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RESEARCH PAPER

Poverty Risk, Inequality Decomposition and Educational Level of Household Heads

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Abstract

This study aims to investigate poverty risk and inequality decomposition based on the education level of Iranian urban household heads in 2017. A logistic regression model is estimated with the poverty status of households as a dependent variable, a set of control variables (gender and age), and the education level of household heads as explanatory variables. We also use the Gini decomposition as appropriate inequality decomposition for selected provinces. These provinces are categorized based on whether they are deprived or non-deprived provinces using the Council of Ministers guidelines. The findings show that the poverty risk of families in both deprived and non-deprived provinces as well as the country as a whole decrease when the education level of the household head increases. The marginal effect of the first level of education is higher than other levels. Therefore, one can conclude that Iran is more similar to less developed countries. We also show that being a male household head reduces the poverty risk of families in Iran, but the gender of household heads has no significant effect in the selected provinces. In addition, the poverty risk in higher age groups is lower than that of other age groups. Based on the Gini decomposition reports, the highest level of inequality is observed in Sistan and Baloochestan province which suffers from the highest level of unemployment and illiteracy rates in Iran. Finally, inequality decomposition confirms the crucial role of education in explaining inequality.

Keywords: Poverty Risk, Education, Inequality Decomposition, Logistic Regression, Iran.
JEL Classification: D12, D63, R21.

Introduction

The living expenditures and the standards of living vary across different regions of developing countries. These differences create many problems, one of which is the regional imbalance in household economic well-being. Removing regional imbalances calls for an equal distribution of means and services among regions. This topic is a central issue in the new global economy because greater inequality among regions will lead to increased flows of population and capital to better areas (Yu et al., 2010). In order to solve the problems caused by such regional imbalances, the first step is to identify and classify regions in terms of social, cultural, and economic conditions.

Based on Households Income and Expenditure Survey (HIES) issued by the Statistical Center of Iran (SCI), consumption expenditure growth was 15.8% roughly equivalent to the annual average income growth of households (15.7%) in 2017. This is at least two more than the growth rate of consumption in 2016, though it varied in different provinces. Also, a significant difference exists among Iranian provinces in other economic and social indicators in 2017. In some provinces such as Semnan, South Khorasan, Ghom, and Bushehr the unemployment rate was below the Iranian total unemployment rate (13.4%) in 2017. The

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unemployment rates in Sistan & Baluchestan, Alborz, and Kordestan provinces were 18.6, 15.6 and 13, respectively, which were higher than other provinces. Moreover, the illiteracy rates differed considerably among provinces too. The average illiteracy rate in the country was 12.3% in 2017 while Tehran, Alborz, and Semnan were provinces with a low illiteracy rate of 7, 7.7 and 8.5 percent, respectively, and Sistan & Baloochestan, Kordestan, and Kohgilooie & Booierahmad were the provinces with the highest illiteracy rates of 23.8, 18.5, and 15.6 percent, respectively. All of such heterogeneities in the economic and social conditions of different provinces need within and between regional economic examinations. One of the important economic problems is poverty. Poverty is an obstacle to sustainable development and although extensive research has been carried out on poverty at the national level, no single study has analyzed poverty and inequality among different regions of Iran.

This paper aims to study the role of demographic characteristics on poverty status of households in Iran paying particular attention to the eleven selected provinces which are categorized into two main groups: deprived and non-deprived; based on their economic, social, and geographical conditions. We use the HIES database of 2017 to investigate the poverty risk and the Gini decomposition. The Gini decomposition analysis is performed to determine the importance of demographic characteristics of household heads on consumption inequality. A useful aspect of decomposing inequality into within and between-group components is that it makes it possible to accurately determine the source(s) of inequality. Also, for policy purposes it is useful to be able to decompose the inequality indicators. If most inequality is due to the gender of household head, for instance, then the focus of policy may need to be on equal wages between men and women. In general, this research seeks to address the following questions: Does the poverty line differ significantly in different provinces? Which one of household demographic characteristics best describes the poverty status of the Iranian urban households? Which of the household demographic characteristics explains the highest between-group inequality?

In short, the results show that education is the most important factor explaining poverty risk in Iran and that the marginal effect of education on poverty risk differs slightly among selected provinces. Education has been thought of as a key factor in eliminating poverty and inequality in the history of the economic development field. According to the World Bank studies (1995), primary and secondary schools potentially improve the productivity of the poor, reduce fertility, and enhance health conditions. In other words, education helps people to achieve the ability to participate in the economy and society. Van der Berg (2008) indicates that the probability of finding a job increases with the progress of educational attainment and that in general educated people are paid more than others. Moreover, the results show that contrary to what we expect, the gender of household heads has an insignificant impact on poverty risk in selected provinces which is well confirmed by the inequality decomposition analysis.

The remaining parts of the paper proceed as follows: section two presents literature review on this topic. The third section explains the data set and empirical methodology. Section four presents result and the final section provides conclusion.

