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A Framing-Effect-Based Analysis of Income Inequality Perceptions*

Gelir Eşitsizliği Algısının Çerçeveleme Etkisi Bağlamında İncelenmesi

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ABSTRACT

Income inequality is one of the greatest problems of our time, and what can be done to solve this problem is still under debate. Indeed, income distribution began to deteriorate especially after the industrial revolution. In particular, the fact that a small minority of the world's population receives a large portion of the world's income and wealth is truly a matter that needs to be discussed. At this point, for the discussion to be healthier and reach a solution, it may be necessary for the majority to share the same view. However, due to changing perceptions, the importance of the income inequality problem may be perceived differently. From this perspective, the behavioural economics school emerges, which argues that our perceptions can be distorted by the influence of psychology in perceptual processes. The psychological effects put forward by this school are generally referred to as biases, and perhaps the most popular of these biases is the framing effect. According to this effect, when the same situation is presented differently, the perceived reality may differ. In this study, the perception of income inequality was examined in the context of the framing effect. To test this perception, a questionnaire was designed, and participants were asked to answer numerical and verbal questions with the same meaning. The results obtained from the study show that the way income inequality is conveyed leads to perceptual differences and that the use of the framing effect could be an important tool in minimising potential income inequality problems.

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ÖZ

Gelir eşitsizliği günümüzün en büyük problemlerinden birisidir ve bu sorunun çözümünde neler yapılabileceği hala tartışılmaktadır. Öyle ki, gelir dağılımı özellikle sanayi devriminden sonra bozulmaya başlamıştır. Özellikle, dünya nüfusundaki küçük bir azınlığın dünyadaki gelir ve zenginliğin büyük bir kısmını alması gerçekten de tartışılması gereken bir konudur. Bu noktada, tartışmanın daha sağlıklı ve çözüme ulaşabilmesi için belki de çoğunluğun aynı görüşte olması gereklidir. Ancak değişen algılar nedeniyle gelir eşitsizliği sorununun önemi fark-

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lı algılanabilir. Bu açıdan, algısal süreçlerde psikolojinin de etkisiyle algımızın bozulabileceğini savunan davranışsal iktisat ekolü karşımıza çıkmaktadır. Bu ekolün öne sürdüğü psikolojik etkiler genel olarak önyargılar olarak adlandırılmaktadır ve bu önyargılardan belki de en popülerleri çerçeveleme etkisidir. Bu etkiye göre aynı durum farklı şekilde aktarıldığında algılanan gerçeklik farklılık gösterebilmektedir. Bu çalışmada da gelir eşitsizliği algısı çerçeveleme etkisi bağlamında incelenmiştir. Bu algıyı test edebilmek için bir anket tasarlanmış ve katılımcılardan aynı anlama gelen sayısal ve sözel soruları cevaplamaları istenmiştir. Çalışmadan elde edilen sonuçlar, gelir eşitsizliğinin aktarım şeklinin algısal farklılıklara yol açtığı ve çerçeveleme etkisinin kullanımının potansiyel gelir eşitsizliği sorunlarını minimize etme açısından önemli bir araç olabileceğini göstermektedir.

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1. INTRODUCTION

Income inequality is a significant problem, affecting almost all countries to varying degrees. Addressing this issue is challenging because, in addition to income inequality itself being negative, perceptions of it vary widely and are perhaps an even greater problem.

The perception of income inequality is a highly diverse and intriguing phenomenon. This is because, even though data on income inequality is readily available, its interpretation varies considerably. For example, individuals with high incomes may not react to income inequality in the same way as those with low incomes. In this context, according to a study conducted by Horowitz et al. (2020), 52% of low-income individuals think that income inequality in the US as the most important problem that politicians should solve, while only 36% of high-income individuals share this view. However, 61% of people in the US believe that income inequality is high. What is interesting here is that while 61% of people think income inequality is high, 39% do not. Perceptually, these differences are also likely to make it difficult to resolve income inequality.

Our perceptions can indeed change or be distorted easily, and this situation is particularly studied by behavioral economists. According to this school of thought, psychological factors cause various biases in decision-making processes, and these factors lead to perceptual differences that influence our decisions or perceptions. The framing effect is one such bias. According to this effect, the reality we perceive can differ when the same situation is presented in different ways.

The first section of this study examines the behavioral economics school, which rise to prominence in the 1980s with Daniel Kahneman and Amos Tversky, and the framing effect, one of the psychological biases that cause bounded rationality in this school. The second section of the study addresses the issue of income inequality. The third section of the study presents a literature review on the perception of income inequality, and the final section presents an empirical study on this perception.

2. BEHAVIORAL ECONOMICS AND FRAMING EFFECT

Traditional economics' "homoeconomicus" assumption posits that individuals are rational in all circumstances and make choices that maximize their utility. In contrast, behavioral economics assumes that individuals may not always behave rationally, even if they have the capacity to do so. This assumption of behavioral economics is called "bounded rationality" (Mullainathan & Thaler, 2000).

