Factors Influencing Poverty in Iran Using a Multilevel Approach

Ali Asghar Salem[*]   Neda Bayat[†]

This study aims at investigating the factors effective on poverty as one of the notable socioeconomic problems in Iran. To overcome the limitations of the prior research, the present study makes use of a multilevel model so as to simultaneously analyze the individual-level (personal characteristics) and macro-level (economic and institutional characteristics) factors. The provincial household budget data are obtained from Statistical Center of Iran and regional-national accounts of 2014 are used to explore the individual and institutional factors that might influence the poverty status of a family. Comparing the individual and institutional effects within the analytical process revealed that the model can empirically make it clear which of the two levels has the highest effects on poverty likelihoods in poor families. The study results indicate that none of the institutional and macro-level variables affects the poverty occurrence or eradication likelihoods and, in the meantime, the majority of the individual level variables, including the number of family members, employment status, age and education level of the family head are found strongly and significantly associated with poverty occurrence likelihood in a household.

Keywords: Determinants of Poverty, Multilevel Model, Individual Level Factors, Macro-Level Factors, Institutional Level Factors.
JEL Classification: H31, I32, P36, R28

1 Introduction

Poverty is one of the essential problems of the human communities and it is a distinct sign of a country's economic, social and cultural underdevelopment and it is known to endanger the political stability, social solidarity and psychological health in various classes of the society. Poverty is one of the most complicated economic issues, the resolving of which entails a subtle and precise recognition thereof. The investigation and awareness of the poverty status of society and the relevant factors is the first step onto the path of making plans for fighting poverty and deprivation. That is because incorrect recognition of poverty factors in a country and the factors intensifying or

[*] Allameh Tabataba'i University; Salem207@yahoo.com (Corresponding Author)
[†] Qazvin Islamic Azad University; nedabbayat@gmail.com.

alleviating it in poverty eradication programs cause improper policy-making, wastage of economic resources, unfruitfulness of the efforts and programs and continuation of poverty in the form of culture and prevention of sustainable development.

In the turn of the new century, the world leaders gathered around in UN to formulate a long-term vista for fighting poverty in various aspects. The aforesaid perspective, rendered within the cast of eight millennium development goals (MDGs), has been utilized as the framework of the developmental efforts worldwide during the first 15 years of the current century. The eightfold ideal of millennium development plan is monitored within the framework of 18 goals and 47 indices so as to evaluate the number of advances made towards the delineated panorama. The first ideal of the millennium development goal set is the eradication of severe poverty and hunger. Based on the studies performed in this regard, severe poverty has been significantly reduced during the past two decades in such a way that the number of individuals living in intensive poverty has been reduced to less than a half, from 1.9 billion individuals in 1990 to 836 million individuals in 2015 and the improvement owes its vast part to the years after 2000 with the formation of the millennium development goals (a report by millennium development goals, 2015).

Based on the statistics and information by Statistical Center of Iran, unlike the common trends of the world, absolute poverty is expanding in the country in such a way that it shows an increase from 11% in 2002 to about 30% in 2014 (a report based on a research project by Statistical Center of Iran, 2015). Based thereon, active confrontation with this sophisticated and multi-level issue via gaining a precise insight thereof and investigating the factors influencing it is felt more than any other time. The essential question that is raised in this regard is that are the factors influencing poverty individual, macro-level or institutional? In other words, has poverty come about due to the individual characteristics of a poor person like his or her lack of proper education? Or, have the institutional factors like absence of facilities and improper poverty removal policies been in place? Until before the recognition of the multi-level models, the studies conducted so far have not been capable of simultaneous investigation of the individual factors and macro-level factors. To overcome the limitations of the prior research, the present study makes use of a multi-level model so as to simultaneously analyze the factors in both individual (personal characteristics) and institutional levels. Multilevel model is a more general paradigm of panel data models (the latter being a particular state of the former) that enables simultaneous evaluation of factors

influencing a household in individual (personal characteristics) and provincial (macro- and institutional) levels. Since every province features a different structural difference, the clarification of the poverty level in each household and, subsequently, in the provincial and country levels makes it feasible to investigate the factors effective in the poverty differences observed between various households and provinces. This analysis would show the institutional and individual factors with the most significant effects on poverty. Such recognition helps the designing of policies in such a way that the highest poverty mitigation effect can be brought about.

The general framework of the present study in this regard is as follows:

The second part of the article deals with a review of the literature on the subject. The third section reviews the empirical and theoretical studies regarding factors influencing poverty inside and outside the country. Then, in the fourth section, an experimental estimation of individual and institutional factors influencing poverty is conducted using specific multilevel models. The final section sums and concludes the study.

