



## Perceived Equitability and Labor Participation

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### ABSTRACT

While the “relative Gini coefficient” is one of the common criteria for measuring inequality, people’s perception of inequality seems to go beyond this criterion. Hence, self-report of subjective well-being (SWB) is becoming the focus of studies in public policies to improve social welfare. Since such statistics are not currently available in Iran, we are seeking for the best possible measure that can reflect subjective inequality of individuals with existing data. Investigating this issue besides people’s reaction to feeling deprived sheds light on an important attitude of the society, and is useful in policy design. This is because as a result of feeling inequitable, some people may stop their economic participation, while others try to be constructive and increase their economic activity. In this regard, we first introduce a criterion for the representation of subjective inequality at the individual level, and investigate the results of measuring subjective inequality for nominal and real values, urban and rural areas, as well as by the gender groups. We then address the effect of this perceived inequality on the economic participation of individuals. Accordingly, we distinguish the effects of subjective inequality on economic participation by age groups in the range of 15 to 65 years. The results indicate that the subjective inequality among women is greater than men, and is increasing over the years under study. It also appears that the increase in perceived equitability has had its most destructive effect on the middle class, deciles 5-8, while lower deciles react constructively in subjective deprivation.

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## **1. Introduction**

Investigating the process of inequality and its implications in the economic literature are of great importance. It seems that the creation of such inequalities or subjective inequalities has been caused by many political and social developments in societies. Therefore, many studies have addressed the level and trend of inequality within and among countries. For instance, Cornia and Kiiski (2001) and Firebaugh (1999) obtained different results by studying different indexes of measuring inequality. Some studies (Wood, 1995; Richardson, 1995) viewed globalization as a major motive of inequality among and within countries. Additionally, other studies like Niño-Zarazúa et al. (2016) used the global distribution of income and, by separating relative and absolute inequality, investigated the level and trend of interpersonal inequality, and reported that the relative inequality, measured by the Gini coefficient and the coefficient of variation, had declined sharply in recent decades, but this inequality remained high. On the other hand, absolute inequality, measured by using the absolute Gini coefficient and standard deviation, has increased over the years. In this regard, Milanovic (2002) also studied the differences in purchasing power parity among countries. The results indicated that inequality had increased on the Gini index. He attributed the increase to inequality due to differences in average income among and within countries. Berry et al. (1983) reached similar conclusions by using household income in their studies.

Therefore, while the relative Gini coefficient is one of the common criteria for measuring inequality, it seems that individuals' perceptions of inequality go beyond this criterion. In the past decades, especially after the emergence of the statistical approaches to such studies, the understanding of welfare and human development has shifted from a traditional focus on income and consumption to a more multidimensional approach and a broader perspective. This has been strongly influenced by research on subjective well-being (SWB). For

example, according to Steptoe et al. (2015), although things such as physical health, economic status, and freedom for human development are particularly important, as stated the report of the Commission on Measuring Economic Performance and Social Progress the French government under Joseph Stiglitz, in addition to current measures of economic performance such as GDP, people's self-health reports should also be considered as an indicator of community progress. Hence, people's reporting of their health is becoming the focus of studies on public policy review and social welfare improvement. Moreover, it is not easy to investigate people's attitudes toward inequality (e.g. Niv-Yagoda, 2020), so considering how people perceive inequality in society has been a controversial topic in recent decades. As Camfield and Esposito (2014) and Kahneman et al. (1997) suggest, even the detailed information that influences responses, such as memories or even weather, should be considered to study the subjective information of individuals. Therefore, to judge the happiness and satisfaction of one's life, various influencing factors should be considered that is a very complex task to do.

Some studies found that people's perception of inequality is affected by their economic status. For example, Roper (1940) divided the economic level into four different categories. This categorization was formed using living standards and individuals' perceptions of inequality depending on their relative position in their groups, so individuals with similar incomes in each of these groups may have a different relative status concerning their peers' earnings. Van Praag (1977) also argued that one's perception of inequality might depend on the position they stood in the income distribution. Shibutani (1955) coined the term 'reference group', which was used as an analytical tool to understand individuals' perception. Cruces et al. (2013a) mentioned the importance of reference groups as usually defined by geographical groups, education, demographics, or even friends and

family. The future status of the individual can also be a reference group for the individual.

Runciman (1966) expressed deprivation, and made a comparison of one's situation with that of the reference group. Runciman explained relative deprivation<sup>1</sup> as the difference between a person's desirable status and the current one. In this manner, the higher is the number of people who earn high incomes, the more the low income people will feel deprived. Yitzhaki (1979) also interprets the Gini coefficient following the theory of relative deprivation. Since each unit of income represents the set of goods an individual can consume, income should generally be an indicator of one's ability to consume goods. Yitzhaki made statements about deprivation and general satisfaction of society, and showed that the relative deprivation of society could be explained by incomes mean and Gini coefficient.