When behavioral economics was not yet popular, its relationship with traditional economics was not very good. This was because traditional economic actors accepted economics as a mathematical field and had adopted a dismissive view of behavioral economics for a long time (Rehman, 2016). Keynes's 1936 book began to change the relationship between traditional economics and behavioral economics. Traditional economics actors sought to develop economics by examining Keynes's views within a mathematical framework, while behavioral economics actors sought to address the shortcomings of the behavioral economics school and develop it further. Towards the end of the 1970s, two important figures in behavioral economics, Daniel Kahneman and Amos Tversky, published Prospect Theory, ensuring that behavioral economics gained more ground in economics. The theory essentially determined that individuals' preferences change depending on whether they are in a gain or loss situation, with individuals generally being risk-averse in gain situations and generally taking risks in loss situations (Akerlof, 2002).

In contrast to traditional economics' rigid assumptions about preferences, behavioral economics offers a more flexible perspective and provides some critical examples challenging the assumption of rational human behavior. For example, consider a fair coin with equal and equal probabilities of landing heads or tails. Suppose this coin is tossed 50 times and lands heads 50 times. Some people may see a higher probability of heads coming up on the 51st toss because it came up tails 50 times, or they may think that since it came up tails every time, it will now come up heads

next time. However, no matter how many times the coin is tossed, the probability of heads and tails coming up each time is equal and independent of previous events. Rational individuals assume that the probabilities are equal, but many people cannot behave rationally due to previous events and may make flawed choices (The University of Chicago, 2024).

The basic logic of bounded rationality, one of the fundamental assumptions of behavioral economics, is loss aversion. According to loss aversion, individuals generally prefer guaranteed choices in positive situations and take risks in negative scenarios. The worse the negative scenario, the greater the degree of risk-taking. Furthermore, individuals react more strongly to loss situations than to gain situations. In this regard, Kahneman and Tversky (1979) conducted a simple experiment in their studies to explain how rational behavior can easily be disrupted. In the experiment, participants were asked to make choices in the following scenario:

1. Which one would you prefer?
 - a. Definitely earning \$240 (84%)
 - b. A 25% chance of earning \$1,000 and a 75% chance of losing nothing (16%)
2. Which one would you prefer?
 - c. Definitely lose \$750 (13%)
 - d. Lose \$1,000 with a 75% probability and lose nothing with a 25% probability (87%)

The first question is a typical gain scenario, and participants tended to choose option a, the more guaranteed choice. The second question is a typical loss scenario, and a large proportion of participants chose option d, i.e., taking the risk. Participants were then asked to make a choice in the following scenario:

3. Which one would you prefer?
 - e. A 25% chance of gaining \$240 or a 75% chance of losing \$760 (0%)
 - f. A 25% chance of gaining \$250 or a 75% chance of losing \$750 (100%)

In this question, all participants chose option f. It can be said that everyone acted rationally only in terms of this question. However, when all three questions are considered, it can be seen that the vast majority of participants did not act rationally. This is because option e in the third question was created by combining options a in the first question and d in the second question, while option f in the third question was created by combining options b in the first question and c in the second question. Therefore, in order to behave rationally, participants who strongly preferred options a and d in the first and second questions should have chosen option e in the third question. However, no participant chose this option and instead chose the other option, failing to behave rationally. This example is a simple illustration of how rational behavior is more difficult than assumed and how easily rationality can be disrupted.

The main focus of behavioral economics on behaviors

that undermine rationality is psychology, and these behaviors are referred to in the literature as “bias.” Some of these effects are loss aversion, mental accounting, confirmation bias, sunk cost fallacy, availability effect, context effect, and framing effect. In addition to these effects, other biases that have emerged in recent years include the fundamental ratio fallacy, action bias, majority effect, Dunning-Kruger effect, and IKEA effect. Among these effects, the framing effect is particularly popular and significant (Azzopardi, 2021).

According to the framing effect, decision-making can vary depending on how a situation is presented. For example, let's assume that a person named John goes to a pharmacy and wants to buy an antibacterial cleaning wipe. There are two brands of the product John wants to buy, and the price and number of wipes in these brands are the same. The only difference between the two brands is the information on the front about the percentage of germs. These two brands are “Bleachox,” which claims to kill 95% of germs, and “Bleach-it,” which claims that only 5% of germs survive. When John compares these two brands of wipes, he is not very interested in buying the “Bleach-it” brand, which indicates the probability of germs surviving.

As a result, John purchased the “Bleachox” brand wipe. While everything seemed normal here, there was actually a problem. This is because both brands were equally effective in combating germs. The Bleachox brand killed 95% of germs while allowing 5% to survive. Similarly, the Bleach-in brand killed 95% of microbes while allowing 5% to survive. Therefore, both brands were saying the same thing. However, John fell victim to the framing effect and interpreted the information labels on the brands as if they were different, thinking he had made a better choice (The Decision Lab, 2024).