2 Theoretical Foundations

Poverty has been investigated by many schools of thoughts and economists as a macro-economic phenomenon. However, a number of studies have attempted expressing of the idea that poverty is a micro-economic subject hence it can be analyzed using micro-level economic premises. In other words, these studies point to the issue that the poor, like the other individuals, features an intelligent behavior and endeavor maximization of their income and welfare according to the existent facilities. Considering the technical problems of the previous decades concerning the offering of a coherent and comprehensive theory and establishing of an appropriate relationship between the functions "social welfare", "optimality" and "poverty scales", the use of a comprehensive model for analyzing the factors influencing the volume and intensity of poverty was faced with certain troubles. To this end, using the recent multi-level techniques, poverty is investigated and analyzed as a function of individual level and macro-level variables. To do so, both of the variables, i.e., individual level (personal characteristics) factors and macro-level (institutional characteristics) factors influencing the household poverty are taken into account.

2.1 Individual Level Factors (Personal Characteristics)

Lewis (1969) was the first person suggesting culture of poverty as one of the factors explaining poverty in individual level and expressed, based thereon,

that poverty is correlated with individual characteristics and familial grounds. The individuals living in poverty culture choose a unique individual lifestyle based on their own social conditions. They develop their pathological behaviors and attitudes and feel that they are separate from the mainstream of the society. According to Lewis's mindset, poverty culture is characterized by a vicious circle and it is self-solidifying because such negative properties as insolvency, determinism, frustration and inability are transferred from a generation to another and, this way, the poor are in a continuous circle of misery and entrapped in poverty (Harrington, 1981). Therefore, Harrington (1981) believes that an increasing daily number of individuals living in poverty have increased as a result of a merciless cycle of poverty.

Following Lewis, human capital theory believes that the household resources stem from its amount of human workforce investment. Theoretically, human capital means that family has an essential influence on the socioeconomic status of an individual and it is this same effect that makes it clear whether the individual falls into the trap of poverty or not? And, can s/he free himself or herself from poverty's claws or not? (Becker, 1993) The theory states that poverty is based on individual characteristics like educational level, age and participation in the workforce and individuals enjoying a higher education level are more likely to have jobs with higher incomes. Based on this perspective, escaping poverty is very difficult due to the educational poorness and inability in the accumulation of human capital hence resolving poverty cannot be eased because education and skill are missing and the individuals cannot acquire higher wages in the labor market (Becker, 1975 and 1993).

Based on this theory, the income inequality level is positively related with the inequality level in human capitals and getting rid of poverty requires an individual's efforts for the improvement of human capital such as struggling for elevating education or job skill levels (Becker, 1975). According to the studies conducted by Rank et al. (1999) who investigates the relationship between education level and poverty, the individuals who have educated for less than 12 years are three times more likely to become poor in their sixties in contrast to those who have educated for more than 12 years. Moreover, recently there has been an increased number of studies in poverty area underlining the skillfulness and participation in the workforce. Ritakallio (2002) studies poverty rate fluctuations according to the employment status of the working age members of the families and indicates that there is a significant difference between the families whom their working age members

have a job and the families whom their working age members are jobless in terms of employment status.

Along with population structural changes such as a considerable increase in older population, reduction in the workforce population and increase in families headed by one parent, studies on poverty in these vulnerable group have also been increased in economic aspects. Some studies carried out in this regard, including those by Hoynes et al (2005), Iceland (2003), Albrecht et al (2000), Lindsay (1999), Bound et al (1991), Eggebeen and Lichter (1991), Ellwood and Crane (1990), Ellwood (1988) and Smith (1988), are drawn on human capital theory and have come to the realization that the poverty factors are concentrated on some of the other personal characteristics like gender and age of the family head, type and structure of the family[1], marital status and family dependency ratio[2] (Hoynes et al, 2005). For example, single-head families are more likely to be poor in comparison to families with parents (Ellwood, 1988) and families headed by females are likely to be poorer than families headed by males (Hoynes et al., 2005). The investigation of the age of the family head has been reflective of the idea that poverty is more prevalent amongst the elders and minorities (Lindsay, 1999). Furthermore, the marital status is found to increase the poverty likelihood, especially amongst women. Several studies have demonstrated that failing marriage and/or the sudden death of a spouse leads to the impoverishment of the women who have had incomes that marking their status above poverty line before divorcement or death of their spouses (Bound et al., 1991).

2.2 Macro-Level and Institutional Factors

Generally, macro-level and institutional factors are focused on the economic development, change in the labour market, industrial structures and socioeconomic policies and the government's role for the distribution of poverty. In this section, theories are presented for the investigation of the relationship between economic development and poverty by considering the

---

[1] As an example, families with a single head or families with both parents, families with no children or families with children, large or small families and so forth.
[2] The ratio of the number of the household members not in working age (below 14 and above 65) to the number of household members at work age is called the household dependency ratio.

post-industrial period, bipolar labor market and the government's economic policies.