Fehr and Schmidt (1999) also stated that people did not like inequality. People feel inequitable when their incomes are lower or even higher than others. But inequality, due to having lower income than others, is more distressing to people. They modeled inequality as a function of the income of person  $i$  in a way that paired the individual's income with the income of their peer in the community. Yet, Tideman et al. (2008) stated that individuals compared their income to those they earned in the past, as well as income of other individuals. Therefore, the earnings of many others in the reference group reduces the welfare of the individual. Hence, increasing the others' income through greater relative deprivation or lower relative satisfaction decreases one's well-being. This of course depends on whether those who increase their income have more or less income. Therefore, lowering others' income improves one's well-being.

According to past studies, the absolute gap in earnings may reflect people's subjective inequality better than the relative measure. In this

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1. According to Ransman (1966: 10), a person is deprived of time when: 1- They do not have x; 2- See the person or people who have x; 3- They want x; 4- They see that they must have x.

regard, Amiel and Cowell (1999) found that half of the students did not accept the principle of scale-independence<sup>1</sup>. They argued that many people did not seem to compare and analyze in a relative manner. Atkinson and Brandolini (2010) stated that current criteria for inequality regarding social valuation differences were limited to income. Therefore, a criterion of some sort with absolute structure is studied as a new parameter of global social welfare. Bosmans et al. (2014) also claimed that past studies of inequality had focused almost exclusively on measures of relative inequality. They showed that while absolute inequality had increased over years, relative views were significantly retained in the mainstream. Ravallion (2003) also emphasized the importance of avoiding limiting metrics to relative criteria. Ravallion et al. (2004) argued that the absolute criterion gave us a better understanding of the gap between rich and poor, and there was little evidence to suggest that the relative means of income inequality could be used in place of absolute means to assess social outcomes. They emphasized that the notion that people had inequality was more about absolute income inequality than relative inequality. Ravallion (2017) stated that 40-60% of participants surveyed in the UK, Israel, Germany, and the United States thought about inequality in absolute terms, implying that perceptions of inequality usually appeared in absolute conceptions.

Clark and d'Ambrosio (2015) stated that the Gini coefficient might not be a good measure of inequality and that people perceive inequality to be different from what was estimated in statistics. They compared the two log-normal income distributions, one of which had a horizontal shift to the right and the other of all incomes had increased proportionally. They argued that if an individual's assessment of the earnings distribution depended on their income

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1. The widely accepted principle in the measurement of income inequality implying that the size of the inequality index is not sensitive to the proportional and uniform changes in the income of all individuals.

position, the individual in the two distributions would have different satisfactions. This is because people's satisfaction with income also depended on the number of people who had higher or lower incomes.

Considering what people think about inequality is important, and the present study understands that inequality has different and sometimes destructive effects at the individual and social levels. For example, Oto-Peralías and Romero-Ávila (2017) showed that persistent inequality, as measured by land inequalities, had a negative impact on cultural traits such as blood donation in southern Spain. Consequently, inequality may even change the norms of societies. Additionally, some studies investigated the effect of income inequality over other social factors. Vries et al. (2011) suggested that income inequality had a negative impact on individuals' personalities and the spirit of agreement, and Macours (2010) showed a strong relationship between increased regional income inequality and the spread of Maoist activities for rioting and mass theft. Moreover, Morawetz et al. (1977) included the level of happiness to check the effect of income distribution in two different Israeli societies. They ignored other factors that might have an impact, and showed that the level of happiness in the society with a more equitable income distribution is higher than the others. Hagerty (2000) offered two studies to compare the social effect of income on SWB. The first study, from 1989 to 1996, used national representative samples in the United States to show that the range and skewness of income distribution in society affects one's health. The study shows that the upper limit and the skewness of incomes were negatively and positively correlated with happiness scores, respectively. The second study of eight countries over a 25-years period showed that reducing the amount of income inequality in one country increased the national SWB average.

Moreover, Alesina et al. (2004) addressed the effect of inequality level on well-being using a questionnaire on happiness. To this end, they compared the long-term US and European data, and found

significant differences between them. In Europe, the poor and those on the left of the political spectrum are unhappy with inequality. While in the United States, the happiness of the poor and those on the left of the political spectrum is not correlated with inequality. Interestingly, in the United States, the rich are saddened by inequality. Inequality in Europe affects happiness more than it does in the United States. Alesina and colleagues argued that these findings were consistent with perception. In fact, Americans think they live in a mobile society, where individual effort can move people up and down the income ladder, while Europeans believe their community is less mobile. They add in surveys more than 60% of Americans regard poor people as lazy, and think they could improve upon their status by more effort. This percentage, however, is very low in Europe.

Increasing subjective inequality may also affect various factors in society, including economic participation. Fehr and Schmidt (1999) argued that the economic environment determined the type of behavior of individuals in equilibrium. Sometimes a person's selfish behavior may affect the behavior of a large number of people in the community, and they may also display selfish behavior. For example, in the delivery of public goods, the behavior of a selfish person may cause many people to stop contributing to the public good, even though others have contributed. Conversely, in a society where the majority of individuals are selfish, the behavior of a number of inhabitants may cause the majority of selfish individuals to be persuaded to contribute to public goods. In addition, among other empirical studies in this scope, Abeler et al. (2010) in a gift-exchange game found that when wages were equal, workers worked less to avoid working longer than the co-workers who received the same wage. Clark et al. (2010) also found that the wages offered to other participants in a laboratory exchange game had a negative association with workers' effort. In addition to examining laboratory evidence, they used a questionnaire on the role of relative income in determining

workers' effort. The results of both types of data suggest that the rank of the individual in the distribution of income is a more powerful determinant of workers' effort provision. In the following, we first develop a model by which a measure of subjective inequality is provided, and then in results we provide group and gender comparisons in addition to the association of subjective inequality and economic participation.