The most famous experiment conducted on the framing effect is the one Kahneman and Tversky (1981) called the Asian Experiment. The experiment was conducted on a total of 307 students (first group 152, second group 155) at the University of British Columbia and Stanford University. In the experiment, it was expected that a virus that had emerged in Asia would also affect people in the United States and cause the deaths of approximately 600 people. It was not entirely possible to prevent the spread of this virus, so some of the participants were asked to choose one of the following treatment methods:

- If Treatment A is applied, 200 people will definitely be saved. (72%)
- If Treatment B is applied, there is a 1/3 chance that everyone will be saved and a 2/3 chance that no one will be saved. (28%)

The choice scenario presented to the first group of participants was framed positively. This is evident from the use of the term “saved.” In positive scenarios, individuals are likely to gravitate toward guaranteed choices, so 72% of participants in this scenario chose Treatment A, which

was a more guaranteed choice than the other option. The second group of participants was also asked to choose one of the following treatment methods:

- If Treatment C is applied, 400 people will definitely lose their lives. (22%)
- If Treatment D is applied, there is a 1/3 chance that no one will lose their life, while there is a 2/3 chance that everyone will lose their life. (78%)

The choice scenario presented to the second group of participants was framed negatively. This is evident from the phrase “lose their lives.” Since individuals are likely to make risky choices in negative scenarios, 78% of the participants in this scenario chose Treatment D, which was a riskier choice than the other option.

The framing effect is an effect that indicates that decision-making can change when the same situation is presented in different ways. In the Asian Experiment, Kahneman and Tversky also presented the same situation to participants in different ways. So, if the virus is expected to kill 600 people, in the scenario presented to the first group of participants, if you apply Treatment A, 200 people will be saved, but at the same time, 400 people will also lose their lives (because the virus is expected to affect 600 people for sure). Similarly, if Treatment C is applied, 400 people will definitely lose their lives, but 200 people will also be saved (because the virus is expected to affect 600 people for certain). In other words, Treatment A and Treatment D describe the same situation. In this context, it can be said that Treatment B and Treatment C also mean the same thing. This is because the 1/3 probability of everyone being saved expressed in Treatment B also means the 1/3 probability of no one losing their lives expressed in Treatment C. Similarly, a 2/3 probability of no one being saved is equivalent to a 2/3 probability of everyone losing their lives. As a result, participants fell prey to the framing effect and made irrational choices.

3. THE PROBLEM OF INCOME INEQUALITY

Income inequality refers to the unfair distribution of income among the population (OECD, 2024). Looking at the historical development of income inequality, between 1945 and 1970 (after World War II), countries grew economically and began to increase their incomes. During this period, the income gap between the lower and middle income classes and the upper income class, while significant, did not change much. Therefore, income differences between countries did not attract much attention. However, starting in the 1970s, countries' economic growth performance weakened, and various unemployment problems began to emerge (Sherman, Trisi, & Cureton, 2024). So much so that while the world economy's growth rate was close to 5% at the end of the 1980s, it declined to around 1.5% at the beginning of the 1990s (World Bank, 2024). This led to a marked increase in income disparities both between coun-

tries and within income groups. In particular, while people in the upper income group became wealthier, those in the lower and middle income groups were unable to increase their incomes to the desired level.

There are many methods for measuring income inequality. These methods include the Gini coefficient method, the Atkinson index method, the coefficient of variation method, the decile ratio method, the generalized entropy index method, the Kakwani index method, the total income ratio method, the Robin Hood index method, and the Sen poverty index method. The most popular of these methods is the Gini coefficient method. This coefficient takes values between 0 and 1, and it can be understood that as the coefficient approaches 0, income inequality decreases, and as it approaches 1, income inequality increases (De Maio, 2007). For example, in 2023, the countries with the lowest Gini coefficients were Slovakia (0.24), Slovenia (0.24), and Belarus (0.24), while the countries with the highest Gini coefficients were Colombia (0.55), Brazil (0.52) and Zambia (0.51) (Our World in Data, 2024). The Gini coefficient is actually an extension of the Lorenz curve, and details about the Lorenz curve can be found in the Figure 1 below.

The Lorenz curve represents the share of income received by a specific percentage of the population in a country. In a situation of perfect equality (where the Gini coefficient equals zero), the Lorenz curve has a 45-degree slope, meaning that, for example, each 20% segment of the population receives 20% of the income. As inequality increases (the Gini coefficient rises), the Lorenz curve begins to shift toward the lower right. In this case, part of society begins to receive a smaller share of income; for example, the 20% segment receives 5%. In this case, inequality increases (De Maio, 2007). These examples are supported by statistical data, and these details can be found below.

