

The Effect of Socio-Economic Factors on Poverty in Iranian Urban Households in 2010: A Gender Perspective

Zahra Mila Elmi* & Samaneh Ebrahimpour**

Abstract: Poverty reduction is the first priority of the Millennium Development Goals. All United Nation member states have to implement sound policies to halve absolute poverty by 2015. Several studies show that female education has a great impact on reducing poverty by reducing the fertility rate, increasing women's entrepreneurial activities, and assuring better child nourishment and health (Moser 1989; Elson 1998; Khandker and et al. 2003).

In this paper, we utilized household survey data in 2010 conducted by the Statistical Center of Iran which covered 18,701 households to show determinant factors of poverty in Iran's urban areas through the use of a multivariate binary logit model.

Our data analysis showed poor households have less education and the regression results showed female headed households are more likely to be poor than households headed by men. Therefore, promoting female education will have a considerable positive impact on poverty alleviation. This policy can also have an impact effect on household size, which is another important determinant of poverty.

Because of high correlation between age and experience, we include experience as an explanatory variable in the model. The effect of the experience of the head on poverty was U shaped. It means that in the early years of one's life, the probability of coming out from poverty is possible while in later years the probability of

* Zahra Mila Elmi is Associate professor in Economics, Economic faculty, University of Mazandaran (Iran). E-mail: z.elmi@umz.ac.ir

** Samaneh Ebrahimpour is M.A in Economics, University of Mazandaran (Iran). E-mail: samaneh_ebrahimpour@yahoo.com

being poor increases. Therefore, government must pay more attention to poor head of households, especially female ones. Also, the proportion of income earners in a household has a relatively high significant effect on getting out of poverty. This result supports the emphasis on job creation by the government for poverty eradication programs.

Keywords: Poverty, Iran, female headed household, Logit Model

Introduction

In the past decade the number of women living in poverty has increased disproportionately to the number of men, particularly in developing countries. While poverty affects households as a whole, because of the gender division of labor and responsibilities for household welfare, women bear a disproportionate burden, attempting to manage household consumption and production under conditions of increasing scarcity.

—*Beijing Platform for Action*, 1995

Poverty alleviation is a key policy for international organizations and governments. Some researchers are believed that fighting against poverty is a necessary condition for growth (like as Emwanu et al., 2006) and needs essential acknowledgment about the factors which effect on it.

In Iran like as other countries, poverty eradication is an important issue for government and researchers. Despite the fact that Iranian government is highly interested in the alleviation of poverty and inequality, available evidence reveals that poverty has not been reduced as planned in the post revolution periods. Then, it seems that identifying poverty, its dimensions and determinants in Iran is one of the necessary factors for taking a successful poverty alleviation policy.

Although studying the determinants of poverty in Iran is rather rare, but some studies were carried about poverty in last two decades. These

studies can be grouped in two main categories: The first includes studies which measure poverty line and separate the poor from non-poor. Then they analyze the poor status based on it. But in the second group, which is more related to this paper, are some studies dealing with the determinants of poverty by using econometrics method.

One of the comprehensive studies is that of Nili et al. (1997), which deals with measurement, profile and determinants of poverty. The study used probit regression and household survey data (both urban and rural) in the year 1994 and analyzed that four groups of households' characteristics have the most effect on poverty status of household. They are as follows: demographic status of the household, employment status of the household, human capital and physical capital of the household.

Arabmazar and Hoseininejhad (2004) showed in their study that family size and illiteracy had a positive effect on poverty in the rural area of Iran. Moreover, age and gender of the head were significant only in two groups of occupation employed and self-employed.

Najafi and Shooshtarian (2007) studied determinants of poverty both in rural and urban areas of Iran separately. Using probit regression and data of households in 2003, the paper expressed that the extent of poverty is larger in rural areas than urban. Moreover family size and dependency ratio are the most important factors that affect poverty.

In their study, Niloofar and Ganjali (2008) used Bayesian Network analysis and identified size of household and level of education as the key determinants of poverty.

