potential bias, fail to fully adjust their counteroffers, leading to higher salaries for applicants who set strong initial anchors. This phenomenon highlights the strategic advantage of setting high opening demands in salary discussions to maximize compensation.

Beyond negotiations, anchoring bias also impacts judicial decision-making. Englich, Mussweiler, and Strack conducted an experiment with judges, where they provided sentencing recommendations based on arbitrary numerical anchors [12]. The results showed that even experienced legal professionals were influenced by the suggested numbers, resulting in sentences that aligned with the initial anchor rather than objective legal reasoning. This study emphasizes how legal rulings—particularly in criminal sentencing, civil settlements, and penalty assessments—are vulnerable to cognitive biases.

Professionals make more strategic decisions. Job seekers should set higher salary expectations to benefit from anchoring effects, while lawyers and negotiators can use it strategically to improve client outcomes. Conversely, policymakers and legal professionals should be aware of potential biases in judicial rulings and settlement discussions and consider debiasing techniques to promote fairer decision-making.

Understanding how anchoring shapes negotiations and legal processes is essential for professionals in business, law, and human resources. By recognizing and mitigating its effects, individuals can improve negotiation strategies, while legal systems can develop more objective decision-making frameworks to minimize cognitive distortions in high-stakes discussions.

4. Mitigation strategies for anchoring bias

Anchoring bias is a pervasive cognitive effect that influences decision-making in various domains, including consumer behavior, financial markets, and legal negotiations. While anchoring serves as a useful heuristic for simplifying complex information, it often leads to systematic errors and suboptimal choices. To mitigate its effects, interventions should target both individual decision-makers, such as consumers and investors, and institutional actors, including policymakers and businesses.

DOI: 10.54254/2754-1169/2025.BL23774

Consumers and investors can take proactive steps to reduce their susceptibility to anchoring bias. First, awareness of anchoring effects is essential. Research by Kahneman suggests that simply recognizing cognitive biases can help individuals make more deliberate and rational decisions. For example, when purchasing goods or negotiating salaries, consumers should critically assess whether the initial reference price or wage offer is reasonable rather than blindly accepting it as a valid anchor.

Second, individuals should seek multiple reference points before making financial decisions. Studies by Beshears et al. indicate that comparing multiple price points and using external benchmarks can help counteract the influence of a single, potentially misleading anchor [13]. Investors, for instance, should evaluate stock prices relative to industry trends, market fundamentals, and broader economic indicators rather than past stock values alone.

Using independent financial models can help investors and financial experts avoid bias. Eroglu and Croxton [9] discovered that using objective valuation models and algorithmic trading tools can lessen the impact of personal opinions, resulting in smarter investment choices. Automated systems and AI-driven models provide insights based on data that are less affected by human thinking errors.

Beyond individual actions, structural interventions are needed to address anchoring bias on a larger scale. One key strategy is the regulation of deceptive pricing practices. Research by Wolk and Spann highlights that fictitious reference pricing, where businesses inflate original prices to make discounts appear larger, significantly distorts consumer perceptions. Regulatory agencies can enforce stricter pricing transparency laws to ensure that discounts reflect actual market values rather than artificial anchors.

Financial disclosure requirements can also help improve the accuracy of economic forecasts and investment decisions. Campbell and Sharpe [8] argue that macroeconomic forecasting errors due to anchoring can be reduced when central banks and financial institutions disclose potential biases in their projections. Increased transparency in economic reports can help market participants make more informed decisions, reducing systemic inefficiencies caused by reliance on outdated reference points.

Financial education and literacy programs can further help individuals recognize and counteract anchoring effects in everyday financial decisions. Studies by Fernandes, Lynch, and Netemeyer suggest that consumers with higher levels of financial literacy are less likely to fall for pricing traps and irrational spending behaviors [14]. Teaching these skills in schools, workplaces, and community programs can give individuals the ability to think critically and handle complicated financial situations without being misled by mental shortcuts.

In conclusion, mitigating anchoring bias requires a multi-faceted approach that involves individual awareness, financial comparison strategies, algorithmic decision-making tools, regulatory policies, and education. While anchoring is a deeply ingrained cognitive tendency, applying these strategies can help improve decision-making accuracy and market efficiency. By fostering financial literacy and implementing fairer pricing regulations, both individuals and institutions can navigate economic environments with greater objectivity and rationality.

5. Conclusion

Anchoring bias is a powerful cognitive effect that significantly influences decision-making across various economic and behavioral domains. Research has shown that individuals rely too heavily on initial reference points when making judgments, often leading to predictable errors. It also have demonstrated how anchoring distorts numerical estimations, probability assessments, consumer purchasing behavior, financial market predictions, and legal negotiations. These findings highlight the systematic and pervasive nature of anchoring bias in both individual and institutional decision-making.