Income is distributed so unevenly that this situation is more clearly demonstrated in the World Inequality Report published in 2022. For example, 50% of the world's adult

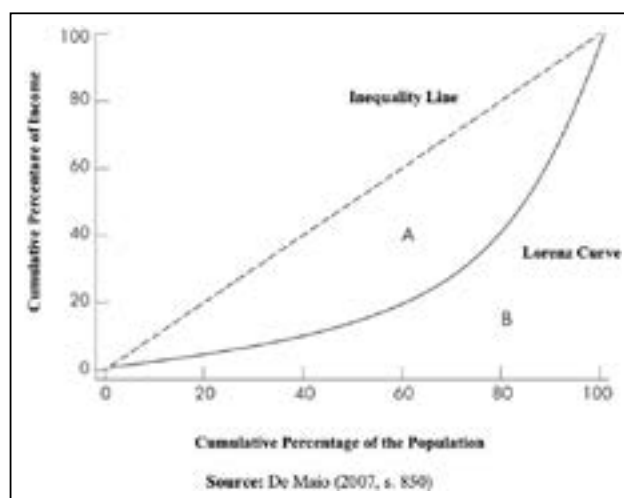


Figure 1. Lorenz curve.

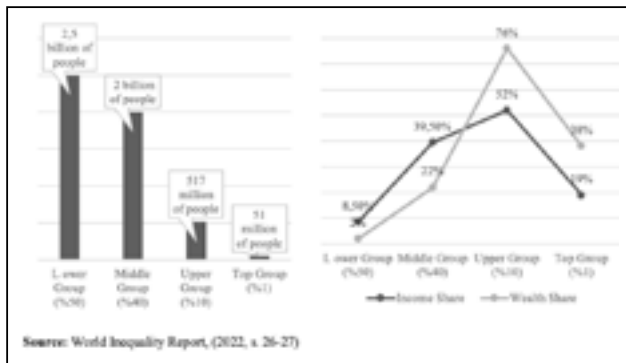


Figure 2. Distribution of the world's adult population by income groups (left) and the shares of income and wealth received by these income groups (right) (2021).

population (2.5 billion people) is in the low-income group, 40% (2 billion people) is in the middle-income group, and 10% (517 million people) is in the high-income group. Of those in the upper income group, 10% (51 million people) are in the highest income group. The real problem here is the share of income and wealth that these income groups receive (Fig. 2). For example, while the 2.5 billion people in the low-income group received 8.5% of income in 2021, the 51 million people in the top-income group received 19% of income in 2021. On average, a person in the lower income group earned €2,800 in 2021, while a person in the top income group earned an average of €321,600 in 2021. The difference is approximately 115 times. The imbalance in income is even worse in terms of wealth. At this point, it is known that in 2021, the lower income group received only 2% of the world's wealth, while the top income group received 38% of the world's wealth. On average, a person in the lower income group received €2,900 of the wealth in 2021, while a person in the top income group received €2,755,200. The difference is 950 times, which is a much worse situation in terms of income (Chancel, Piketty, Saez, & Zucman, 2022).

4. LITERATURE REVIEW

Some studies in the literature on the perception of income inequality have reported that people may have different perceptions of income inequality. For example, according to Knell & Stix (2020), individuals reach conclusions about income inequality not based on general data, but only by looking at reference groups. However, when it comes to income inequality, low-income (high-income) individuals tend to perceive themselves as worse off (better off) than they actually are. This result was also obtained in the study by Faggian et al. (2023), which also revealed that people living in the same region have similar perceptions of income inequality. Among studies examining perceptions of income inequality specifically in the US, Xu & Garand (2020) found that, regarding income inequality in the US over the past 20 years, people living in states with higher income in-

equality perceived a greater increase than people living in states with lower income inequality. Chambers et al. (2014) found that people living in the US perceive income inequality as a bigger problem than it actually is and underestimate their own average income. Furthermore, liberal politicians exaggerate income inequality more than conservative politicians. Another study examining perceptions of income inequality in the context of electoral processes, Engelhardt & Wagener (2014), found that perceptions of income inequality are more distorted than normal during political election cycles and that people vote based on perceptions rather than data. According to Hauser & Norton (2017), who examined the variability of perceptions of income inequality based on reference groups and social status, people tend to underestimate income inequality in their own country and make incorrect inferences about income inequality based on information obtained from their immediate environment. (2019) found that people's perceptions of their status within society also influence their conclusions about income inequality.

In terms of this study, apart from the studies mentioned in the literature, the study by Amiel & Cowell (1992) stands out on the issue of income inequality. In this study, an experiment was conducted on the perception of income inequality, and it was found that people have variable perceptions. In the experimental procedure of the study, participants were asked numerical and verbal questions about income inequality. The numerical and verbal questions asked had the same meaning. Therefore, participants were expected to answer the questions with the same meaning in a similar way. However, as the complexity level of the questions increased, the answers given to the numerical and verbal questions differed significantly. In subsequent years, two similar studies were conducted: Ballano & Ruiz-Castillo in 1993 and Jancewicz in 2016. These two studies yielded results similar to those obtained in the study by Amiel & Cowell.