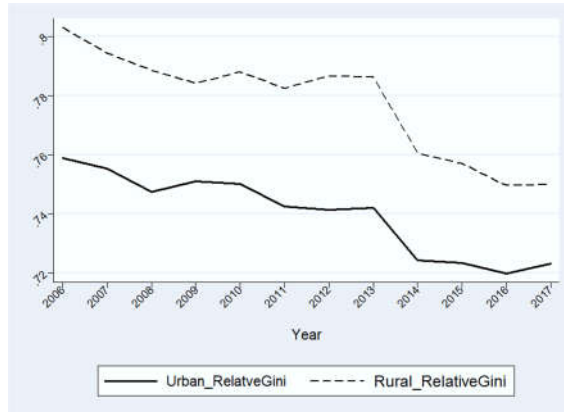
## 2. Model

In various countries as well as the Statistical Center of Iran (SCI), the Gini coefficient is used as one of the common tools for measuring inequality based on household costs. But according to Yitzhaki (1979), each unit of income is an indicator of one's ability to consume goods, and since our unit of study is the individual and their sense of inequality, and we seek to compare and measure inequality at the individual level, the household cannot be a suitable benchmark for this study. Therefore, in this paper, we have calculated the relative Gini coefficient based on the individuals' income in the community, because studying this criterion in individual units brings us closer to studying and comparing relative and absolute criteria. In general, the Gini coefficient formula, called the Gini Mean Difference Index, is presented by Equation (1):

$$G = \frac{\sum_{j=1}^n \sum_{i=1}^n |y_i - y_j|}{2n^2 \bar{y}} \quad (1)$$

where  $y_i$  is the income of person  $i$ ,  $\bar{y}$  is the average income, and  $n$  is population. The Gini index value ranges between 0 and 1, with 0 reflecting a community with completely equal income and 1 reflecting a completely unequal income.





**Figure 1.** Relative Gini Coefficient of Individuals' Income in Urban and Rural Areas during 2006–2017

**Source:** Research findings.

In Figure 1, we have computed the relative Gini coefficient of income in Iran. As shown, income in rural areas are less equitable than that of urban areas; however, this could be due to the presence of more zeros in rural data. Yet, in both areas, the Gini coefficient has been decreasing, and this has been accompanied by fluctuations over the years. As can be seen from the graphs, the relative Gini coefficient has decreased over the years in rural areas with a higher intensity and slope than urban areas. This indicates that the situation of income distribution and relative inequality in rural areas has been improving more rapidly than in urban areas, and is witnessing a reduction in relative income inequality in rural areas more rapidly than in urban areas. The highest reduction in the relative Gini coefficient was observed in urban and rural areas in 2016. The trend of relative Gini coefficient in urban and rural areas has been similar for most of the years. For example, the relative Gini coefficient in cities has decreased in 2010, while this indicator has increased in rural areas. Moreover, in 2017 the relative Gini coefficient has increased in urban areas but no significant change has been observed in rural areas.

### 2.1 Individual Deprivation: Absolute Gini Coefficient

Various studies (e.g. Tideman et al. 2008; Amiel and Cowell 1992; 1999) stated that most people compared their income with others in absolute terms. In fact, in this comparison, people look at the absolute differences in their income with others, not the percentage difference of their income. It should be noted that, in contrast, the Gini (relative) coefficient considers inequality based on the ratio of income, so it is suitable for evaluating absolute difference of individuals' income. Given that people compare their income with others, deprivation and satisfaction are defined at the individual level.

To calculate the deprivation felt by individuals in our community, we use the Yitzhaki (1979) model. Hey and Lambert (1980), with a note on Yitzhaki (1979), described the deprivation felt by person  $i$  with income  $y_i$  in relation to a person with income  $y_j$ :

$$d_i(y) = \begin{cases} (y_j - y_i) & y_i < y_j \\ 0 & \text{else} \end{cases} \quad (2)$$

According to Yitzhaki (1979), the function of deprivation of a person with income  $y_i$  is a total weighted income of all the gaps that apply to all members of society with a better income:

$$D_i(y) = \sum_{j \in B_i(y)} \frac{y_j - y_i}{n} \quad (3)$$

Where  $B_i(y)$  is a set of people who earn more than person  $i$ , and is identified as a better-off set. Likewise  $W_i(y)$  is a set of people earning less than person  $i$ , and is called a worse-off set. By averaging out Equation 3, the total deprivation of society is achieved as follows:

$$D(y) = \frac{1}{n} \sum_{i=1}^n \sum_{j \in B_i(y)} \frac{y_j - y_i}{n} \quad (4)$$

This criteria, in fact, is the absolute Gini that is obtained by summing deprivations of all individuals up. It is worth to at the way Fehr and Schmidt (1999) look at disutility of person if having

different income than a peer. They include “inequality aversion” in their form, so the utility of a person with income level  $y_i$ :

$$U_i(y_i) = y_i + \alpha_i \sum_{j \in B_i(y)} \frac{y_j - y_i}{n-1} + \beta_i \sum_{j \in W_i(y)} \frac{y_i - y_j}{n-1} \quad (5)$$

They claim that  $\alpha_i \leq \beta_i \leq 0$ , so the more dispersed distribution of income, the more dissatisfied the society is. In fact, with the absolute Gini coefficient, we concentrate more on deprivation in multiplier of  $\alpha_i$ . Therefore, building on absolute Gini coefficient, in order to reflect feeling inequitable, we may use  $D_i(y_i)$  as subjective inequality of the person with income  $y_i$ .