Understanding anchoring bias has important implications for financial decision-making, policy design, and business practices. Recognizing how initial reference points shape perceptions and

DOI: 10.54254/2754-1169/2025.BL23774

choices allows individuals to take proactive steps to mitigate its effects, such as seeking multiple reference points and using independent valuation models. In financial markets, investors and analysts who are aware of anchoring biases can make more rational investment decisions by integrating dynamic forecasting tools and relying on real-time market data rather than past trends. In consumer markets, awareness of price anchoring strategies can help individuals make more informed purchasing choices and avoid misleading pricing tactics.

At a broader level, policymakers should consider interventions to minimize the negative consequences of anchoring bias. Regulations on deceptive pricing, transparent financial disclosures, and financial education initiatives can help reduce reliance on arbitrary anchors and improve economic decision-making. Legal professionals and negotiators can also apply debiasing techniques to ensure fairer legal settlements and contract negotiations. By promoting greater awareness of cognitive biases, organizations and governments can foster more rational decision-making at both micro and macroeconomic levels.

In conclusion, anchoring bias is a fundamental cognitive tendency that affects a wide range of economic and behavioral decisions. While it is impossible to eliminate anchoring entirely, increasing awareness and applying effective mitigation strategies can help individuals and institutions make better choices. Recognizing and addressing anchoring bias will lead to more efficient markets, fairer negotiations, and improved financial well-being for consumers and businesses alike.

References

[1] *Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. Science, 185(4157), 1124-1131. https://doi.org/10.1126/science.185.4157.1124*

[2] *Kahneman, D. (2011). Thinking, fast and slow. Farrar, Straus and Giroux.*

[3] *Furnham, A., & Boo, H. C. (2011). A literature review of the anchoring effect. The Journal of Socio-Economics, 40(1), 35-42. https://doi.org/10.1016/j.socec.2010.10.008*

[4] *Jia, L. (2024). Anchoring and adjustment bias and its applications. Advances in Economics, Management and Political Sciences, 60, 141-148. https://doi.org/10.54254/2754-1169/60/20231193*

[5] *Wansink, B., Kent, R. J., & Hoch, S. J. (1998). An anchoring and adjustment model of purchase quantity decisions. Journal of Marketing Research, 35(1), 71-81. https://doi.org/10.1177/002224379803500108*

[6] *Biswas, A., Wilson, E. J., & Licata, J. W. (1993). Reference pricing studies in marketing: A synthesis of research results. Journal of Business Research, 27(3), 239-256. https://doi.org/10.1016/0148-2963(93)90029-O*

[7] *Wolk, A., & Spann, M. (2008). The effects of reference prices on bidding behavior in interactive pricing mechanisms. Journal of Interactive Marketing, 22(4), 2-18. https://doi.org/10.1002/dir.20123*

[8] *Campbell, S. D., & Sharpe, S. A. (2009). Anchoring Bias in Consensus Forecasts and Its Effect on Market Prices. Journal of Financial and Quantitative Analysis, 44(2), 369–390. https://doi.org/10.1017/S0022109009090127*

[9] *Eroglu, C., & Croxton, K. L. (2010). Biases in judgmental adjustments of statistical forecasts: The role of individual differences. International Journal of Forecasting, 26(1), 116-133. https://doi.org/10.1016/j.ijforecast.2009.02.005*

[10] *Lieder, F., Hsu, M., & Griffiths, T. L. (2018). The anchoring bias reflects rational use of cognitive resources. Psychonomic Bulletin & Review, 25, 322–349. https://doi.org/10.3758/s13423-017-1286-8*

[11] *Galinsky, A. D., & Mussweiler, T. (2001). First offers as anchors: The role of perspective-taking and negotiator focus. Journal of Personality and Social Psychology, 81(4), 657-669. https://doi.org/10.1037/0022-3514.81.4.657*

[12] *Englich, B., Mussweiler, T., & Strack, F. (2006). Playing dice with criminal sentences: The influence of irrelevant anchors on experts' judicial decision making. Personality and Social Psychology Bulletin, 32(2), 188-200. https://doi.org/10.1177/0146167205282152*

[13] *Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. (2018). Behavioral household finance. In Handbook of Behavioral Economics: Applications and Foundations 1 (Vol. 1, pp. 177–276). North-Holland. https://doi.org/10.1016/bs.hesbe.2018.07.004*

[14] *Fernandes, D., Lynch, J. G., & Netemeyer, R. G. (2014). Financial literacy, financial education, and downstream financial behaviors. Management Science, 60(8), 1861–1883. https://doi.org/10.1287/mnsc.2013.1849*