5. MATERIALS AND METHODS

This study was conducted to reveal perceptions of income inequality. In this context, the study first conducted by Amiel & Cowell in 1992 was used as a basis. In that study, a survey was conducted to determine perceptions of income inequality, and it was found that participants' perceptions of income inequality varied under different scenarios.

This study differs from other studies in several ways. For example, in other studies, participants were labeled as supporters of certain axioms found in the literature on income inequality after giving their answers, but this study does not include such details. Furthermore, while in other studies the questions "Doubling Income," "Adding a Fixed Amount," and "Reducing a Fixed Amount" were all included in the "Income Transformation Scenario," in this study only the question "Doubling Income" is included in the "Income Transformation Scenario" and the "Fixed Amount Addi-

tion” question is presented as a separate scenario. The “Fixed Amount Reduction” question is not included in this study in order to reduce the number of similar questions. In addition, the options presented to participants in the verbal questions in Amiel & Cowell’s “Income Transformation Scenario,” “Transfer Principle Scenario,” and “Population Replication Scenario” have been simplified in this study and presented as “Decreases,” “Increases,” and “Remains Unchanged.” Again, unlike this study, Amiel & Cowell’s study asked participants if they wanted to change their preferences immediately after each verbal question, but this option is not offered in this study. While Amiel & Cowell and Jancewicz’s studies depict individuals’ incomes as 5, 8, and 10, this study changes individuals’ incomes to 2, 5, and 8. In the question posed in the “Fixed Amount Addition Scenario,” 6 units are added to individuals’ incomes in this study, whereas 5 units are added in other studies, and this amount is the same as in Ballano & Ruiz-Castillo’s study. One important point is that the “Unequal Enrichment Scenario” in Amiel & Cowell’s study, as Jancewicz also mentions, is a scenario that is quite difficult for participants to understand and answer. Therefore, this scenario will not be included in the analysis section of this study. Finally, the main objective of this study is to explain the perception of income inequality using the link between behavioral economics and the framing effect. Other studies also present a similar analysis, but they do not include the link between behavioral economics and the framing effect.

The study employed an online survey method, and 101 academics working at a foundation university were selected as the experimental group. In the survey application procedure, participants were first asked 9 numerical questions, followed by 6 verbal questions. Some of these numerical questions and each of the verbal questions have the same meaning, and participants will be tested to see if they gave the same answer to these questions in the context of the framing effect. For this purpose, frequency tests were performed using the SPSS 29.0.2.0 program to analyze the data in the study. Although this study has certain limitations, participants who wish to participate in the survey are required to share certain demographic information (such as age, gender, or income status). Those who do not wish to share this information cannot participate in the survey. However, compared to other studies, the number of participants is lower.

The following scenarios are listed in order: “Income Transformation Scenario,” “Fixed Amount Addition Scenario,” “Transfer Principle Scenario,” “Population Replication Scenario,” and “Decomposability Scenario.” Since a

different method was followed from other studies in terms of scenarios, a comparative analysis with other studies was performed for the three scenarios other than the “Income Transformation Scenario” and the “Fixed Amount Addition Scenario.” Since the main objective of this study is to measure the perception of income inequality through the framing effect, it is irrelevant whether the questions in all scenarios are answered correctly. What matters is whether the participants give the same answer to the numerical and verbal questions (two numerical questions in the case of the Decomposability Scenario) within the relevant scenario. As mentioned earlier in this study, the framing effect is an effect where the same situation is presented differently, and preferences may change accordingly. Therefore, when examining the scenarios, it is important whether participants are influenced by the framing effect rather than whether they give the correct answer.

5.1. Income Transformation Scenario

According to the income transformation scenario, the incomes of individuals in society (3 individuals in total) (2, 5, and 7) have been doubled (4, 10, and 14). To avoid framing effects, participants should choose the “Decreases” option in the verbal question if they chose option A in the numerical question, the ‘Increases’ option in the verbal question if they chose option B in the numerical question, and the “Neither” option in the verbal question if they chose both options in the numerical question. (A and B together) they should choose the “Remains the same” option in the verbal question.

Q1. In which option is the income distribution more unequal?

- A = (2, 5, 7)
- B = (4, 10, 14)

Q10. Consider a society where each individual has a different income. How does income inequality change when each individual’s income is doubled?

- Decreases
- Increases
- Remains unchanged

Under this scenario, a large portion of participants chose “Increases” in the numerical question, while in the verbal question, the choices ‘Increases’ and “Remains the same” were almost equal. The percentage of those who changed their answer from the numerical question to the verbal question was 51%. In other words, it can be said that 51% of participants in the income conversion scenario were influenced by the framing effect (Table 1).