Literature Review

The issue of poverty, inequality, and the factors affecting them has received considerable critical attention as they have been the aim of many studies. From a purely capitalistic viewpoint, it is not “the inequality” that we have to worry about so much, but it is rather poverty that needs to be alleviated and eliminated (Conard, 2016). Several attempts have been made to show that inequality is a positive phenomenon. For example, Lazear & Rosen (1981) showed that inequality is an essential stimulus which provides incentives to improve

economic conditions. Kaldor (1957) declared that inequality can increase investment. Barro (2000) indicated that inequality allows for the accumulation of a minimum of assets needed for training and entrepreneurship activities. However, recent studies have found that inequality impedes economic growth (Forbes, 2000; Banerjee and Duflo, 2003; Easterly, 2007; Berg, Ostry, and Zettelmeyer, 2012; Berg et al., 2018).

In recent years, there has been an increasing interest in investigating the impact of some demographic characteristics such as gender, education and age on poverty and inequality in economic welfare literature. Most studies have found that education has a significant impact on poverty and inequality over other factors. They also have shown that the effects of different level of education attainments on poverty risk and inequality vary in various regions e.g. Gemmell (1996) indicated that primary school, high school and higher educations have a considerable impact on poverty in underdeveloped, developing and developed countries, respectively. Moreover, by using some regression models such as Quantile and Binary models, the negative relationship between the education level of household head and poverty risk was confirmed by Bilenkisi, Sami Gungor, and Tapsin (2015), Vahid and Maitra (2006) and Heshmati, Maasoumi, and Wan (2019) in Turkey, South Africa, and India, respectively. In other words, poverty risk in households with uneducated heads is more than households with educated heads all over the world.

Few articles have investigated the issue of poverty and the factors behind it in Iran. Alborz, Eftekhari, and Ganjali (2009) examined the impact of housing, employment, and demographic factors on poverty using a Multinomial Logistic Regression model. They divided poverty into four levels. The result showed that women are more likely to be poor than men and large households are at risk of poverty. Noormohamadi and Hazeri (2012) studied the determinants of poverty in Iranian urban households. Their findings reported that there is a significant negative relationship between urban poverty and some macroeconomic variables such as GDP, government spending and taxes. Mohamadzade, Falahi, and Hekmatifarid (2013), using a Linear Expenditure System model, estimated the poverty line in Iranian urban households. The results indicate that the greatest reduction in the probability of poverty is related to education and gender. Also, the age of the head and the size of the household are effective in reducing the probability of poverty.

There are also some studies that investigate inequality decomposition based on different characteristics of households. Nguyen (2018), using a decomposition method, analyzed household consumption distribution in Cambodia, Indonesia, and the Philippines. The results showed that the change in per capita consumption is related to household size and the education attainment of the household head. It was also confirmed that education acquisition should be strengthened to alleviate poverty and reduce inequality. Hayashi, Kataoka, and Akita (2014) investigated consumption inequality by using various decomposition methods. Their findings showed that inequality is on the rise in the surveyed regions. Also, the education attainment of household heads plays an important role in consumption inequality within and between urban and rural areas. The latter result is confirmed by several other studies e.g. Akita, Kurniawan, and Miyata (2011), Pieters (2011) Chongvilaivan and Kim (2015). Najarzadeh, Keikha and Heydari (2021) investigated the dynamics of consumption distribution during economic fluctuations using Factor Augmented Vector Autoregressive model in Iran. They found that a positive oil revenue shock can reduce consumption inequality among Iranian urban households with different demographic characteristics.

Previous studies of poverty and inequality have not dealt with heterogeneity across different regions in urban and rural areas of Iran; indeed their analysis combined the data of various regions. Our contribution is to examine the poverty line and its related factors, especially education, in selected provinces which divided into two deprived and non-deprived groups. It is also the first study that analyzes the inequality decomposition according to the

demographic characteristics of households in different provinces in Iran. The relationship between poverty and education is particularly important because education plays a key role in boosting economic growth and reducing poverty. We use household consumption information since it reflects better living standards than income and it is less exposed to economic fluctuations. In other words, consumption is a more appropriate measure of welfare level than income (Attanasio and Pistaferri, 2014; 2016). Also, self-reported values of consumption are closer to reality than income.

Methodology

Data

The research data in this paper is drawn from urban HIES (2017) data set which includes 18701 households and 65,572 people in Iran. Social security payments for retirees, health insurance, and unemployment insurance can affect our general inference. As a result, we focus on 14495 households whose head's age is between 30 and 65 years old since we want to minimize potential inference errors.

564 deprived districts have been identified and introduced by the iranian Council of Ministers based on economic, social and geographical conditions in Iran. The ratio of deprived districts to the total number of districts is 56.8% which means that more than half of the country's areas are deprived and less developed. The information on eleven of the provinces divided into deprived and non-deprive are used to investigate the poverty risk and inequality decomposition. Based on the proportion of the deprived district in each province, the eleven selected provinces are Sistan and Baloochestan (100%), Ilam (95%), Kohgilooie and Booierahmad (88.2%), Bushehr (87%), Kordestan (86.2%), South Khorasan (85%), Hormozgan (81.6%), Semnan (20%), Tehran (0%), Ghom (0%) and Alborz (0%).