The most recent study on determinants of poverty was done by Mohammadzadeh et al. (2010). They used probit model to analyze the poverty monitoring survey (1994-2008) data. First, the poverty line was estimated and some indices of poverty calculated. Next, determinants of poverty were identified as following: gender and education level of household's head, age of the head and size of household.

Ebrahimpour and Elmi (2012) studied the determinants of poverty in Iran in two major steps. At first, the poverty line is calculated by using 50% of average of expenditure per capita approach and then poor and

non-poor households are separated. In the second, the data are clustered and after that, panel data with logit model is estimated with maximum likelihood approach. Their study results show that being in poverty is strongly associated with household size and the low level of education.

The aim of this paper is to identify some factors which influence poverty in urban areas of Iran and evaluate their impact on the probability of being poor. The study is organized as follows: the next section explains the methodology taken in this paper. Section 3 describes the statistical facts using “Household Expenditure and Income Survey” (HEIS) carried out by Statistical Center of Iran (SCI) in 2010. The estimated results also will be presented in section 4. Finally, Section 5 summarizes the main findings and conclusion.

Methodology

Data

Data for this research is obtained from HEIS conducted by SCI which covered 18,701 households in the urban areas of Iran.

A household was defined as a person or a group of people related or unrelated to each other, who live together in the same dwelling unit and share a common source of food (SCI, 2007).

Econometric Model

The approach used in this paper intends to explain some key determinants of poverty. It will be done in two stages. At first, poverty line is calculated by using 50% of average per capita expenditure approach and then poor and non-poor households are separated. In the second, the socio-economic factors which affect the poor are determined through the use of multivariate binary choice model and maximum likelihood estimation.

As dependent variable is binary choice (being poor or non-poor),

therefore logistic function is used. In this case, the probability of being poor can be defined by equation (1):

$$p(Y_i = 1) = \frac{e^{\Xi\beta}}{1 + e^{-\Xi\beta}} \quad (1)$$

In equation (1), Y_i is a dependent variable which shows the poverty status of household (being poor or not). Therefore, after calculating poverty line, the 18701 households in sample separated in two groups. If the per capita expenditure of the household is higher than poverty line the household is not poor ($Y=0$). In contrast if the household per capita expenditure is less than poverty line the household is poor ($Y=1$).

Furthermore, in equation (1), β is a vector of parameters and X is a vector of socio-economic characteristics of household as following:

Demographic characteristics of the household:

- Household size and its square: Square of household size is taken into model to explore the effect of economies of scale; like in Mukerjee and Benson (2003).
- Gender of head which is entered in model as a dummy variable. We take male as 1 and female 0.
- Marital status of head which is taken as a dummy variable, too. We take married head as 1 and 0 otherwise.

Social characteristics of the household:

- Experience years of head is taken as a proxy for human capital of household. On the base of Mincer, we calculate experience as follows:

$$Experience = Age - Schooling\ years - 6$$

Based on theoretical (Mincer, 1958, 1974) and empirical studies, it is expected that human capital has a positive effect on income level and so reducing poverty. The square of experience was included in the model as a control variable.

Economical characteristics of the household

- Employment status of head which is taken as a dummy: having income or being employed is 1 and otherwise 0.
- Proportion of income earners in household.

As in the usual binary choice model we are not interested in β . We are interested in the marginal effects of changes in the regressors. Considering equation (1), marginal effects of variables can be written as follows:

$$\frac{\partial P(Y_i = 1)}{\partial X_i} = \frac{e^{\Xi\beta}}{[1 + e^{\Xi\beta}]^2} \beta_\kappa \quad (2)$$

As logit model is nonlinear, maximum likelihood approach is used.

Statistical facts**Poverty line and its measurement**

In logistic regression having poverty line or threshold is essential. As a matter of fact, estimating the poverty line is the first step in all poverty studies.