Table 1. Analysis of income transformation scenario

Numerical Q (Q1) (%)			Verbal Q (Q10) (%)			Q1 & Q10 (%)	
Decrease	Increase	Unchanged	Decrease	Increase	Unchanged	Same	Different
7	69	24	1	49	50	49	51

5.2. Fixed Amount Addition Scenario

According to the fixed amount addition scenario, a fixed income of 6 units was added to the income of each individual in the community (3 individuals in total) (10, 11, and 13). To avoid framing effects, participants who chose option A in the numerical question should choose the “Decreases” option in the verbal question, those who chose option B in the numerical question should choose the “Increases” option in the verbal question, and those who chose both options in the numerical question (A and B together) they should choose the “Remains the same” option in the verbal question.

Q2. In which option is the income distribution more unequal?

- A = (2, 5, 7)
- B = (8, 11, 13)

Q11. Consider a society where each individual has a different income. If a fixed amount is added to each individual's income, how will income inequality be affected?

- Decreases
- Increases
- Remains unchanged

Under this scenario, a large portion of participants concentrated on the “Decreases” option in the numerical question, while concentrating on the “Remains unchanged” option in the verbal question. The percentage of those who changed their answer from the numerical question to the verbal question was 61%. In other words, in the fixed amount addition scenario, 61% of participants can be said to have fallen under the framing effect. This rate is higher than in the previous scenario (income transformation scenario) (Table 2).

5.3. Transfer Principle Scenario

According to the transfer principle scenario, 1 unit of income has been transferred from one individual (with 8 units of income) to another (with 5 units of income) among the individuals in the community (5 individuals in total). (In the new situation, the high-income individual's income has

decreased from 8 to 7, while the low-income individual's income has increased from 5 to 6). The incomes of the other individuals have not changed. To avoid framing effects, participants should choose the “Decreases” option in the verbal question if they chose option A in the numerical question, the “Increases” option in the verbal question if they chose option B in the numerical question, and the “Neither” option in the verbal question if they chose both options in the numerical question (A and B together) they should choose the “Remains the same” option in the verbal question.

Q3. In which option is the income distribution more unequal?

- A = (2, 5, 8, 11, 14)
- B = (2, 6, 7, 11, 14)

Q12. Consider a society where each individual has a different income. Assuming that the incomes of other individuals remain fixed, let us assume that a certain amount of income is transferred from the higher-income individual to the lower-income individual for only two individuals. As a result of this situation, the lowest-income individual remains the lowest-income individual, and the highest-income individual remains the highest-income individual. How is income inequality affected?

- Decreases
- Increases
- Remains unchanged

Under this scenario, although most participants chose the “Increases” option in the numerical question, a large majority changed their choice in the verbal question and selected the “Decreases” option. The same situation occurred in the other three studies, except for the study by Ballano & Ruiz-Castillo. In this scenario, the percentage of participants who changed their answer from the numerical question to the verbal question was 72%. In other words, it can be said that 72% of participants were susceptible to the framing effect in the fixed amount addition scenario. This percentage is higher than in the previous two scenarios (income transformation and fixed amount addition scenarios) (Table 3).

Table 2. Analysis of fixed amount addition scenario

Numerical Q (Q2) (%)			Verbal Q (Q11) (%)			Q2 & Q11 (%)	
Decrease	Increase	Unchanged	Decrease	Increase	Unchanged	Same	Different
58	23	19	24	16	60	39	61

Table 3. Analysis of transfer principle scenario

	Numerical Q (Q3) (%)			Verbal Q (Q12) (%)			Q3 & Q12 (%)	
	Decrease	Increase	Unchanged	Decrease	Increase	Unchanged	Same	Different
Altun & Altan (2025)	35	51	14	63	9	28	28	72
A&C (1992)	35	42	22	60	24	14	-	-
B&R-C (1993)	54	22	24	57	37	6	-	-
J (2016)	38	42	20	55	23	22	-	-

5.4. Population Replication Scenario

According to the population replication scenario, copies of each individual in society (3 individuals in total) have been included in society (2, 5, and 7). In the new situation, the number of individuals in the society is 6 (2, 2, 5, 5, 7, 7). To avoid framing effects, if participants choose option A in the numerical question, they should choose the “Decreases” option in the verbal question; if they choose option B in the numerical question they should choose the “Increases” option in the verbal question, and if they choose both options in the numerical question (A and B together), they should choose the “Remains unchanged” option in the verbal question.

Q4. In which option is the income distribution more unequal?

- A = (2, 5, 7)
- B = (2, 2, 5, 5, 7, 7)

Q13. Consider a society where each individual has a different income. Assume that a copy of each individual in this society (the real individual and the copy have the same income) is included in the society. How does this affect income inequality?