One of the economic approaches used to explain the relationship between poverty and economic development is the trickle-down effect. The theory is laid out on the foundation that economic development causes poverty reductions. The theory also expresses that economic development and the increase in a country's production growth cause an increase in the amount of wealth held by affluent persons and part of their wealth increase is gradually transferred in this process to the poor or, in other words, the wealth compiled by the rich spills over to the poor with the economic development based on a trickle-down effect. Drawing on the theory, the profitability and income of the rich are increased following economic development as a result of which the capital and deposit pileup by them is augmented. These profits would benefit all social classes because the demand for production is increased and the suppliers of such demand, particularly in the workforce, are susceptible classes. Thus, the higher profit made by the rich causes an increase in demand for workforce hence transferred to the entire society (Dollar and Kraay, 2002).

Positing this same effect, Anderson (1964) shows that economic growth results in poverty reduction but the effect of economic growth on poverty reduction differs in various growth stages. He divides economic development into three periods as mentioned below:

−   The first stage is the one in which poverty begins declining with the economic growth.
−   The second stage is the one in which the anti-poverty effect of economic development is maximized.
−   The third stage is the one in which the anti-poverty effect is gradually ceased.

Due to the same reason, Anderson reasons that wealth is transferred from higher social classes (the rich) to the lower social classes (the poor) when the economic development reaches a certain level and this causes a reduction in poverty (Kelso, 1994). There are many studies, including the ones by Alesina and Rodrik (1994), Bourguignon and Morrison (2001), Chen and Ravallion (2001) and Stiglitz (2003) Dollar and Kraay (2002), Tsai and Hang (2007) supporting the merits of economic development and stating that the people, both rich and poor, benefit from economic growth (Kim et al., 2010).

On the contrary, there are studies, including the ones by Leu (2010), Ashley (2008), Foster and Sze'kely (2008) and Smolensky et al (1994) that have indicated, unlike the trickle-down effect theory, that the economic status of the poor is not improved by the economy's undergoing of development and

blooming. As an example, no trace of trickle-down effect was seen in the economy of the US during 1980 following economic development due to structural evolutions, including the changes upon the entry to a post-industrial society and transition from factory-based industries to service-based ones and the massive volumes of customization and polarization of employment and wage and, in other words, welfare did not spill over to the poor and susceptible classes (Chen and Wang, 2015).

With the advent of post-industrial society, the studies performed in the area of the relationship between economic development and poverty are more concentrated on the structural changes of the economy (for instance, the translocation of the focal point of industrialization from manufacturing and production to service sector) and economic stagnation that came about following the tenure of welfare governments since 1970s. The post-industrial evolution has not only brought about changes in the industrial structure but also it exacerbated the poverty status via the bi-polarization of labor market for professional individuals with jobs featuring higher income rates and for the less skillful individuals with jobs featuring lower income rates (Albrecht et al., 2000). Therefore, it has been attempted in the studies to examine poverty from structural perspectives, including the bipolar theory of the labor market and post-industrial theory.

Opposite to the theories based on the neoclassic economy that considers a homogeneous market, the bipolar reasoning of the labor market claims that the labor market is divided and the process of negotiating the wage takes different courses in these classified markets and that the workers' mobility in this divided labor market is severely restricted. Thus, the high wage differences in the two ends of the market contribute to the increase in poverty and income disparities. Versatile workers are faced with relatively stable jobs, higher wages, favorable work conditions and jobs, an abundance of the job opportunities and fair wok regulations whereas the weak laborers are usually confronted with unstable works, low job opportunities and informal and unjust job regulations. Put differently, the structure of the labor market prevents the disadvantaged individuals from entering the stable labor market and their getting rid of poverty because this bipolar market causes the creation of such problems as spatial (place-related) and skill-related mismatches. Skill mismatch means that the low education level and weak skills of the poor and deprived individuals does not match to the employment requirements in the labor market. In addition, the spatial mismatch, as well, reflects the discoordination between the employment opportunities and the poor's dwelling place (Doeringer and Piore, 1985). Based thereon, Freeman (2003)

used the regional data as compared to the national level data to demonstrate that, quite opposite to the expectations, the correlations between poverty rates and unemployment rates are negative during 1980s and 1990s following the controlling of population-related variables which means that the job creation policies have not only failed to result in poverty alleviation but also caused its increase.