We first need to identify the poverty status of the households to establish the dependent variable of the study. Our aim is to quantify the relationship between the probability of a household's poverty risk and the education level of household head based on the data. To estimate this relationship, we first need to ascertain whether a household is poor or not. The poverty lines for the selected provinces are separately calculated using a relative method. By incorporating the OECD measure, fifty percent of the median value of per equivalence consumption set is considered to be poverty line in each province. In other words, the poverty line is computed as: $poverty line = 0.5 \times (median\{c_1..c_n\})$.

With the help of equivalence scales, each household type in the population is assigned a value in proportion to its needs. This measure allows us to compare households with different dimensions and structures. Per equivalence consumption used in this paper divides household consumption expenditures by the square root of the household size. Then the dependent variable for each household is given a code as 1 if per equivalence consumption of the household falls below the poverty line, otherwise 0.

Figure 1 provides Poverty lines based on per equivalence consumption of households in different provinces. The poverty line is 64291426 IR-Rials for Iranian urban households in 2017. It is not appropriate to consider the total poverty line for households of different regions, due to the skewness of inter-regional consumption distribution. For example, due to the different cost of living standards in various areas, a non-poor family in Sistan & Baloochestan province may be considered a poor family based on the total Iranian poverty line. On the contrary, a poor household in Tehran province may be considered as a non-poor household based on the total poverty line. As a result, we calculate the poverty line separately for all of our selected provinces. As we expected various poverty lines are found in selected provinces. There is a considerable per equivalence consumption gap between Tehran and

Sistan and Baloochestan which have upper and lower poverty lines, respectively. As can be seen the poverty line in Tehran is almost three times higher than that of Sistan and Baloochestan.

The explanatory variables used in this study have been shown to be important determinants of household consumption in previous studies e.g. Molini & Wan (2008), Chongvilaivan & Kim (2015), Thu Le & Booth (2014) and Chen, Glasmeier, Zhang, & Shao (2016). Our set of explanatory variables is as follow: (1) the education level of the household heads (2) demographic characteristics of the household heads: age and gender. We control for the level of education of the household head using four educational categories: (a) primary school and lower (code: 0), (b) secondary school and high school drop-outs (code: 1) (c) high school diploma (code: 2) and (d) some college and higher educations (code: 3). Finally, we control for province variation by performing model estimation for each province separately.

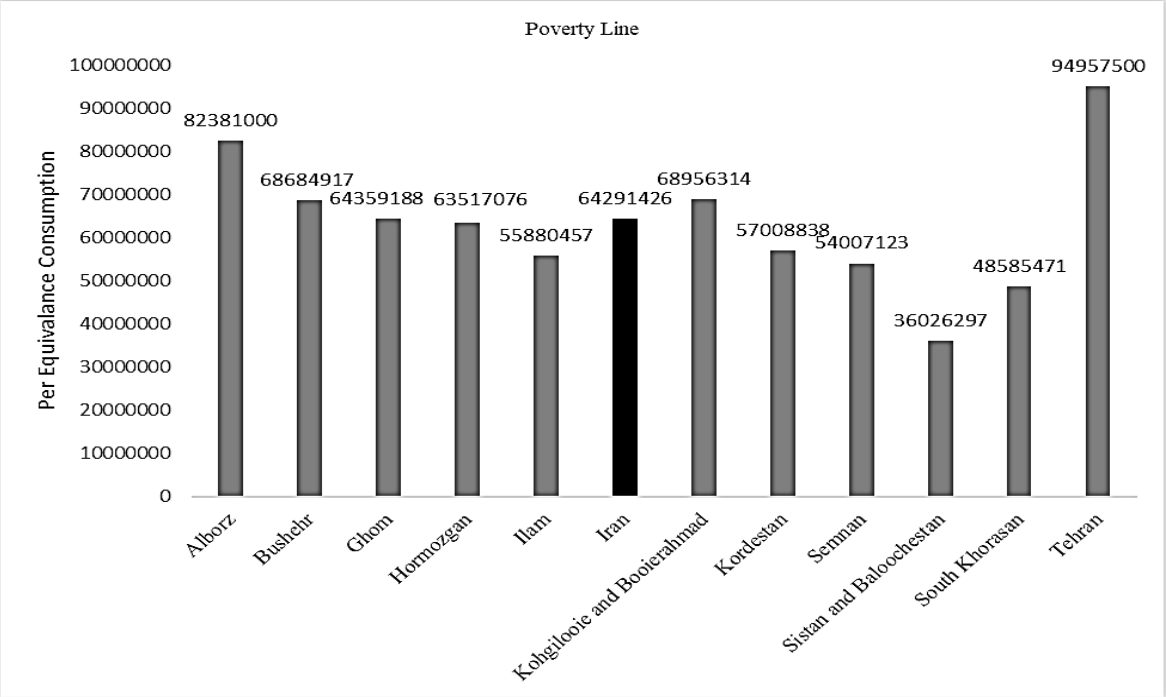

Figure 1. Poverty Lines for Iran and Selected Provinces
Source: Research finding.