## 2.2 Factors Affecting Economic Participation

Determining how individuals respond to feeling inequitable is crucial to designing public policies in each society. As Alesina et al. (2004) showed, the effects of inequality on European societies were more devastating than American societies. Thus, if the reaction to feeling inequitable makes people more participatory, it could be constructive, otherwise, inequality can be destructive. This is important because the impact of economic participation on increasing the general welfare of society is evident.

Economists typically use a model of labor-leisure choice to analyze labor supply. In this model, each person decides to devote part of their time to work based on individual characteristics and in terms of the potential wage. This model has been used in various ways to study the factors underlying a person’s decision to enter the labor market or not. For instance, factors such as age, gender, literacy, experience, and wage levels are listed. Since the results of various studies mentioned in Section 1 indicate the effect of deprivation on the economic participation of individuals, in this study we seek to investigate the effect of deprivation, as indicator of subjective inequality, on economic participation. Thus, economic participation can be modeled as:

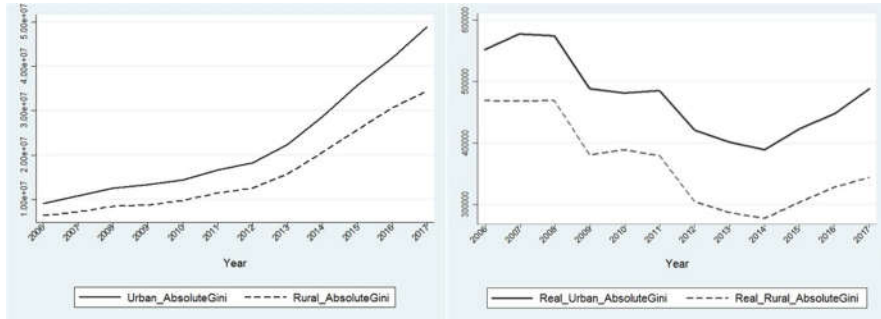
$$LFP = f(X, Dep) \quad (6)$$

where  $LFP$  is Labor Force Participation, and  $X$  is vector of explanatory variables including gender, literacy, and experience. Here we add the variable  $Dep$  for deprivation, indicator of subjective inequality, and investigate effects of this variable on one's economic participation.

Here, we address the endogeneity problem coming from the effect of participation on deprivation. To tackle the problem of endogeneity, we use the "rank of place of residence" as an instrument for measuring deprivation. Due to the differences in level of income of provinces, this rank has the highest correlation with the perceived deprivation variable, while in general there is no significant relationship between "rank of place of residence" of and economic participation.

### **3. Results**

In this study, we used Household Income and Expenditure Survey (HIES), data gathered by SCI during 2006–2017. We studied absolute Gini coefficients once for nominal income and again for individuals' real earnings over different years. We also used nominal income in this study because Equation 4 reflects the difference in income of person  $i$  from other people who earn more. Moreover, a person who compares their income in society may consider nominal or real income. However, in calculating the relative gains, the real or the nominal income would have no effect because the criteria is a relative measure. The results for the nominal and real income are presented in Figure 2.



**Figure 2.** Real (Right) and Nominal (Left) Absolute Gini Coefficient of Individuals' Incomes in Urban and Rural Areas during 2006–2017

**Source:** Research findings.

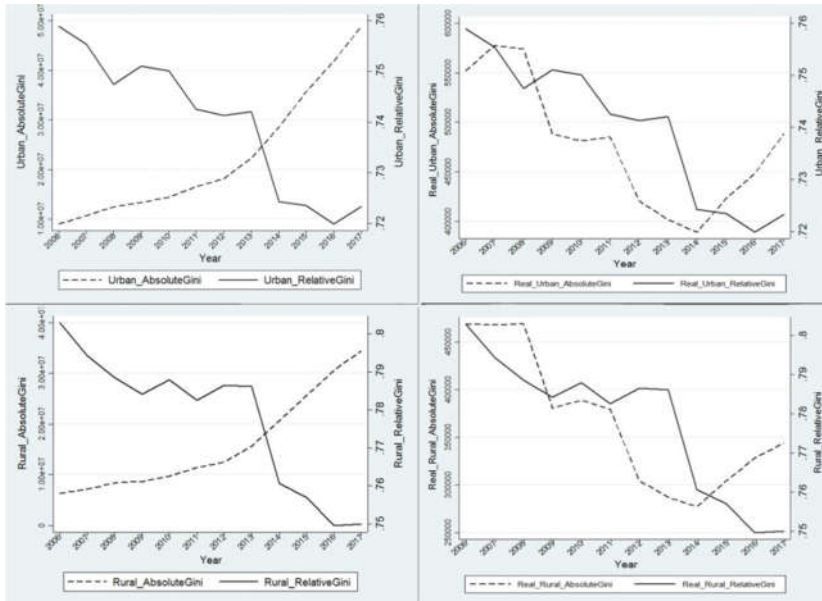
As shown in Figure 2, the absolute inequality for nominal income has been increasing over the years under study. That is, the absolute income gap in the community has increased over the years. Indeed, the deprivation felt among individuals in the community is increasing. Therefore, unlike the relative Gini coefficient, subjective inequality of income in urban areas is higher than in rural areas, which makes more sense. The data analysis shows that the range of urban income is more than rural ones. That is a higher income gap in urban areas than rural areas has a greater impact on the feeling of deprivation in urban areas, and as a result, the absolute Gini coefficient in urban areas is more.