In contrast to these studies, some seek explaining poverty from institutional perspectives and they have placed their highest focus on this issue that what are the socioeconomic policies applied by the government for preventing and reducing poverty? In other words, they believe that poverty emergence is highly dependent on ideological perspectives (of the politicians) regarding poverty in a country. In fact, a large number of studies have dealt with the categorization of welfare states and investigation of their differences in efforts they have made for the development of social welfare. Esping-Anderson (1990) have classified the western industrialized countries according to their welfare systems into liberal regimes, such as the US and Canada, corporatist regimes, such as Germany, France, Italy and Austria, and social democratic regimes, such as the countries in Scandinavian region (Finland, Sweden and Norway, the Netherlands and Denmark). These categorizations have been made based on the governments' interventions and the role of the free market in social welfare (Kim et al., 2010).

According to the studies by Atkinson et al (1995), Forster (1993), Mitchel (1991) and Oxley et al (1997) who have investigated the difference in poverty rates in various welfare systems, Scandinavian countries and northern European countries, like Denmark and the Netherlands, have had lower poverty levels while the poverty levels are relatively higher in English speaking countries. These studies suggest the idea that the institutional differences in welfare redistribution of the economic resources lead to the considerable differences in poverty prevalence amongst western industrial countries even with their similarities in terms of economic development levels and labor market structure. Therefore, the states' poverty reduction policies and perspectives are amongst the factors influencing poverty and they should be taken into account. Amongst the institutional factors, the share of the general social security costs and the leftists' domination rate are variables used to show institutional differences in various regions (Kim et al., 2010).

3 A Review of the Empirical Research
Many empirical studies have been carried out about factors influencing poverty with a multilevel approach, and they have investigated the

demographic factors in individual levels and macro-level and institutional factors at the same time to come up with explanations about some changes in poverty. But, no study has been conducted domestically in this regard. The present section summarizes the relevant studies and results on the multilevel estimation of the factors influencing poverty.

3.1 Foreign Studies:

− Ren et al. (2017) performs a multilevel study on the data obtained for 13 poor regions in China in 2013 so as to evaluate the effects of seven socioeconomic variables related to poverty. Their results indicate that rural income, urbanization degree, the ratio of enrolment in high schools, production of grains and the ratio of the lands under irrigation exert negative and significant effects on poverty prevalence. However, some of the indices are found having more significant effects in some regions on the prevalence rates of poverty as compared to the other regions. This finding show that the policies of fighting poverty can be different in various regions and that these policies can be separately designed for each region.

− Da Costa and Dias (2015) dealt in intercultural research with the differences and similarities in the poverty reasons between 28 UN member states in 2007. To simultaneously analyze the two individual and national levels, they use the latent variable multilevel model. Besides providing a correct understanding of the social class structure of each country, the study also allows a comparison of the countries. Multilevel modeling also reduces the effect of inhomogeneity between the individuals and countries, and this makes it a proper method to be applied in the study of culturally different regions. The results of the current research paper show that some groups realize poverty as the cause of their status even with the generalization of the social reasons of poverty in individual levels. The individuals with economic problems are found more frequently attributing the social reasons of poverty to themselves than the individuals with better financial and social status. Moreover, the study also show that at country level, the more advanced countries believe that poverty is caused by individualistic and fatalistic factors while the less developed countries explain poverty based on the injustices od society.

− Chen and Wang (2015) investigate the factors influencing poverty, including individual and regional ones in Taiwan in 2006. Expressing the idea that the prior research ignore the relationships between the

individuals, households and social structures due to the methodological limitations, they apply the hierarchical generalized linear model. To do so, they use the information of 13640 households gathered from 23 cities and regions in Taiwan by the general office of budget, accounting, and statistics. Their results indicate that the factors influencing the poverty differ from a region to another. Amongst the studied individual level factors, education, socioeconomic status, age, family, dependency ratio (the ratio of family members in work age to those not in work age), marital status and number of deliveries are pinpointed as being related to poverty. The important relationships between poverty and structural properties like economic inequality, economic growth, structural transfer and labor market attributes, are documented. Furthermore, in their study, the mutual interactions between familial and regional factors are also identified. Quite wonderfully, none of the inter-region interactions are found statistically significant.

− Arpino and Aassve (2014) investigate the role of villages in the households' exiting of poverty in Vietnam using multilevel models during the time span from 1992 to 1993. Stating the fact that Vietnam has experienced a considerable reduction in poverty during the early years of the 1990s and that it has undergone considerable changes in households, villages and regions, they examine the factors influencing poverty. They make use of a multilevel model on panel data collected from rural samples and assesse the life standard in Vietnam to demonstrate the vital role of villages in the dynamicity of resolving poverty. Their results indicate that education plays a crucial part in reduction and elimination of poverty in the families in such a way that the families with higher education are found having scored the highest rates of going out of poverty. Conversely, large families, especially in cases that there are many children in the families, as well as the non-specialized laborers are found with the lowest rates of going out of poverty. But, the characteristics of the villages wherein the families are residing are essential, as well. For example, the individuals living in regions wherein agriculture has made technical progress are more likely to escape poverty. They also demonstrate how the prediction of the random effects in village level can contribute to the correct targeting of the poverty reduction policies.