Tables 1 and 2 present the variable's percentage statistics for non-deprived and deprived provinces, respectively. The most striking result to emerge from the data is just above ten percent of 14495 Iranian households that their information is used in this study are below the poverty line. Alborz and Sistan & Baloochestan have the lower (2%) and the upper (13%) percent of the poor population, respectively. As expected, Sistan & Baloochestan has the largest proportion of the poor due to the highest unemployment rate (18%) and illiteracy rate (23%) among other selected provinces. Also, 37.3 percent of Iranian household heads are in the first level of educational attainment, indeed a considerable number of urban households are less educated. It is interesting to note that two deprived provinces: Kohgilooie & Booierahmad and Ilam with respectively 33.41 and 28.96 percent have the highest percentage of the educated household heads among selected provinces. Moreover, Kordestan and Sistan & Baloochestan provinces with 48.11 and 46.27 percent are the first and second provinces that have less educated household heads, respectively.

We also control the effects of some household demographic characteristics besides the education level of household heads. The gender of the household head is given a code as a

binary variable with female as a reference category (code: 0). Just under ten percent of the surveyed households have female heads in 2017. The percentage of female heads in the selected provinces is slightly higher or lower than ten percent. Another control variable is the age of the household head. We restrict our attention to household heads that are 30 to 65 years old to avoid possible inference errors. Then, three age groups are generated: 30 to 40, 41 to 50, and 51 to 65. The age group variable code is such that zero designates the first group (30 to 40).

Table 1. Percentage of Variables

Variables	**Region**				
	Iran	**Tehran**	**Ghom**	**Alborz**	**Semnan**
Dependent Variable					
Poor	10.2	12	5	2	4
Non poor	89.8	88	95	98	96
Explanatory Variables					
Education					
Lower than primary school	37.3	27.3	43.19	28.57	32.03
Secondary school and uncompleted high school	20.2	22	16.43	23.80	23.11
High school or diploma	22.7	27.7	17.60	27.77	23.95
Upper than high school	19.8	23	22.76	19.84	20.9
Gender					
Female	9.9	8	9.38	9.53	11.43
Male	90.1	92	90.62	90.47	88.57
Age group					
30-40	32	32.5	36.38	27.51	27.01
41-50	30.6	32.5	25.58	31.74	30.36
51-65	37.4	35	38.02	40.74	42.63

Source: HIES, 2017, Iran and non-deprived provinces.

Table 2. Percentage of Variables

Variables	**Region**						
	Ilam	**Bushehr**	**South Khorasan**	**Sistan & Baloochestan**	**Kordestan**	**Kohgilooie& Booierahmad**	**Hormozgan**
Dependent Variable							
Poor	6	3	8	13	5	3	12
Non poor	94	97	92	87	95	97	88
Explanatory Variables							
Education							
Lower than primary school	35.79	30.68	39.41	46.27	48.11	28.34	34.29
Secondary school and uncompleted high school	14.48	19.83	13.73	20.07	22.01	10.82	24.43
High school or diploma	20.76	25.67	24.32	18.35	18.23	27.41	21.35
Upper than high school	28.96	23.79	22.52	15.29	11.63	33.41	19.91
Gender							
Female	11.47	7.09	13.06	13.76	9	7	9.2
Male	88.53	92.91	86.93	86.23	91	93	90.8

Variables				Region			
				Age group			
30-40	31.14	37.57	28.82	41.49	38.36	35.25	35.31
41-50	32.51	28.81	29.72	28.29	26.1	35.25	31.82
51-65	36.35	33.61	41.44	30.21	35.53	29.49	32.85

Source: HIES, 2017, Deprived provinces.

Empirical Model

Logistic Regression

In this section we investigate the general framework of the empirical model. We focus on modeling the probability of poverty risk as a function of some household characteristics in deprived and non-deprived provinces in 2017. we use the Binary Logistic Regression model (Green, 2008; Wooldridge, 2013). Households are divided into two main groups: poor ($y_i = 1$) with per equivalence consumption below poverty line, otherwise non-poor ($y_i = 0$). According to this model, the probability of being a poor household is specified by equation (1) where poverty risk is a function of estimated coefficients (β) and values of the explanatory variables (x_i'),

$$p(y_i = 1|x_i') = G(x_i'\beta) = \frac{1}{1+e^{-x_i'\beta}} = \frac{e^{x_i'\beta}}{1+e^{x_i'\beta}} \quad (1)$$

