

## Analysis of the Effective Factors in the Probability of Household Poverty in Iran with Emphasis on Type of Occupation

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### Abstract

In this study tried to use household income-cost data in urban and rural areas in 2016, therewith analysis effect of characteristics of household heads on probability of their poverty, examined the role of their occupation in Agriculture sector or non-agricultural sector and their occupation in public sector or private sector. Calculations shows that 37.7 percent of urban households and 36.7 percent of rural households are in poverty. Estimation of study model Pseudo Panel data with a limited dependent variable and with random effect logistic regression in a separate format for urban and rural areas. The results showed employment in agriculture sector compared to the non-agricultural sector has an undesirable effect on probability of poverty and employment in public sector compared to private sector has a desirable effect on probability of poverty. Employment in agriculture sector compared to the non-agricultural sector in rural areas is lees than urban areas and employment in public sector compared to private sector in rural areas is lees than urban areas. Based on calculations and increase of poverty probability in occupation in Agriculture sector (specially in urban areas) and private sector (specially in rural areas), more attention must be paid to employees in these occupation by policymakers.

**Keywords:** Poverty, Employees, Urban and Rural, Panel Data.

### JEL Classification:

### 1. Introduction

There have been many studies on poverty and its related issues in Iran. However, in these studies, the effect of the household head's occupation type, such as working in agricultural and non-agricultural sectors or in public and private sectors, has not been considered. The household head's activity type affects the income and, consequently, the poverty rate of the household. The key questions that the present study seeks to answer are:

1) Is there a lower probability of household poverty when the head of the household is working in the public sector compared to the private sector?

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2) Is there a lower probability of household poverty when the head the household is working in the agricultural sector compared to the non-agricultural sector?

3) How do other factors, such as education, age, gender, and marital status of the household head affect their probability of poverty? In response to these questions, in this research, after the introduction, the research literature is presented in the second section. In the third section, the research model is presented. The poverty line of the working heads of household is determined in the fourth section and the research data is described. The fifth section is devoted to the results of model estimation. Research findings and suggestions are provided in the final section.

## 2. Literature Review

Employees can be considered in two major public and private sectors. Poor people are often forced to turn to self-employment due to lack of sufficient job opportunities. In low-income countries and developing countries, the number of job seekers is much higher than the number of jobs themselves. For most poor people, employment in the public sector is better than self-employment. However, in the absence of unemployment insurance and other social protection programs, self-employment is better than nothing (Fields, 2019). In a study, Fields (2019) examined the relationship between self-employment and poverty in developing countries. Fields introduced raising the income of the poor as an effective way to get rid of poverty in the world. Two key policies against poverty are to increase the productivity of self-employment and to create more opportunities for the transition from self-employment to higher-paying public employment.

Poverty can also be related to the sector in which the person works (agriculture, industry or services). Those working in agricultural sectors (who generally have a larger share in developing and underdeveloped countries compared to developed ones and are mainly in rural areas) are expected to have a lower level of welfare and, consequently, a higher level of poverty compared to other sectors, such as industry and services due to the type of their activity (Lanjouw, 2001). Lanjouw and Morgai (2009) studied the relationship between activity type and poverty in rural areas in India during the years 1983-2004 and showed that the expansion and growth of work in non-agricultural sector and the increase of the rural household income and farmers' wages are effective in reducing poverty.

## 3. Econometric Model

In the present study, a panel data model is used in which provinces play the role of sections and households in each province play the role of time series. Thus, for household  $h$  in cluster (province)  $c$ , we have Equation 1:

$$y_{ch}^* = \mu_c + X'_{ch}\beta + \varepsilon_{ch} \quad c = 1, 2, \dots, C; \quad h = 1, 2, \dots, h \quad (1)$$

$y_{ch}^*$  is the observed latent variable,  $X$  is the vector of effective factors,  $\beta$  denotes the vector of parameters, and  $\varepsilon_{ch}$  represents the error component. The component  $\mu_c$  represents the fixed or random effects of each cluster and  $H$  is the number of households in cluster  $c$ . According to the variables studied in the present study, Equation 1 is rewritten as follows:

$$y_{ch}^* = \mu_c + \beta_1 Gender_{ch} + \beta_2 Age_{ch} + \beta_3 Age_{ch}^2 + \beta_4 Education_{ch} + \beta_5 Married_{ch} + \beta_6 Agriculture_{ch} + \beta_7 Public_{ch} + \beta_8 workhour_{ch} + \varepsilon_{ch} \quad (2)$$

In equations 1 and 2,  $y_{ch}^*$ , as the dependent qualitative variable, is based on the household heads' poverty or non-poverty and is defined as follows:

$$y_{ch} = \begin{cases} 1 & \text{if: } y_{ch}^* = (z - x_{ch}) \geq 0 \\ 0 & \text{if: } y_{ch}^* < 0 \end{cases} \quad c = 1, 2, \dots, C; \quad h = 1, 2, \dots, h \quad (3)$$

$x_{ch}$  is the cost of household  $h$  in cluster  $c$ . According to this pattern,  $x_{ch}$  is not observable unless  $y$  and the properties vector of  $X$  are observed (Ravalion, 1996). Independent variables in Equation 2, including the household heads' demographic and economic characteristics are as follows:

*Gender* indicates the qualitative variable of gender of the household head in which code 1 denotes male and code 0 represents female. *Age* indicates the age of the household head, which is a quantitative variable. *Education* indicates the level of education of the household head as a rank in which code 1 means illiterate, code 2 means primary education, code 3 means secondary education, code 4 means diploma education, code 5 means BA education, and code 6 means postgraduate education and higher levels. *Married* indicates the qualitative variable of the marital status of the household head in which code 1 means married and code 0 means unmarried. *Agriculture* indicates the qualitative variable of the working status of the household head in the agricultural or non-agricultural sector in which code 1 means working in the agricultural sector and code 0 means working in the non-agricultural sector. *Public* indicates the qualitative variable of the working status of the household head in the agricultural or non-agricultural sector in which code 1 means working in the public sector and code 0 means working in the private sector. *workhour* indicates the number of working hours of the household head per week, which is a quantitative variable. The probability of poverty in the household is expected to decrease if the household head is male, is older age has a higher education,

and if he is married and working in the non-agricultural and public sectors, with increasing working hours. It should be noted that Equation 2 will be estimated separately for urban and rural areas.

#### 4. Results

In the present study, similar to many international and domestic studies, the relative poverty line has been calculated based on 66% of the average per capita expenditure of the total households. The results show that the poverty line for the urban area is higher than the rural area in a way that in urban areas, a family of 4 people needs a monthly cost of at least 1,708,045 Tomans and in rural areas, it needs 1,062,741 Tomans in order not to be considered as poor. According to calculations, 37.7% of urban households and 36.7% of rural households are in relative poverty. Calculations show that in urban and rural areas, 62% and 47.3% of the households with their head of the household working in the agricultural sector are poor, and in the non-agricultural sector, the percentages of poor households are 36.1% and 33.1%, respectively. Calculations also show that in urban and rural areas, 12.1% (47.3%) and 6.7% (40%) of those working in the public (private) sector are poor, respectively. Table 1 shows the estimation of the research model for urban and rural households. The results are similar for urban and rural areas in terms of significance and direction of effect. According to Table 1, the effect of all variables except for the gender of the head of the household is significant. There is no significant difference between male and female household heads in terms of their probability of poverty. The age of the household head has a U-shaped effect on the probability of poverty. Education also has a reverse effect on the probability of household poverty. The marital status of the household head is also associated with the probability of poverty. The working hours of the household head have a reverse effect on the household poverty. Therefore, as expected, if the household head is working in the agricultural sector, the probability of poverty increases. However, if the household head is working in the public sector, the probability of poverty decreases.

**Table 1: Estimation results for urban and rural areas with random effects**

	Urban area			Rural area		
	Coff.	Prob.	Marginal Effect	Coff.	Prob.	Marginal Effect
<i>Gender</i>	-0.252	0.381	-0.056	0.282	0.331	0.060
<i>Age</i>	0.045	0.015	0.010	0.029	0.037	0.006
<i>Age<sup>2</sup></i>	-0.001	0.000	-0.0002	-0.001	0.004	-0.0001
<i>Education</i>	-0.738	0.000	-0.158	-0.468	0.000	-0.104
<i>Married</i>	1.123	0.000	0.186	1.05	0.000	0.187
<i>workhour</i>	-0.073	0.000	-0.016	-0.015	0.000	-0.003
<i>Agriculture</i>	0.492	0.000	0.113	0.412	0.000	0.094

<i>Public</i>	-0.915	0.000	-0.178	-1.493	0.000	-0.253
Log likelihood	-3676.1			-3506.3		
Statistic LR	112.7			55.2		
Statistic W	1213.6			503.8		
Number of Obs.	6918			5911		
Coefficient difference between urban and rural area						
	Coefficient difference			t Stat. in difference		
Education	-0.054			-295.5***		
Married	-0.001			1.84**		
workhour	0.013			243.5***		
Agriculture	0.019			33.8***		
Public	0.075			167.8***		

Symbol \* indicates marginal effect for dummy variables

## 5. Research Findings

In the present study, an the household income-expenditure micro data of urban and rural areas in 2016 was used to analyze the effect of household heads' social identities on the probability of household poverty, and investigate the role and type of their activity in agricultural or non-agricultural sectors in public or private sectors. For this purpose, a panel data model with limited dependent variable was used. The results showed that the estimated coefficients of the variables in both urban and rural areas, except for the household head's gender, were significant for the probability of poverty and had a similar direction. Comparing the estimated coefficients in urban and rural areas showed that, first, the effect of the household head's education on reducing the probability of household poverty in urban areas is greater than that in rural areas. Second, the possibility of poverty in households with married heads is lower than the possibility of poverty in households with single unmarried heads and this effect is higher in rural areas compared to the urban areas. Third, the probability of household poverty with a head working in the agricultural sector is less than the probability of household poverty with a head working in the non-agricultural sector and this effect is higher in rural areas compared to the urban areas; this difference was equal to 1.9%. In other words, in rural areas, the household with a head working in the agricultural sector is 1.9% less likely to be poor than a household with a head working in the non-agricultural sector compared to the urban areas. Fourth, the probability of household poverty with a head working in the public sector is less than the probability of household poverty with a head working in the private sector and this effect is higher in rural areas compared to the urban areas with the difference being equal to 7.5%. This means that in rural areas, the household with a head working in the public sector is 7.5% less likely to be poor than a household with a head working in the private sector compared to the urban areas. Based on the findings of model estimation and considering

the increase in the probability of poverty when the heads are working in the agricultural and private sectors, it is suggested that policymakers more specifically consider those working in these two areas. In this regard, since the probability of poverty of a household with a head working in the agricultural sector is higher in urban areas than in rural areas and the probability of poverty of a household with a head working in the private sector in rural areas is higher than in urban areas, it needs to be considered in poverty alleviation policies.

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