Furthermore, as shown in Figure 2, the absolute income inequality for real earnings during the years under review has been fluctuating, but these fluctuations have initially declined and continued to decline until 2014 and turns upward hereafter. The trend of changes in the Gini coefficient in urban and rural areas has been similar for most years, but in some years, including 2010, the Gini coefficient has increased in rural areas but has been associated with a decrease in urban areas.

### 3.1 Comparison of Relative and Absolute Gini Coefficient in Urban and Rural Areas in Iran

By comparing the relative Gini coefficient and the nominal absolute income over the years surveyed in the urban and rural areas in Figure 3, the relative Gini coefficient in 2006 was the highest over the period

under study. In 2016, there is the lowest relative Gini coefficient. Over the period under study, although the relative Gini coefficient has declined, the absolute Gini coefficient for nominal earnings shows the opposite. That is, while the relative measure indicates that the income distribution situation is improving over the years, the absolute measures have the opposite message. The absolute Gini coefficient, as Figure 3 illustrates, has been increased in both urban and rural areas during these years. The upward trend in the absolute Gini coefficient indicates an increase in the incomes gap and consequently, an increase in the deprivation felt by individuals in the society. Yet, the relative Gini coefficient fluctuations have in some years been in line with the increasing trend of the absolute Gini coefficient. It points out that in addition to the increasing perceived deprivation of community members that can be measured by an absolute measure, the relative income inequality has also increased over some years, indicating a worsening distribution of income in urban areas. In addition, the relative Gini coefficient in rural areas declined significantly in 2013, but the absolute Gini coefficient increased. This indicates that, contrary to what the Gini coefficient indicates, an improvement in the distribution of income in rural areas perceived as inequality has increased after 2014.



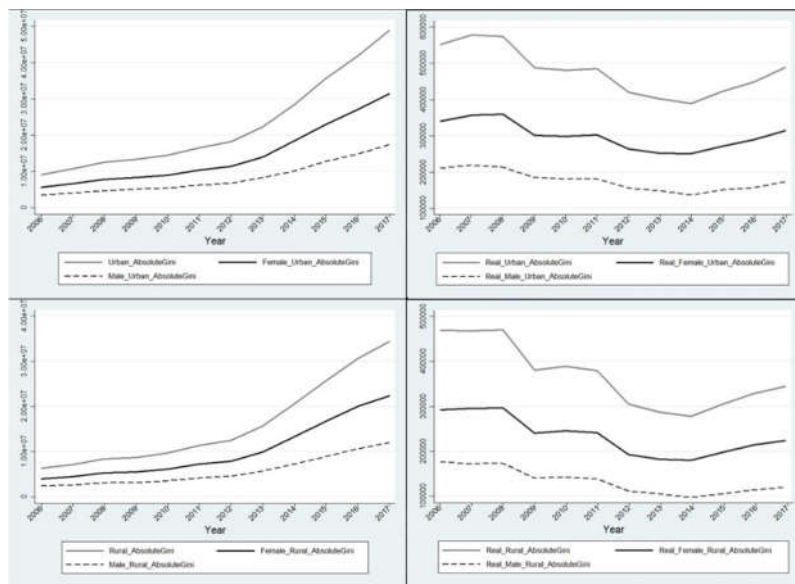
**Figure 3.** Comparison of Absolute and Relative Gini Coefficient for Nominal (Left) and Real (Right) Incomes in Urban Areas (Ups) and Rural Areas (Downs) during 2006–2017

**Source:** Research findings.

As can be seen in Figure 3, the absolute Gini coefficient of real income has increased steeply after 2012. To understand this, it is worth noting that since 2010, a cash subsidy was paid to all Iranian, leading to a sharp decrease in the relative Gini coefficient. However, after 2012, unrelenting inflation led to a weakening of the targeting plan in the following years, which resulted in a 31.5% inflation in 2011. Since then, the absolute Gini coefficient has also increased sharply. The relative Gini coefficient has been decreasing in 2012, but the absolute Gini coefficient has increased steeply since then. That is, despite the relative Gini coefficient since 1990 shows that the situation in rural areas has improved, the absolute Gini coefficient, unlike the relative Gini coefficient, indicates an increase in the income gap and thus an increased sense of deprivation.