And the probability of being a non-poor household is:

$$p(y_i = 0|x_i') = 1 - p(y_i = 1|x_i') \quad (2)$$

We apply the Maximum Likelihood method which employs an iterative process to estimate coefficients. The density function, $G(.)$, always has a positive value, so it can be said that in the logistic regression model the sign of marginal effects depend on the sign of coefficients (β_i). To calculate the marginal effects of x_i on y or to calculate the marginal effects of explanatory variables on the probability of poverty risk, we do as follows:

$$\begin{aligned} &\frac{dp(y_i = 1)}{dx_i} = \frac{dG(x_i'\hat{\beta})}{dx_i} = \frac{dG(x_i'\hat{\beta})}{d(x_i'\hat{\beta})}\frac{d(x_i'\hat{\beta})}{dx_i} = g(x_i'\hat{\beta})\hat{\beta} \\ &= G(x_i'\hat{\beta})(1 - G(x_i'\hat{\beta}))\hat{\beta} = p(y_i = 1|x_i)p(y_i = 0|x_i)\hat{\beta} \end{aligned} \quad (3)$$

To obtain the marginal effect of x_i on y, we take derivatives as in equation (4) (the estimated equation (3) and the mean values of x_i are used):

$$\frac{dp(y_i = 1)}{dx_i} = g(\hat{\beta}_1 + \hat{\beta}_2\bar{x}_2 + ... + \hat{\beta}_k\bar{x}_k)\hat{\beta}_i \quad (4)$$

Gini Decomposition

Inequality decomposition is investigated by calculating and decomposing of the Gini coefficient. The decomposition of the Gini indicator can be used to assess the major contributors to inequality, by different subgroups of the population such as gender or

education categories. For example, average consumption expenditure may vary between male and female household heads, and this alone implies some inequality between groups. Moreover, consumption varies within each gender group, adding a "within group" component to total inequality. For policy purposes it is useful to be able to decompose these sources of inequality: for instance, if most inequality is due to disparities between men and women, then maybe the focus of policy makers should be on equal wage programs.

To decompose the Gini index, the Mussard, Seyte, & Terraza (2003) method and software package is used. Consider a population R in a specific region with N total consumption units $C_i\,(i=1,...,N)$. $F(C)$, μ and G are the cumulative distribution, the mean and the Gini coefficient, respectively. Total population in each region can be partitioned in K subpopulation $R_j\,(j=1,...,K)$. The Gini coefficient measured on R is:

$$G=\frac{\sum_{i=1}^{N}\sum_{r=1}^{N}\left|C_i-C_r\right|}{2N^2\mu} \tag{5}$$

And the within the subpopulation Gini, R_j (within-group Gini) is given by:

$$G_{jj}=\frac{\sum_{i=1}^{n_j}\sum_{r=1}^{n_j}\left|C_i-C_r\right|}{2n_j^2\mu_j} \tag{6}$$

Also, the between-group Gini (that calculates the inequality between R_j and R_h) is given by:

$$G_{jh}=\frac{\sum_{i=1}^{n_j}\sum_{r=1}^{n_h}\left|C_{ji}-C_{hr}\right|}{\mu_j-\mu_h} \tag{7}$$

With this method we can determine the importance of different household demographic characteristics in the observed consumption inequality in each of the selected provinces. Also, inequality decomposition is a robustness analysis for the latter section and it has useful policy implications. Decomposing inequality based on household demographic characteristics such as gender, if most inequality is due to between-group component (between men and women), then social and economic policies should be modified in such a way that they eliminate between-group inequality (e.g. Policies for equal pay for men and women). Stata 14 Software and Excel 2016 are used to estimate the model. Programs and research data will be sending to readers upon request.

Results

The results of the model presented in the latter section are reported for non-deprived and deprived provinces in tables 3 and 4, respectively. As can be seen, there is a negative relationship between the education level of household heads and the probability of being poor in urban areas. The marginal effect of the first education level (primary school and under) is considerably larger than other levels in both types of provinces, indeed moving from the first level to the second level of educational attainment leads to the biggest reduction in poverty risk of families. Another important finding is that the marginal effects of higher education levels are smaller than lower education levels. The marginal effects of different levels of education on poverty risk are at minimum levels in Kordestan and Kohgilooie & Booierahmad compared to others. They are among the regions with high unemployment and

illiteracy rates. The most surprising aspect of the result is in the size of the marginal effect of the upper educational level in Sistan & Baloochestan which is higher than those of others (-0.02). This result can be due to the structure of the labor market and the highest unemployment rate in Sistan & Baloochestan which could suggest that households need college degrees to get rid of poverty.

When we look at the marginal effect of gender on poverty risk in Iran, we find that being a male head reduces the probability of poverty risk by 2 percent. However, the marginal effect of gender is not significant in selected provinces. It is interesting to note that in all selected regions of this study except Bushehr, there is a significant negative relationship between age group and poverty risk implying that increasing the age of household head reduces the likelihood of poverty. The value of the marginal effect is -0.041 in Tehran which is the largest of all regions. It can be said that the latter result is due to the high cost of living in Tehran. It can be said that this result is due to the high costs of living in Tehran. We may claim that young household heads in Tehran have a tougher time than other provinces in the early years of their career because the major costs of living in Tehran, e.g. housing, are far higher than other provinces.