- Decreases
- Increases
- Remains unchanged

Under this scenario, a large portion of participants chose the “Decreases” option in the numerical question, while they chose the “Remains unchanged” option in the verbal question. Compared to other studies, this study shows a concentration on the “Decreases” option in the numerical question, while other studies show a concentration on the “Remains unchanged” option. However, when comparing the verbal question, all studies show a concentration on the “Remains unchanged” option. In this scenario, the percentage of those who changed their answer from the numerical question to the verbal question is 67%. In other words, it can be said that 67% of participants in the copycat scenario fell victim to the framing effect. This rate is lower than in the previous scenario (transfer principle) but higher than in the first two scenarios (income transformation and fixed amount addition scenarios) (Table 4).

5.5. Decomposability Scenario

According to the decomposability scenario, two additional individuals with fixed and identical incomes (10

units of income) were added to two different societies (3 individuals with incomes of 7, 11, and 12 units, and 3 individuals with incomes of 8, 9, and 13 units, respectively). To avoid framing effects, if participants chose option A in the first numerical question (question 8), they should choose option A again in the second numerical question (question 9). If they chose option B in the first numerical question (question 8), they should choose option B again in the second numerical question (Question 9). Unlike the other scenarios, this scenario compares two numerical questions rather than a numerical and a verbal question.

Q8. In which option is the income distribution more unequal?

- A = (7, 11, 12)
- B = (8, 9, 13)

Q9. In which option is the income distribution more unequal?

- A = (7, 10, 10, 11, 12)
- B = (8, 9, 10, 10, 13)

Q15. Suppose there are two societies with the same number of individuals and total income, but where income is distributed differently among individuals. Suppose two individuals with equal income are included in both societies. How is income inequality affected?

a. In the society where income is distributed more unequally, income continues to be distributed more unequally after the inclusion of new individuals.

b. Without knowing the exact income distribution, it is impossible to say for certain which society has a more unequal distribution of income.

c. None of the above.

Under this scenario, the percentage of respondents who gave the same answer to both numerical questions was 60%, while the percentage of respondents who gave different answers to both numerical questions was 40%. In other words, in the separability scenario, it can be said that 40% of participants were susceptible to the framing effect. This percentage is lower than in all previous scenarios. Compared to other studies, in Jancewicz's study, except for the nearly balanced ratio, the majority of participants in all other studies gave the “Same” answer (Table 5).

Table 4. Analysis of population replication scenario

	Numerical Q (Q4) (%)			Verbal Q (Q13) (%)			Q4 & Q13 (%)	
	Decrease	Increase	Unchanged	Decrease	Increase	Unchanged	Same	Different
Altun & Altan (2025)	57	19	24	10	21	69	33	67
A&C (1992)	31	10	58	22	9	66	-	-
B&R-C (1993)	28	12	60	20	16	64	-	-
J (2016)	40	9	51	31	8	60	-	-

Table 5. Analysis of population replication scenario

	Numerical Qs (Q8 & Q9) (%)		Verbal Q (Q15) (%)		
	Same	Different	a	b	c
Altun & Altan (2025)	60	40	33	52	15
A&C (1992)	57	41	40	45	11
B&R-C (1993)	68	32	43	52	5
J (2016)	51	49	27	69	5

6. RESULT AND DISCUSSION

This study is similar to those conducted by Amiel & Cowell in 1992, followed by Ballano & Ruiz-Castillo in 1993 and Jancewicz in 2016. The most fundamental difference between this study and others is that it examines the perception of income inequality through behavioral economics and the framing effect.

The framing effect is an effect whereby decisions can differ depending on how the same situation is presented. This study also tested the perception of income inequality by utilizing this effect. To this end, in the first stage of the survey, designed as an experiment, participants were asked numerical questions related to income inequality, while in the second stage, they were asked verbal questions with the same meaning as the numerical questions. The basic logic is this: The answers given to numerical questions should match the answers given to verbal questions. If this does not happen, we can say that participants have been influenced by the framing effect and their perception of income inequality has been distorted. The five basic scenarios in Amiel & Cowell's study (Income Transformation, Transfer Principle, Population Replication, Decomposability, Unequal Enrichment) were presented in this study in a slightly different form. The reason for this is the considerable complexity of the Unequal Enrichment scenario in particular and the similarity of question types within the Income Transformation scenario. The complexity of the Unequal Enrichment scenario is also mentioned in Jancewicz's study.

7. CONCLUSION

In terms of the results of this study, it was found that as the complexity of the questions increased, participants were more susceptible to the framing effect and their perception of income inequality was distorted. This result is broadly consistent with other studies. It was found that in simpler scenarios (e.g., comparing two numerical questions in the decomposability scenario), participants' perception levels were better and they were less susceptible to the framing effect.

One of the biggest problems in the perception of income inequality is how income inequality is communicated to people. It is important that data and facts that can be perceived as complex are communicated in the simplest and most under-

standable way. For example, the statement “we must reduce income inequality by this much in percentage terms” may not be easily understood perceptually. However, it may be easier to understand if it is framed positively, such as “if income inequality decreases, the level of prosperity and social harmony will increase,” or negatively, such as “if income inequality increases, the level of social conflict and unrest will increase.” From another perspective, when tax policy is implemented to reduce income inequality, it may be more beneficial to convey this as “a more equitable society.” However, data on income inequality should be presented in a more transparent and impartial manner. If the level of economic literacy among individuals is also increased, a better perception of income inequality can be formed in society, which can contribute to solving the problem of income inequality.