− In another study, Da Costa and Dias (2014) investigate the factors influencing poverty in Europe. They use combined multilevel models and acquire information from 15 UN state members to study this social phenomenon in Europe. They examine three types of factors influencing

poverty: individual, social and destiny and deterministic factors. The individualist perspective believes that the poor are responsible and they are the reason of their current status. The society-oriented perspective believes that the community guides the individuals towards poverty and the deterministic perspective is that poverty is the result of misery or destiny. The multilevel combined model is estimated with three clusters of countries and six clusters of individuals. The results indicate that there are groups underlining the individualist explanations and blame the poor for the situation they are in. In the countrywide or macro-level, the most developed cluster believes in individual and destiny-making factors whereas the less developed clusters explain poverty based on injustice.

– Dafermos and Papatheodorou (2013) use panel data techniques to determine the macro-economic and institutional factors influencing the injustice and poverty in EU during 1994-2008 time span. The experimental analyses by them show that the social transfer in cash form and, generally, transfers other than retirement salaries have considerable effects on inequality and poverty. The effect of employment on inequality and poverty does not seem to be empirically true. This same issue also holds for labor market institutions. Their results conform to the perspective that the social support system is considered as an essential factor in supplying social costs and distributing economic growth and employment. They figured out that the countries that have developed the democratic social welfare regimes are more efficient than the southern European countries with liberalist social welfare states in reducing disparity and poverty using the incomes obtained from economic growth and higher employment.

3.2 Domestic Studies
No study has been conducted in Iran regarding the multilevel analysis of the factors influencing poverty in Iran. However, there are some studies performed regarding factors influencing poverty in the country some of which have been summarized below:

– In a study, Hasanzadeh (2000) estimates the factors influencing poverty based on provincial information of 1996 using a systematic pattern. To do so, he analyzes poverty as a function of demographic, economic and social variables. The results of this study indicate that population growth rate, fertility coefficient, household size, urbanization status, amounts of household and government investment in education and healthcare, economic growth, inflation, industrialization trends and status of wage,

income and wealth distribution in the country are amongst the factors
influencing the intensity and expansiveness of poverty in the country.

- Arab Mazar and Hosseininejad (2004) deal with the factors influencing
  poverty in working rural households in Iran in 2000. To do so, they adopt
  an indirect approach to the identification of the poor and use a simple
  Logit model to identify the factors influencing poverty in the country's
  rural households using the income-cost information procured from
  Statistical Centre of Iran. The results of the study are suggestive of the
  idea that the increase in the household number, as well as the reduction in
  the household assets, plays a considerable role in the increase in the
  impoverishment chance of the households as compared to the other
  demographic and geographical variables of the farmers. In the employed
  working group, illiteracy of the household head causes an increase in
  poverty likelihood. Also, the households whose heads work in private or
  the governmental sectors, in contrast to the households whose heads are
  recruited in the cooperative sector, are less likely to become poor.

- Niloofar and Ganjali (2008) deal with the reasons and the qualities of the
  effects of factors influencing the poverty using Bayesian networks. They
  perform a randomized sampling method to choose the data of 500 urban
  households from the cost-income plan of 2005 and use an appropriate
  Bayesian network to analyze the poverty data. Their findings are
  indicative of the idea that education level and household aspects are the
  most critical factors in determining the household's poverty level.
  Furthermore, in case that a household is considered as absolutely poor, the
  most likely reason is low education level or the very illiteracy of the
  household head.

- Khaledi et al. (2008) deal with the study of rural poverty and confirmation
  of factors influencing it. They use subjective topics of the effect of
  economic growth on poverty in their study and inserted investment as one
  of the economic growth factors in long-term planning for poverty
  eradication into their model. Then, using the statistics for the time span
  between 1971 and 2003 to investigate the type of agricultural investment
  relationship with the economic growth and rural poverty through
  seemingly unrelated regressions (SURE). The results of their study
  indicate that although investments made in agriculture sector have been
  accompanied by economic growth therein, the distribution of the interests
  and profits gained from the growth have not been to the extent capable of
  influencing the rural poverty, and it seems that the interests of agricultural
  economic growth is not transmitted to the poor rural classes.