Based on the results of the logistic regression model, the marginal effect of household demographic characteristics on poverty risk shows that there is only a slight difference among selected provinces. In other words, although the effects are somewhat different in strength, the direction and sign of the changes are almost the same.

Table 3. Logistic Regression Estimates (Marginal Effects)

Regions	**Iran**	**Tehran**	**Ghom**	**Alborz**	**Semnan**
		Education			
Primary school and lower	-0.14***	-0.22***	-0.06**	-0.08*	-0.13***
<HS	-0.07***	-0.12***	-0.03***	-0.04***	-0.05***
HS	-0.03***	-0.04***	-0.01***	-0.02***	-0.01***
>HS	-0.01***	-0.01***	-0.009**	-0.009***	-0.004
Gender	-0.028***	-0.006	-0.007	-0.013	0.003
Age group	-0.036***	-0.041***	-0.032***	-0.02*	-0.02*
Number	14495	1162	426	378	359
Pseudo R2	0.13	0.16	0.1	0.08	0.26
Log Likelihood	-4198	-357.19	-80.67	-71.98	-48.25
L2chi2	1208	140.56	17.67	12.51	34.31
Prob>chi2	0.00	0.00	0.00	0.01	0.00

Note: The dependent variable is poverty status. Poverty status would be one if household per equivalence consumption was below the poverty line and it would be zero if the household per equivalence consumption was above the poverty line. *, ** and *** indicate significant levels at the 10%, 5% and 1% respectively.
Source: Research finding.

Table 4. Logistic Regression Estimates (Marginal Effects)

Regions	Bushehr	Kohgilooie & Booirahmad	Hormozgan	Ilam	Kordestan	Sistan & Baloochestan	South khorasan
				Education			
Primary school and lower	--0.1**	-0.06	-0.2***	-0.14***	-0.06	-0.07***	-0.16***
<HS	-0.04***	-0.02**	-0.1***	-0.07***	-0.03***	-0.05***	-0.07***
HS	-0.01***	-0.01***	-0.04***	-0.03***	-0.01***	-0.03***	-0.02***
>HS	-0.006**	-0.005*	-0.01***	-0.01***	-0.007*	-0.02***	-0.008**
Gender	0.01	-0.02	-0.02	0.027	-0.01	-0.02	-0.01
Age group	-0.006	-0.01*	-0.034**	-0.04***	-0.019**	-0.038***	-0.025**
Number	479	434	487	366	318	523	444
Pseudo R2	0.20	0.23	0.14	0.12	0.18	0.12	0.15
Log Likelihood	-78.43	-47.12	-156.6	-77.52	-54.26	-181.04	-110.74
L2chi2	39.45	29.44	54.20	22.13	24.12	49.64	37.9
Prob>chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Note: Dependent variable is poverty status. Poverty status would be one if household per equivalence consumption was below the poverty line and it would be zero if the household per equivalence consumption was above the poverty line. *, ** and *** indicate significant levels at the 10%, 5% and 1% respectively.
Source: Research finding.

Consumption inequality decomposition is examined by calculating the Gini coefficient and decomposing it according to the demographic characteristics of households. Table 5 shows the results of Gini decomposition based on gender, education level and age group of household heads for selected regions in 2017. The Gini coefficients show that Sistan & Baloochestan and Tehran have the highest level of consumption inequality, 0.39 and 0.38, respectively, and Kohgilooie & Booirahmad has the lowest level of inequality, 0.26, among other provinces.

In short, gender explains between 14 and 28 percent of the overall inequality in the selected provinces. For example, it can be said that 28 percent of observed inequality in Semnan is due to the between-group component of inequality, indeed only 28 percent of inequality is due to the difference between men and women. Also, on the average 23% of the consumption inequality is explained by the between-group component (men and women) of inequality based on the Gini decomposition in Iran. In other words, gender-based decomposition shows that much of the inequality is due to inequalities within groups and not between male and female groups. In contrast to the Gini decomposition based on the gender, when we decompose the Gini coefficient according to the education level of household heads, a main part of inequality is explained by the between-group component. In other words, education plays a key role in consumption inequality topics especially from a policy making viewpoint. Similar to the latter result, the Gini decomposition based on the age group of household heads indicates that the between-group component of the overall inequality explains consumption inequality considerably. However, its values are smaller than those of education level. In general, it is confirmed that education is the most determinant factor of consumption inequality in the Iranian urban areas.

Table 5. Gini Decomposition based on the Education Level, Gender and Age Group of Household Heads

Regions	Consumption Inequality (Gini index) within the provinces (%)	Contribution of within-group and between-group component to the overall inequality					
		Educational Group		Age Group		Gender Group	
		% of within-group component	% of between-group component	% of within-group component	% of between-group component	% of within-group component	% of between-group component
Tehran	38	22	78	33	67	79	21
Alborz	26	24	76	34	66	80	20
Semnan	26	26	74	34	66	72	28
Ghom	31	28	72	33	67	79	21
Bushehr	29	21	79	33	67	86	14
Hormozgan	35	21	79	33	67	83	17
South Khorasan	34	24	76	33	67	72	28
Ilam	33	25	75	32	68	79	21
Kohgilooie & Booierahmad	23	23	77	34	66	83	17
Kordestan	26	29	71	33	67	78	22
Sistan & Baloochestan	39	24	76	33	67	78	22
Iran	36	25	75	33	67	77	23

Source: HIES (2017), calculation of authors. Education groups are constructed based on educational attainment of household heads. Four groups are primary and lower (the first group), secondary school and high school drop-outs (the second group), high school or diploma (the third group) and higher than high school (the fourth group), respectively. Gender is coded 1 for male and zero for female. There are three age groups: 30 to 40, 41 to 50 and 51 to 65.