Poverty threshold, or poverty line, is a minimum income level below which a person is officially considered to lack adequate subsistence and to be living in poverty in a given country. In practice, like the definition of poverty, the official or common understanding of the poverty line is significantly higher in developed countries than in developing countries (Hagenaars et al. 1985, 1988)

Absolute poverty is a level of poverty as defined in terms of the minimal requirements necessary to afford minimal standards of food, clothing, health care and shelter. For the measure to be absolute, the line must be the same in different countries, cultures, and technological

levels. Such an absolute measure should look only at the individual's power to consume and it should be independent of any changes in income distribution. The intuition behind an absolute measure is that mere survival takes essentially the same amount of resources across the world and that everybody should be subject to the same standards if meaningful comparisons of policies and progress are to be made. Notice that if everyone's real income in an economy increases, and the income distribution does not change, absolute poverty will decline.

A measure of relative poverty defines "poverty" as being below some relative poverty threshold. For example, the statement that "those individuals who are employed and whose household equivalised disposable income is below 60% of national median equivalised income are poor" uses a relative measure to define poverty. Using this definition, if everyone's real income in an economy increases, but the income distribution stays the same, then the rate of relative poverty will also stay the same.

Measures of relative poverty are almost the same as measuring income inequality: If a society gets a more equal income distribution, relative poverty will fall. They point out that if society changed in a way that hurt high earners more than low ones, then relative poverty would decrease, but every citizen of the society would be worse off. Likewise in the reverse direction: it is possible to reduce absolute poverty while increasing relative poverty.

It's clear that poverty line and its measurement is a critical and decisive factor in the analysis of poverty because there is no exact definition for it and each researcher adopts one of them related to his/her study (Khodadad Kashi and Heidari, 2009).

In this study, at first the average per capita expenditure was calculated and then 50% of it considered as poverty line. Table 1 shows this value.

Table 1. Poverty Line in urban areas of Iran, 2010

Area	Poverty line (Per year, per capita, in terms of Rials (Iranian currency))
Urban	15550142

Source: Authors' calculation

Based on this poverty line, poverty rate (number of poor households divided by number of whole households) is calculated. Poverty rate shows that 27.64 percent of households are poor in 2010 in urban of Iran (table 2).

Table 2. Poverty rate in 2010

Area	Frequency	Poverty rate (%)
Urban	5169	27.64

Source: Authors' calculation

Descriptive analysis

In this section we present data description. First, some characteristics of the whole data are summarized. Then, by using poverty line, households are separated in two groups: poor and non-poor. Some characteristics of the two are compared.

HEIS in 2010 contains a sample which 16,612 households out of 18701 (88.83%) are male headed households and 2,089 households (11.17%) are female headed households. Table 3 shows a brief summary of data and its characteristics.

Table 3. A brief summary of data

characteristics	Whole sample	Male headed	Female headed
Average of household size	3.87	4.05	2.47
Average of head's educational years	7.19	7.69	3.15
Average of head's age	48.52	47.29	58.72
Average of per capita expenditure (Rials)	31100283.29	30516823.74	35740029.59

Source: Authors' calculation, HEIS 2010

Comparison between male headed households and female ones shows that average of head's educational years is higher in male ones. While female's educational years are lower than average. This is an important finding implement that the government should pay more attention to. Education is one of the most factors that affect earnings and poverty status.

In the rest of this section poor and non-poor households are compared to get a better view of each group. Household size is one of the most important characteristics which affect poverty status of the household. Based on this data, the average household size is higher in poor than non-poor ones. Precisely, average of household size is 4.59 in poor and 3.6 in non-poor households. Table 4 shows that household size of 5 people in poor households is 47.61% (the highest among other categories). While in non-poor ones the highest is 4 persons. In general, it can be concluded that household size is more in poor households than non-poor (table 4).