- Garivani et al. (2014) deal with the investigation of factors influencing poverty in the urban households in Khorasan-e-Shomali Province using Tobit pattern. The variables investigated in their study are a number of family members, gender and age of the family head, educational costs and healthcare expenditures of each household. The results of their study indicate that all of the studied variables, except the age of the family head, are effective in the poverty of the urban regions in Khorasan-e-Shomali Province. In addition, the results also indicate that the female-headed households are more likely to be grouped as poor than the male-headed households hence it is necessary that the policymakers pay a greater attention to this social class in their poverty removal programs.

- Mohammadi et al. (2016) deal in a study with the investigation of factors influencing poverty of the nomads settled down in Fars Province. They made use of a two-stage randomized cluster sampling method to select a sample consisted of 175 nomad households settled down in Fars Province and subjected them to analysis using the poverty index and Tobit Model. The results of their study indicate that education level and age of the household head, level of agricultural activity, family size and number of domestic animals are amongst the factors influencing poverty reduction in the settled nomad households; therefore, concentration of adults' education and corroboration of supplementary activities are recommended for sustainable coping of poverty phenomenon in the settled nomad households.

As it can be understood from the national studies, multilevel analysis of the factors influencing poverty has not been so far undertaken in any of the studies and, in this regard, the current research paper is the first article dealing with such an important issue based on a multi-level model. Additionally, to estimate the model, we use information of nearly 19 thousand urban households in the country for 2014; besides the microdata and economic and social characteristics of the households, macro-level and institutional variables are concomitantly taken into consideration in the present study's proposed multilevel model for performing a more precise estimation and this can also be considered an innovation of the current research paper.

4 Experimental Modeling

As it is pointed out, the majority of prior studies have had severe limitations in the investigation of factors influencing poverty in individual level and macro-level. Inability in considering the individual level (personal characteristics) and the governmental level factors simultaneously dealing

with explaining poverty variations navigate the studies towards multilevel models and make them primarily focused on the interstate or provincial comparisons. These models can be used for the estimation of macro-level (institutional) factors influencing the economic status of the households under certain controlled conditions that they are also deemed as the very individual level (personal characteristics) factors of the households. The technique is used to investigate the factors influencing poverty, including individual and macro-level (regional) factors, in Iran in 2014. The upcoming part presents an exposition of the variables and data and the multilevel technique used.

4.1 The Applied Data and Variables

In the current research paper, the crude information (questionnaire-extracted) of the household income-cost plan designed by Statistical Center of Iran for 2014 is employed parallel to the estimation of the factors influencing poverty in Iran. One of the essential and unique information resources in discussions on welfare economy is the household cost-income information that is so-called as a household budget. This annual information is collected in a field study manner within the format of detailed questionnaires (containing over 1000 questions asked from the household) distributed amongst various households in country level in regard of social and economic (cost and income) statuses. Thus, in the course of analyzing the economic issues, the socioeconomic specifications of the households can be used to analyze these factors in economic investigations. To do so, the information of 85018 households from the urban regions in 30 provinces is procured for 2014 from Statistical Center of Iran.

−   Operational Definition of the Variables:

   Table (1) summarizes the variables and their corresponding measurement indices used in the present study. The forthcoming section provides the necessary explanations regarding poverty status.

Table 1

The Variables Used in the Study

Variable type	Variable	Measurement index
Dependent variable	Poverty status	1: living below the poverty line 0: living above the poverty line
	Independent variables	
Individual level (personal characteristics)	Household aspects	Number of household members
	Age (years)	Continuous variable
	Gender	0: male; 1: female
	Marital status	0: double-headed family; 1: single-headed family
	Achievement of the educational facilities	Number of family head's education years
	Occupation status	0: jobless and searching for work; 1: jobless and having income; 2: employed
Macro-level factors (structural-institutional characteristics)	Province size	Population of each province
	Economic development level	GDP per capita of each province
	Society's employment level	Unemployment rate in each province
	Level of public services and facilities	Shares of public, educational and healthcare services in the added value of each province
	Political power	Shares of the parliamentary chairs in each province

The poverty status of the household is the primary dependent variable of the present study, and it is expressive of the idea that whether the household lives below the poverty line or not. In the present study, the concept of "absolute poverty" is utilized because the relative poverty designates disparity and feeling poorness more than reflecting the poverty in the society. Therefore, such type of poverty is second in rank to absolute poverty that is indicative of inability in supplying the preliminary needs. Relative poverty is mostly posited for the advanced communities to which absolute poverty is envisaged rather irrelevant. But, investigation of absolute poverty is of great importance in less developed and poor countries that the supplying of the primary and very essential needs is the main problem of a considerable percentage of the families. In calculating the absolute poverty line, a "basket

of the necessary nutritional needs" is defined and the ability of each household for achieving the basket is subsequently evaluated. Generally, absolute poverty line measurement is based on calorie needs in such a way that the per capita amounts of each households' receiving of the required calorie is calculated based on the households' per capita of food items' values (200 food items) and the amount of calorie of each of these items. Then, based on nutritionists' ideas on the daily needs of minimum receivable calorie (2300) for maintaining physical health, the households having been incapable of supplying their members with an average daily 2300 calorie are considered poor and assigned a value equal to unity otherwise they are given a value equal to zero for this variable.