Conclusion

The present study was designed to determine the impact of demographic characteristics of Iranian urban households on the poverty risk of households and consumption inequality in two types of provinces, deprived and non-deprived based on their social, economic and geographical conditions. In other words, the heterogeneity impact of household characteristics on poverty risk was examined in selected provinces. Also, we decomposed the Gini coefficient based on the age group, gender, and educational level of household heads.

The results indicate that the poverty line is considerably different among selected provinces. There is a noticeable gap between Tehran and Sistan and Baluchestan provinces which are symbols of non-deprived and deprived regions in Iran. The regression estimation shows that the most important determinant factor of a household's poverty status is the education level of household heads in all studied areas. That is why education policies should have an important role in the struggle against poverty. The marginal effect of the first education level on poverty risk is greater than other levels in most of the selected regions. In other words, analyzing regions separately, we show that the graduation of a household head from a primary school is more effective than being a graduate of other levels of education in reducing poverty risk. This is true for households in all regions except Kohgilooie and Booirahmad, Kordestan and Sistan and Baloochestan. Although, the government invests in higher education institutions in all regions considerably, but it can be said that Iran is more like a less-developed country than a developing country. We believe that higher education attainments do not fit to the needs of the labor market in Iran. The marginal effect of gender on poverty risk is significantly negative in Iranian urban households. Actually being a male

household head reduces the probability of poverty. However, this effect is not significant in the selected provinces. Finally, the marginal effect of age group on poverty risk is negative and significant; indeed the probability of poverty in the higher age groups is lower than younger ones. Also, the marginal effect of the age group in Tehran is considerably larger than other provinces. Young household heads in Tehran face significantly higher costs than other provinces. In general, the marginal effects of household demographic characteristics on poverty risk shows that there is a slight difference between the two types of provinces.

The results of the Gini decomposition show that Sistan & Baloochestan province, which has the highest unemployment and illiteracy rates, has the highest consumption inequality among all selected provinces. Secondly, the high level of the Gini coefficient in Tehran, even though none of its areas are deprived, confirms the high level of inequality in this province. Finally, Gini decomposition confirms the result of the regression model. In other words, it can be said that education plays a vital role in fighting poverty and inequality in the Iranian urban areas.

The present findings seem to be consistent with the findings of other studies that have found the level of education to have a major impact on poverty risk and inequality since it has many direct and indirect effects on household income. There are several possible explanations for this result e.g. education attainments lead to more diverse job opportunities, decreased fertility, and increased participation of women in the labor market. It is suggested that the government should invest more in basic education and provide incentives for people to attend school because poor households do not invest in human capital especially in deprived regions. They often believe that education is costly, so they are trapped in a poverty cycle. There is abundant room for future progress in determining the relationship between the education level of household heads and the demand for labor in the labor market. This way one can better explain why Iran is more like a less-developed country where lower education attainment level has a considerable negative impact on poverty risk than other education levels.

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References

[1] Akita, T., Kurniawan, P. A., & Miyata, S. (2011). Structural Changes and Regional Income Inequality in Indonesia: A Bidimensional Decomposition Analysis. *Asian Economic Journal*, *25*(1), 55–77.

[2] Alborz, M., Eftekhari, S., & Ganjali, M. (2009). Determinant Factors of Poverty Risk Using Multinomial Logistic Regression. *Social Welfare*, *6*(24), 125–139.

[3] Attanasio, O. P., & Pistaferri, L. (2016). Consumption Inequality. *Journal of Economic Perspective*, *30*(2), 3–28.

[4] Attanasio, O., & Pistaferri, L. (2014). Consumption Inequality Over the Last Half Century: Some Evidence Using the New PSID Consumption Measure. *The American Economic Review*, *104*(5), 122–126.

[5] Banerjee, A. V., & Duflo, E. (2003). Inequality and Growth: What Can the Data Say? *Journal of Economic Growth*, *8*(3), 267–299.

[6] Barro, R. J. (2000). Inequality and Growth in a Panel of Countries. *Journal of Economic Growth*, *5*(1), 5–32.

[7] Berg, A., Ostry, J. D., Tsangarides, C. G., & Yakhshilikov, Y. (2018). Redistribution, Inequality, and Growth: New Evidence. *Journal of Economic Growth*, *23*(3), 259–305.