Table 4. Household size of poor and non- poor households

Family size (in terms of Person)	Poor		Non-poor	
	Frequency	percentage	Frequency	Percentage
1	165	3.19	854	6.31
2	365	7.56	2175	16.07
3	820	15.86	3509	25.93
4	1358	26.27	3859	28.52
5 or more	2461	47.61	3135	23.17
Sum	5169	100	13532	100

Source: Authors' calculation, HEIS 2010

The other important factor that affect on poverty is educational level. Table 5 shows the comparison of head's education between poor and non- poor households.

Table 5. Head's education of poor and non- poor households

Head's education (in terms of years)	Poor		Non-poor	
	Frequency	percentage	Frequency	Percentage
illiterate	1670	32.31	2235	16.52
Up to 5 (elementary)	1951	37.74	3494	25.82
5 – 12 (diploma)	1424	27.55	5122	37.85
More than 12 (university)	124	2.40	2681	19.81
Sum	5169	100	13532	100

Source: Authors' calculation, HEIS 2010

Average of educational years is 8.1 in non-poor and 4.69 in poor households. Therefore, educational level is higher in non-poor households. In poor households illiteracy is high. It's almost 32%. As table 5 shows the highest frequency of poor households is in second category (elementary education).

In non-poor households the highest frequency is in the third category (diploma). Also illiteracy is much lower in non-poor households.

Estimation Results

In this part, the results of maximum likelihood estimation of logit model which is explained in section 2 are presented in table 6.

Table 6. Logit estimates of poverty determinants among urban households in Iran, 2010

Variable	Coefficient	$P[Z > Z]$	Marginal effect (dy/dx)
Household size	0.561	0.000	0.107
Household size square	-0.016	0.000	-0.003
Experience of the head (year)	-0.036	0.000	-0.007
Experience square	0.0006	0.000	0.0001
Gender of the head*	-0.407	0.000	-0.083
Employment status of the head*	-0.590	0.000	-0.126
Marital Status*	-0.267	0.004	-0.053
Proportion of income earners	-0.860	0.000	-0.164

Constant	-1.02	0.000	--
Loglikelihood= -10156.58			
LR chi2(8) = 1736.58 Prob > chi2 = 0.000			
Pseudo R ² =0.0788			
Observation=18701			

Source: Authors' estimation based on HEIS 2010

*dy/dx is for discrete change of dummy variable from 0 to 1.

Results are as follows:

The effect of household size on poverty status is inverse U. Marginal effect shows that if one person adds to the household, the probability of being poor will be increased by 10.7%. Square of household size has negative sign and explore the effect of economies of scale like in Mukerjee and Benson (2003).

The effect of head's experience-more experience means more ages. Therefore experience can be proxy for age too- on poverty is U shaped. It means when the head is young, the probability of being poor is decreased. On the other hand, when the head is in pension years or old ages the probability of being poor is increased. Therefore, government must pay more attention to the poor adults.

The gender of the head which was considered as a dummy variable (male=1, female=0) has negative effect on poverty. It means that the probability of being poor is decreased 8.3% if head of household is male. Female headed households are supposed to be in poverty more than males. Therefore, government must pay more attention to female headed households.

Employment status of the household head helps in poverty alleviation in urban areas. It was gotten as a dummy variable (employed and or having income without employment =1, otherwise=0). So, being employed or having income without employment has a positive effect on reducing poverty. It can reduce the probability by up to 12.6%.

Marital status which is taken as a dummy variable (married=1, otherwise=0) shows that if the head is married, the probability of being

poor is decreased up to 5.3%.

The more important variable: proportion of income earners in the household reduces the probability of being poor as be expected. Its marginal effect is relatively high (16.4%). Therefore, households with more number of earners are less likely to be poor.

Conclusion

Poverty alleviation is a key policy debate in recent development literature. The elaboration of policies for poverty alleviation requires a thorough knowledge of poverty phenomenon. Therefore, the objective of this paper was to explore the determinants of poverty among Iranian urban area at the household level on the basis of HEIS micro data carried out by the SCI in 2010. This survey covered 18,701 households which 16,612 households out of 18,701 (88.83%) were male headed households and 2,089 households (11.17%) were female headed households.