4.2 Model Estimation
To estimate the factors influencing poverty, multilevel regression modeling (MLM) is utilized. Generally, hierarchical generalized linear model (GLM that is also called multilevel analysis model and random coefficient model) is used for measuring the various levels of simultaneous variables. Panel or pooled models are particular states of multilevel models that are defined in two levels one of which is time. Multilevel models allow simultaneous calculation of the net effect of the variables belonging to both individual level (personal characteristics) and macro-level (institutional characteristics) factors. As an example, in the present study, the household poverty status has been found influenced by the personality characteristics of the household head and the macro-level characteristics of the country wherein the household lives. However, the traditional regression models, like OLS regression model, have essential limitations in the analysis of such type of multilevel data because they choose a unit of analysis for the personality and the governmental attributes of the household. Specifically, insertion of the governmental level variables in OLS models, wherein the household is the analysis unit, contradicts one of the essential assumptions, i.e., variance consistency, that would otherwise lead to an efficient estimation and test of the hypothesis. Variance inconsistencies result in a number of standard errors in the estimation of model's parameters hence increase the risk of first type errors (Raudenbush and Bryk, 2002). On the contrary, the hierarchical linear model can depict the multilevel data with structural error segmentations in individual and regional levels (Raudenbush and Bryk, 2002). To find answers to the questions raised herein, a hierarchical generalized linear model (HGLM) is used because the dependent variable, i.e. poverty status, is an imaginary (0, 1) variable.

The matrix view of a mixed multilevel equation takes the form below:

$$y_j = X_i \gamma + Z_j u_j + e_j$$

Where, y_j is an outcome vector (dependent variable); $n_j \times 1$ belongs to cluster j; Xi is the $n_j \times p$ matrix belonging to fixed effects, γ is a $p \times 1$ vector belonging to uncertain fixed parameters; Z_j is the $n_j \times r$ matrix of the random effect variables; U_j is $r \times 1$ vector of the uncertain random effects that features a normal distribution with a mean value of zero, and standard deviation of σ_u and e_j is the $n_j \times 1$ residual vector featuring normal distribution with a mean value of zero and a standard deviation of σ_e.

Parameter estimation (regression coefficients and variance components) in multilevel modeling is most often carried out using maximum likelihood method that is a general estimation process providing an estimation of the society's parameters in such a way that it is deemed maximally likely that a sample is selected from that society. The other estimation methods used in multilevel modeling are generalized least squares (GLS), generalized equation estimation (GEE), Bayesian models like Monte Carlo Markov Chain (MCMC).

As it is pointed out, the maximum likelihood method is the most common method of estimating multilevel models. The method is advantageous in that its estimations are asymptotically efficient and consistent. In large sample volumes, the maximum likelihood estimations have the required strength, and they are not rendered inefficient with the contradiction of such assumptions as error term normality. Two various kinds of likelihood functions are utilized in multilevel models' estimations. The coefficients and variances are simultaneously inserted in likelihood functions in the first method that is also known as full maximum likelihood (FML). The other method that is called restricted maximum likelihood (RML), only variance components are taken into account in the likelihood function, and the regression coefficients are estimated in a second step. When estimating variance components, FML considers the regression coefficients as fixed but with uncertain values but it does not take the lost degree of freedom into consideration for the estimation of the fixed effects. RML estimates variance components after the elimination of the fixed effects from the model. Resultantly, FML estimations of variance components are biased and extremely small in general. RML gives less bias, and it is also in possession of the characteristic that the coefficients outputted by it are equivalent to variance analysis estimations envisioned as optimum in case of the balanced groups (groups with equal sizes). Since RML is more realistic, it has to theoretically offer better estimations, especially in cases of

few numbers of groups, but in practice, the methods' differences are negligible.