Comparing the relative and absolute Gini coefficients for real values in urban and rural areas shows that changes in relative and

absolute Gini coefficient were not consistent for many years (See Figure 3). Yet, since absolute Gini coefficient signals the perception of inequality, we may understand that while relative Gini coefficient signals a more equitable society, the situation seems to be different.



**Figure 4.** Comparison of the Nominal (Left) and Real (Right) Income of Women and Men in Urban Areas (Ups) and Rural Areas (Downs) in Iran during 2006–2017

Source: Research findings.

### 3.2 Comparison of Subjective Inequality between Women and Men in Urban and Rural Areas of Iran

In another practice, we investigated the transitions of the subjective inequality of individuals for men and women. Figure 4 shows the absolute Gini coefficient values for genders of urban and rural. As can be seen, while the absolute Gini coefficient of nominal income for men and women in urban and rural areas are rising, it has a higher level for women. In addition, it seems that this steep increment has a higher slope for women. Thus, in both urban and rural communities, women feel more deprived and inequitable than men, and this gap has become wider through time. As can be seen, the absolute Gini



coefficient for real income in both urban and rural areas is fluctuating. However, it has been declining till 2014 and then turns back. These fluctuations were greater in the absolute Gini coefficient for females than for males. The absolute Gini coefficient in both urban and rural areas is higher for women, indicating that subjective inequality is higher for women, and as a result, women in both urban and rural communities experience greater deprivation and subjective inequality. This difference in the absolute Gini coefficient for men and women has been steadily increasing since 2014.

### 3.3 Impact of Deprivation on Economic Participation

In this study, we look for the effects of subjective inequality or deprivation on the economic participation of individuals. Economic participation for any corresponding individuals has been gathered by SCI in HIES, and we study the data over the period 2008–2017. Since the impact of deprivation on participation varies for different years, we first investigated the impact of deprivation, gender, and literacy on economic participation in Table 1. Control variables in Table 1 and the following tables show that being woman and illiterate decreases the probability of economic participation. However, our main variable deprivation, shown by eDeprivation, has a positive impact in some years and a negative impact in other years. In the following, we show that the effect is different for various income groups.

**Table 1.** The Impact of Deprivation on Economic Participation during 2008–2017

Variables	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
eDeprivation	-0.926*** (0.333)	0.231 (0.281)	0.662** (0.276)	0.531* (0.298)	0.228 (0.273)	0.618** (0.293)	-0.00114 (0.285)	0.118 (0.112)	-0.281** (0.123)	-0.223** (0.100)
Gender	-2.625*** (0.0240)	-2.770*** (0.0219)	-2.776*** (0.0224)	-2.750*** (0.0227)	-2.751*** (0.0228)	-2.731*** (0.0229)	-2.888*** (0.0239)	-2.898*** (0.0242)	-2.866*** (0.0240)	-2.830*** (0.0240)

Variables	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Literate	-0.315*** (0.0323)	0.402*** (0.0313)	0.364*** (0.0313)	0.426*** (0.0332)	0.447*** (0.0334)	0.570*** (0.0338)	0.567*** (0.0379)	0.584*** (0.0382)	0.702*** (0.0397)	0.733*** (0.0400)
Constant	3.608*** (0.837)	-0.00373 (0.770)	-1.035 (0.716)	-0.828 (0.767)	-0.0103 (0.605)	-0.847 (0.605)	0.520 (0.543)	0.241 (0.236)	0.999*** (0.270)	0.887*** (0.236)
Observations	43,610	55,990	53,723	52,856	52,575	51,223	48,684	48,378	47,798	46,867

Source: Research findings.

Note: eDeprivation is the variable used for subjective inequality defined in Equation (3). Gender is 1 for woman and 0 for men. Literate is a dummy of being literate. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

### 3.3.1 Investigation of Results in Different Income Groups

We investigated the association by dividing the different income deciles. We first studied the impact of deprivation on each of the income deciles and obtained the regression results in the form of three income groups: deciles 1-4, 5-8, and 9-10. In Table 2, the result of the first group, the income deciles 1–4 are presented. Overall, the regression results indicate that the effect of deprivation among low-income deciles is constructive. This is deducted by a significant positive effect of subjective inequality or deprivation on economic participation. In fact, deprivation in these income deciles seems to have increased their economic participation.

**Table 2.** Effect of Deprivation on Economic Participation for Deciles 1 to 4 during 2008–2017

Variables	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
eDeprivation	-1.225*** (0.373)	0.511 (0.322)	1.386*** (0.313)	0.927*** (0.341)	0.900*** (0.313)	1.579*** (0.339)	1.023*** (0.329)	0.867*** (0.131)	0.344** (0.141)	0.383*** (0.115)
Gender	-2.441*** (0.0265)	-2.700*** (0.0247)	-2.754*** (0.0250)	-2.755*** (0.0255)	-2.748*** (0.0255)	-2.711*** (0.0257)	-2.905*** (0.0272)	-2.903*** (0.0276)	-2.890*** (0.0271)	-2.869*** (0.0271)

Variables	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Literate	-0.540*** (0.0338)	0.232*** (0.0343)	0.201*** (0.0339)	0.306*** (0.0367)	0.346*** (0.0365)	0.492*** (0.0374)	0.419*** (0.0416)	0.481*** (0.0427)	0.618*** (0.0440)	0.648*** (0.0437)
Constant	4.288*** (0.938)	-0.930 (0.883)	-2.978*** (0.811)	-1.929** (0.877)	-1.599** (0.694)	-2.959*** (0.700)	-1.502** (0.628)	-1.441*** (0.276)	-0.463 (0.310)	-0.599** (0.272)
Observations	35,438	46,109	44,400	43,415	43,500	41,844	39,685	39,155	39,252	38,553

Source: Research findings.