In present study, at first step, the poverty line was calculated based on 50% of average per capita expenditure approach. As a consequence, by using this poverty line, households were separated into two groups: poor and non-poor. Based on this poverty line, poverty rate was 27.64. In the rest of the paper, some important characteristics of poor and non-poor were defined. Some of the findings of data descriptions were as follows:

- The household size of the poor was higher than the non-poor.
- Also, average of head education is lower in poor than non-poor households.

In the second step, binary multivariate choice model was estimated with maximum likelihood approach. Our findings showed that larger families are more prone to poverty. While other factors such as employment status and marital status of head, proportion of income earners have a negative effect on getting into poverty. Also, the effect of

experience on poverty is inverse U.

Marginal effects showed that proportion of income earners in a household has a relatively high significant effect on getting out of poverty. This result supports the emphasis on job creation by government for poverty eradication programs.

Furthermore, results recommended that government must more pay attention to female headed households for poverty alleviation.

References

- Arabmazar, A. and S.M. Hoseininejhad. (2004). The Effective Factors on Rural Employed Households' Poverty in Iran, Biquarterly Journal of Economic Essays, 1st year, No1: 67-94 (in Persian).
- Ebrahimpour, S and Z.M. Elmi. (2012). Determinants of Poverty in Iranian Urban Households in 2010: An Application of Panel Data with Limited Dependent Variable, 1th. International Conference on Econometrics Method and Application, Iran.
- Elson, D. (1998). Gender and Economic Development, The Netherlands: DGIS and NEI.
- Hagenaars, A. and D. V. Klaas. (1988). The Definition and Measurement of Poverty. Journal of Human Resources.
- Hagenaars, A. and V. P. Bernard. (1985). A Synthesis of Poverty Line Definitions. Review of Income and Wealth.
- Khandker, S, Pitt, M and F. Nobuhiko. (2003). Subsidy to Promote Girls' Secondary Education: The Female Stipend Program in Bangladesh, MPRA Paper 23688, University Library of Munich, Germany.
- Khodadad Kashi, F and Kh. Heidari. (2009). Measurement of Poverty Indices Based on Nutrition of Iranian Households, Economic Bulletin, 9th year, No3: 205-231 (in Persian).
- Mincer, J. (1958). Investment in Human Capital and Personal Income Distribution, Journal of Political Economy, No. 66: 281-320.
- Mincer, J. (1974). Schooling, Experience and Earnings, New York: Columbia University Press.
- Mukherjee, S. and T. Benson (2003). The Determinants of Poverty in Malawi, 1998, World Development, 31 (2), 339-358.

- Mohammadzadeh, P., Fallahi, F and S. Hekmati Farid (2010). The Investigation on Poverty and Its Determinants among Urban Households, *Economic Modeling*, No. 2: 41-64 (in Persian).
- Moser, C. (1989). Gender Planning in the Third World: Meeting Practical and Strategic Gender Needs', *World Development*, Vol. 17, No. 2.
- Najafi, B. and A. Shooshtarian. (2007). Estimation of Poverty Line, Measure of Poverty and Determinants of it in Urban and Rural households in Iran, *Agricultural Economics and Development*, 15th year, No 59: 1-24 (in Persian).
- Nili, F., Razavai, S.M, and R. Shahidzadeh Mahani. (1997). A Study on Changes in Poverty, Income Distribution and Social Welfare during Past years, *The Institute Research for Management on Planning and Development* (in Persian).
- Niloofar, P. and M. Ganjali. (2008). The Effective Factors on Poverty using Bayesian Network. *Social Welfare*, 7. 27, 107-128 (in Persian).
- Emwanu T., Hooegeveen J. and Okwi P. (2006). Updating Poverty Maps with Panel Data. *World Development*, Vol. 34, No.12.
- Statistical Center of Iran. (2007). Annual Statistics of Iran, Iran Statistical Year Book.
- Statistical Center of Iran. (2010). Household Expenditure and Income survey Data.