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REFERENCES

- Akerlof, G. A. (2002). Behavioral macroeconomics and macroeconomic behavior. *The American Economic Review*, 92(3), 411–433. [\[CrossRef\]](#)
- Amiel, Y., & Cowell, F. A. (1992). Measurement of income inequality* Experimental test by questionnaire. *Journal of Public Economics*, 47(1), 3–26. [\[CrossRef\]](#)
- Azzopardi, L. (2021). Cognitive Biases in Search: A Review and Reflection of Cognitive Biases in Information Retrieval. *CHIIR '21: Proceedings of the 2021 Conference on Human Information Interaction and Retrieval* (pp. 27–37). Canberra ACT Australia. [\[CrossRef\]](#)
- Ballano, C., & Ruiz-Castillo, J. (1993). Searching by Questionnaire for the Meaning of Income Inequality. *Revista Espanola de Economia*, 10(2), 233–259.
- Chambers, J. R., Swan, L. K., & Heesacker, M. (2014). Better Off Than We Know: Distorted Perceptions of Incomes and Income Inequality in America. *Psychological Science*, 25(2), 613–618. [\[CrossRef\]](#)
- Chancel, L., Piketty, T., Saez, E., & Zucman, G. (2022). *World inequality report 2022*. World Inequality Lab. [\[CrossRef\]](#)
- De Maio, F. G. (2007). Income inequality measures. *The Journal of Epidemiology and Community Health*, 61, 849–852. [\[CrossRef\]](#)
- Engelhardt, C., & Wagener, A. (2014). Biased perceptions of income inequality and redistribution. *Cesifo Working Paper No 4838*. Center for Economic Studies & Ifo Institute. [\[CrossRef\]](#)

- Faggian, A., Michelangeli, A., & Tkach, K. (2023). Income inequality in Europe: Reality, perceptions, and hopes. *Research in Globalization*, 6, Article 100118. [CrossRef]
- Hauser, O. P., & Norton, M. I. (2017). (Mis)perceptions of inequality. *Current Opinion in Psychology*, 18, 21–25. [CrossRef]
- Horowitz, J. M., Igielnik, R., & Kochhar, R. (2020). *Most Americans say there is too much economic inequality in the U.S., but fewer than half call it a top priority*. Pew Research Center.
- Jancewicz, B. (2016). Measurement of income inequality re-examined: Constructing experimental tests by questionnaire. *Myśl Ekonomiczna i Polityczna*, 53, 17–42.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263–292. [CrossRef]
- Kahneman, D., & Tversky, A. (1981). The framing of decisions and the psychology of choice. *Science, New Series*, 211(4481), 453–458. [CrossRef]
- Knell, M., & Stix, H. (2020). Perceptions of inequality. *European Journal of Political Economy*, 65, Article S0176268020300756. [CrossRef]
- Mullainathan, S., & Thaler, R. (2000). Behavioral Economics. *Nber Working Paper Series No 7948*. National Bureau of Economic Research. [CrossRef]
- OECD. (2024). *Income inequality*. OECD. <https://www.oecd.org/en/data/indicators/income-inequality.html> Accessed on Nov 12, 2024.
- Our World in Data. (2024). *Gini coefficient*. Our World in Data. <https://ourworldindata.org/grapher/economic-inequality-gini-index?tab=table> Accessed on Nov 12, 2024.
- Rehman, T. U. (2016). Historical context of behavioral economics. *Intellectual Economics*, 10, 128–132. [CrossRef]
- Schneider, S. M. (2019). Why income inequality is dissatisfying—perceptions of social status and the inequality-satisfaction link in Europe. *European Sociological Review*, 35(3), 409–430. [CrossRef]
- Sherman, A., Trisi, D., & Cureton, J. (2024). *A guide to statistics on historical trends in income Inequality*. Washington: Center on Budget and Policy Priorities. Center on Budget and Policy Priorities.
- The Decision Lab. (2024). *Why do our decisions depend on how options are presented to us?* The Decision Lab. <https://thedecisionlab.com/biases/framing-effect> Accessed on Nov 12, 2024.
- The University of Chicago. (2024). *Behavioral economics, explained*. The University of Chicago. <https://news.uchicago.edu/explainer/what-is-behavioral-economics> Accessed on Nov 12, 2024.
- World Bank. (2024). *World development indicators*. World Bank. <https://databank.worldbank.org/reports.aspx?source=2&series=SI.POV.GINI&country=> Accessed on Nov 12, 2024.
- Xu, P., & Garand, J. C. (2010). Economic context and Americans' perceptions of income inequality. *Social Science Quarterly*, 91(5), 1220–1241. [CrossRef]