Note: Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

However, as can be seen from the results, the effect of deprivation in the first year of study is negative. It seems that in 2008, and probably a little earlier, individuals who feel deprived lose their hope and participate less. But the effect of deprivation on economic participation in the following years has been positive. Yet, these findings are showing the development of hope among low-income individuals, though it shrinks through time in the following years. It is worth noting that, the endogenous effect of participation on deprivation should have been negative, and since we found a positive significant effect, a different mechanism was working that we claim it was coming from the constructive reaction of low-income individuals who participated more when they felt deprived or inequitable.

Furthermore, the results of the 5–8 income deciles in Table 3 show a different fact. At first glance, it can clearly be seen that the effects of deprivation on economic participation over the period under study seems to be negative. However, the effect of deprivation on participation in the 5–8 income deciles is positive in 2008, and changes its sign hereafter. That is, subjective inequality or deprivation has its destructive effect among deciles 5-8, that we call middle-class individuals. Probably subjective inequality in the 5–8 income deciles creates a sense of disappointment. In other words, it seems that they

presume that they cannot change their current status by more economic participation.

**Table 3.** The Effect of Deprivation on Economic Participation for Deciles 5 to 8 during 2008–2017

Variables	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
eDeprivation	2.354** (0.954)	0.736 (0.863)	-2.062*** (0.761)	-0.709 (0.784)	-1.325* (0.701)	-1.830** (0.730)	-2.870*** (0.740)	-0.502* (0.290)	-0.796** (0.324)	-0.844*** (0.264)
Gender	-2.462*** (0.0769)	-0.851*** (0.0796)	-1.237*** (0.0691)	-1.122*** (0.0667)	-1.085*** (0.0691)	-1.071*** (0.0698)	-0.665*** (0.0776)	-0.726*** (0.0776)	-0.681*** (0.0802)	-0.646*** (0.0808)
Lliterate	0.922*** (0.0884)	0.646*** (0.121)	1.005*** (0.0943)	0.690*** (0.0973)	0.530*** (0.108)	0.481*** (0.109)	0.799*** (0.122)	0.483*** (0.129)	0.460*** (0.137)	0.548*** (0.143)
Constant	-4.945** (2.399)	-0.671 (2.361)	6.007*** (1.970)	2.574 (2.012)	3.815** (1.555)	4.697*** (1.504)	6.148*** (1.407)	2.074*** (0.600)	2.716*** (0.707)	2.802*** (0.618)
Observations	6,041	7,140	7,008	7,208	6,945	7,173	6,758	7,097	6,426	6,294

**Note:** Robust standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

**Source:** Research findings.

Analyzing the effect of deprivation on economic participation for the 9<sup>th</sup> and 10<sup>th</sup> deciles of income, Table 4 shows no significant effect of subjective inequality on the economic participation of individuals. However, the effect of deprivation on participation is positive in the first year, and it seems that the subjective inequality was previously used to encourage individuals to increase their economic participation. This is while in the following years, the sense of deprivation had almost no significant effect on people's economic participation in these income deciles. Therefore, during the period under consideration, the effect of deprivation on economic participation in high-income deciles is positive in some years and insignificant in most of the years.

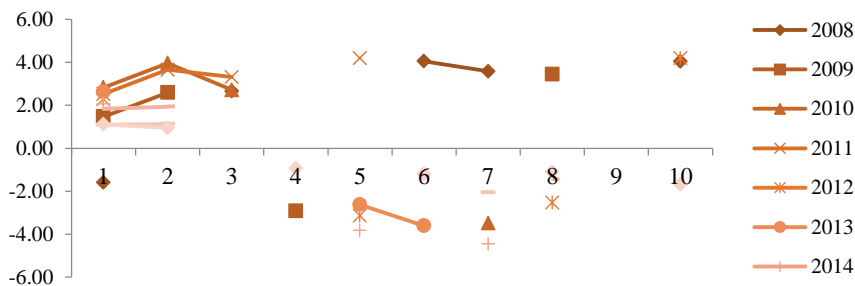
**Table 4.** The Effect of Deprivation on Economic Participation for deciles 9 and 10 during 2008–2017