[8] Berg, A., Ostry, J. D., & Zettelmeyer, J. (2012). What Makes Growth Sustained? *Journal of Development Economics*, *98*(2), 149–166.

[9] Bilenkisi, F., Sami Gungor, M., & Tapsin, G. (2015). The Impact of Household Heads ' Education Levels on the Poverty Risk : The Evidence from Turkey. *Educational Sciences: Theory & Practice*, *15*(2), 337–348.

[10] Chen, G., Glasmeier, A. K., Zhang, M., & Shao, Y. (2016). Urbanization and Income Inequality in Post-Reform China: A Causal Analysis Based on Time Series Data. *PLOS ONE*, Retrieved from https://doi.org/10.1371/journal.pone.0158826
[11] Chongvilaivan, A., & Kim, J. (2015). Individual Income Inequality and Its Drivers in Indonesia: A Theil Decomposition Reassessment. *Social Indicators Research*, *126*(1), 1–33.
[12] Conard, E. (2016). *The Upside of Inequality: How Good Intentions Undermine the Middle Class*. London: Penguin Publishing Group.
[13] Easterly, W. (2007). Inequality Does Cause Underdevelopment: Insights from a New Instrument. *Journal of Development Economics*, *84*(2), 755–776.
[14] Forbes, K. J. (2000). A Reassessment of the Relationship between Inequality and Growth. *American Economic Review*, *90*(4), 869–887.
[15] Gemmell, N. (1996). Evaluating the Impacts of Human Capital Stocks and Accumulation on Economic Growth: Some New Evidence. *Oxford Bulletin of Economics and Statistics*, *58*(1), 9–28.
[16] Green, W. H. (2008). *Econometric Analysis*. New Jersey: Pearson Education, Inc.
[17] Hayashi, M., Kataoka, M., & Akita, T. (2014). Expenditure Inequality in Indonesia, 2008–2010: A Spatial Decomposition Analysis and the Role of Education. *Asian Economic Journal*, *28*(4), 389–411.
[18] Heshmati, A., Maasoumi, E., & Wan, G. (2019). An Analysis of the Determinants of Household Consumption Expenditure and Poverty in India. *Economies*, *7*(96), 1–27.
[19] Households Income and Expenditure Survey (HIES). (2019). Retrieved May 15, 2019, from https://www.amar.org.ir/english/Metadata/Statistical-Survey/Household-Expenditure-and-Income
[20] Kaldor, N. (1957). A Model of Economic Growth. *The Economic Journal*, *67*(268), 591–624.
[21] Lazear, E. P., & Rosen, S. (1981). Rank-Order Tournaments as Optimum Labor Contracts. *Journal of Political Economy*, *89*(5), 841–864.
[22] Mohamadzade, P., Falahi, F., & Hekmatifarid, S. (2013). Analysing Poverty and Factors Affecting it in Urban Household in Iran. *Modeling Economic Research*, *2*(1), 41–63.
[23] Molini, V., & Wan, G. (2008). Discovering Sources of Inequality in Transition Economies: A Case Study of Rural Vietnam. *Economic Change and Restructuring*, *41*(1), 75–96.
[24] Mussard, S., Seyte, F., & Terraza, M. (2003). Decomposition of Gini and the Generalized Entropy Inequality Measures. *Economics Bulletin*, *4*(7), 1–6.
[25] Najarzadeh, R., Keikha, A., & Heydari, H. (2021). Dynamics of Consumption Distribution and Economic Fluctuations. *Econ Change Restruct*, *54*, 847–876.
[26] Nguyen, G. (2018). Changes in the Distribution of Household Consumption in Southeast Asia. *Economic Change and Restructuring*, Retrieved from https://doi.org/10.1007/s10644-018-9236-7
[27] Noormohamadi, M., & Hazeri, H. (2012). Factor Related to Urban Poverty in Iran During 1985 to 2007. *Social Welfare*, *11*(40), 367–400.
[28] Pieters, J. (2011). Education and Household Inequality Change: A Decomposition Analysis for India. *Journal of Development Studies*, *47*(12), 1909–1924.
[29] Thu Le, H., & Booth, A. L. (2014). Inequality in Vietnamese Urban–Rural Living Standards, 1993–2006. *Review of Income and Wealth*, *60*(4), 862–886.
[30] Vahid, F., & Maitra, P. (2006). The Effect of Household Characteristics on Living Standards in South Africa 1993-1998: A Quantile Regression Analysis with Sample Attrition. *Journal of Applied Econometrics*, *21*, 999–1018.
[31] van der Berg, S. (2008). How Effective are Poor Schools? Poverty and Educational Outcomes in South Africa. *Studies in Educational Evaluation*, *34*(3), 145–154.
[32] Wooldridge, M. J. (2013). *Introductory Econometrics: A Modern Approach* (5th Ed.). Mason: South-Western, Cengage Learning.
[33] Yu, L., Hou, X., Gao, M., & Shi, P. (2010). Assessment of Coastal Zone Sustainable Development: A Case Study of Yantai, China. *Ecological Indicators*, *10*(6), 1218–1225.