Variables	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
eDeprivation	3.966** (1.633)	1.597 (1.466)	-0.672 (1.420)	1.150 (1.434)	0.458 (1.368)	1.289 (1.453)	1.088 (1.512)	0.506 (0.634)	-0.0839 (0.683)	-0.729 (0.532)
Gender	-3.010*** (0.186)	-1.942*** (0.189)	-1.760*** (0.191)	-1.790*** (0.198)	-1.492*** (0.228)	-1.380*** (0.205)	-1.418*** (0.204)	-1.376*** (0.198)	-1.034*** (0.193)	-0.523** (0.220)
Lliterate	0.966*** (0.164)	0.606*** (0.229)	-0.0102 (0.281)	0.179 (0.278)	0.171 (0.282)	0.230 (0.271)	0.520* (0.300)	-0.0175 (0.378)	0.744*** (0.288)	-0.108 (0.518)
Constant	-8.931** (4.085)	-2.768 (4.014)	3.510 (3.703)	-1.510 (3.705)	0.478 (3.055)	-1.141 (3.018)	-0.604 (2.877)	0.936 (1.337)	1.454 (1.475)	3.642*** (1.289)
Observations	2.131	2.741	2.315	2.233	2.130	2.206	2.241	2.126	2.120	2.020

**Source:** Research findings.

**Note:** Robust standard errors in parentheses; \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

As mentioned before, we also estimated the effects for each decile, and the results are robust. To show the results of this part, we plot the significant results in Figure 5. The effect of deprivation on the economic participation of individuals in different deciles varies. In low-income deciles including 1, 2, and 3, this effect is positive with a more positive effect in the early years. In the middle deciles including income deciles 5, 6, and 7, the effect of deprivation on economic participation seems to be negative. In fact, this effect has been negative for most of the years. The effects of deprivation on economic participation in the last deciles, i.e. deciles 9 and 10, have been insignificant and positive for some years.



**Figure 5.** The Significant Impacts of Perceived Deprivation on Economic Participation in Deciles during 2008–2017

**Source:** Research findings.

The results show that the effect of deprivation on economic participation appears to have a U-shaped effect, which may be related to the transition of social and economic conditions, and culture of people. Hence, in addition to the perception of deprivation, people's reactions may be different through time.

#### 4. Conclusion

The question of how people perceive inequality has been controversial in recent decades. This is because what people perceive as inequality can have many social and economic consequences. Due to the lack of measured criteria in this topic, further studies are needed on tools and criteria for measuring such perceptions. However, in this study, we were looking for an appropriate criterion in hand to measure subjective inequality in Iran with respect to available data. So, we first set out a measure of subjective inequality in Iran, which at present seems to be the best thing to be extracted from the data, given the available information, which is arguable and may be improved in prospective studies. Then we studied the trend of this subjective inequality with respect to rural and urban areas, men and women, which would not have been possible without the current method. Finally, we investigated the effect of this subjective inequality on the level of economic participation.

Nevertheless, the common measure of inequality, relative Gini coefficient, is a relative measure, and is sensitive to the level of earnings. Many studies, however, suggest greater proximity to people's perceptions of inequality to absolute criteria. Therefore, we used a variation of absolute Gini coefficient as a measure of "subjective inequality". To highlight the difference, we first calculated the relative Gini coefficient of income of individuals. The results showed that the Gini coefficient had been decreasing in both urban and rural areas over the period under study. This has occurred in rural areas with a higher intensity and steeper slope than in urban areas, indicating an improvement in rural inequality compared to urban areas, but relative inequality in rural areas is still higher than urban areas. This is while subjective inequality has been increasing in urban and rural areas. This indicates that people are feeling more deprived than in the past years. Additionally, subjective inequality is greater in urban areas than in rural areas, and this gap is increasing over time. Another question was whether the feeling of inequality was greater in women or men. With gender inequality in urban and rural areas, subjective inequality between men and women in both areas has increased over the years, with a greater sense of deprivation in women.

The next step was to study the effect of subjective inequality on economic participation. To be more precise, we sought to investigate the destructive or constructive effect of deprivation on economic participation. In other words, we looked at the possibility of deprivation on participation by controlling factors such as gender, literacy, and deprivation in the age groups of 15 to 65 years. Moreover, we discussed and largely resolved the endogeneity problem raised by the method we used in this study; however, the results suggested that our main association would sign the same in the absence of endogeneity. Although caution should be exercised in this regard, deprivation in low-income deciles, including deciles 1-4, has a

positive significant effect on the economic participation of individuals, while this effect appeared negative in deciles 5-8. Deprivation also had a positive effect on high-income deciles, and sometimes remains ineffective. It is worth noting that the result especially in deciles 1-4 is surprising because due to endogeneity, we expect to have a negative association in lower deciles. According to these results, it may be concluded that more subjective inequality has its most destructive effects among middle-class individuals. Therefore, subjective inequality may even have a constructive role for low and very high-income individuals.

These results may have a vital policy implication for Iranian society comparing to other countries. Note that regarding attitudes toward subjective inequality, it seems that in the sense of Alesina, Di Tella, and MacCulloch (2004) or Oto-Peralías and Romero-Ávila (2017), middle income class has a more European attitude toward subjective inequality, while low and very high-income individuals tend to act like individuals in the United states. Of course, these results necessitate the need for more in-depth studies on subjective inequality. However, it seems that there is a greater sense of subjective inequality among the middle class, so we may deduct that programs to mitigate the effects of such a perception should be more active among the middle class instead of the lower classes.

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