According to the abovementioned cases, the function form is modified as demonstrated below:

$$P_{ij} = \beta_1 + \beta_2 NMembers_{ij} + \beta_3 Sex_{ij} + \beta_4 Job_{ij} + \beta_5 Age_{ij} + \beta_6 Marital_{ij} + \beta_7 Education_{ij}$$
$$+ \beta_8 Pop_{ij} + \beta_8 Unemp_{ij} + \beta_9 Parliament_{ij} + \beta_{10} Public_{ij} + \beta_{11} Gdps_{ij}$$

where:

Dependent variable (p): Absolute poverty
Nmembers: number of household members
Pop: population in each province
Sex: gender of household head
Unemp: the unemployment rate in each province
Job: family head's activity status
Parliament: each province's share of parliamentary representatives
Age: age of the family head
Gdps: GDP per capita of each province
Marital status: marriage status of the family head
Public: shares of public, educational and healthcare services in the added value of each province
Education: education level of family head

Table (2) presents the results of the multilevel model, including the individual level variables (personal characteristics) and the governmental level (institutional characteristics) for explaining the poverty differences between the studied provinces. Generally, the first duty of the multilevel model is that it has to investigate how much of the variance in dependent variable stems from the differences in the personality characteristics (individual level) and how much of it originates from the differences in macro-level characteristics (the governmental level). Since poverty is a binary (two-part) variable, it is important to figure out the likelihood of its variations with the changes in the individual characteristics and specifications as well as the demographic traits of the household or by the macro-level and institutional variables. As it can be seen, all of the macro-level variables have become meaningless with the existence of the individual level variables. In other words, the changes in poverty can be best explained by the individual level variables and the personality characteristics of the household, which means that the macro-level policies and the regional characteristics have had no effect on poverty at least in the studied year.

Table 2

Estimation of individual level and macro-level factors influencing absolute poverty in 2004

Coefficient Variable	Coefficient	Z-statistic	Likelihood	Variable	Coefficient	Z-statistic	Likelihood
Individual level variables				**Macro-level and institutional variables**			
y-intercept	1.0132	0.95	0.340				
Number of household members	0.3309	24.36	0.000	Population	18.81	0.64	0.521
Family head's gender	-0.0074	-0.08	0.940	Unemployment rate	-0.1132	-1.48	0.139
Family head's activity status	-0.2296	-5.79	0.000	Share of parliamentary chairs	-22.13	-0.84	0.403
Family head's age	-0.0270	-18.19	0.000	Share of public services	0.0121	0.19	0.847
Marital status	-0.0138	-0.15	0.883	GDP per capita	0.000001	0.48	0.635
Education level of family head	-0.0299	-3.55	0.000	LR test vs. logistic model: chi2(2)=2485.77 Prob>chi2=0.0000			

Source: Research Findings

Amongst the governmental level variables, GDP per capita is not found significantly associated with poverty. GDP per capita is the scale of economic development in a region, and it is applicable to the investigation of the trickle-down effect that is of the belief that economic development causes poverty reduction. In the present study, the trickle-down effect is not confirmed and, in other words, the economic development level is not found having an

influence on poverty reduction in the studied regions. The issue is possibly due to the fact that a considerable amount of a province's productions is spent on social welfare costs in the other provinces and that these products are not used to cover the expenses incurred in the same province they are manufactured. As a specimen, some provinces possess oil and minerals but, in spite of the high production rates in them, the budget distribution is different in them. As it is mentioned in theoretical foundations section, the same result is attained in some of the other researches for the studied year, and the trickle-down effect is not seen even with the existence of economic development conditions and, despite the economic development in these regions, it is not found to have an effect on poverty reduction due to the post-industrial changes of the society and the weakening of the industry sector against the service sector and only inequality increase is an evidence for it.

Moreover, the other variables related to macro-level factors, like population and unemployment rate, are not found significantly correlated with poverty occurrence likelihood. Unemployment rate is considered as a variable for measuring the employment level of the society in this study and, as it is shown by Freeman (2003) using the regional data in comparison to national level data following controlling for the demographic and structural factors that, in spite of the expectations, there is a negative correlation between the poverty rate and unemployment rate in the US during the 1980s and 1990s, the present study, as well, despite what is expected, does not document a correlation between unemployment rate and poverty occurrence likelihood in Iran's regions.

Shares of parliamentary chairs and quotients of public, educational and healthcare services of the provincial added value are two institutional variables of the proposed model that are related to the social security policies and system in each province. The parliamentary chair share of each province's representatives, as individuals supposed to safeguard the interests of the working and deprived social classes, is embedded as a political factor amongst the variables. This variable aims at investigating the theory of power resources politically assuming that the representatives work in line with the maximal expansion of welfare policies in favor of the working class so as to keep poverty levels low. Furthermore, the general, educational and healthcare social costs of each province that determine the size of a welfare state also deal with the investigation of the issue as to whether poverty level of a province depends on the organized efforts for reducing poverty via supply and redistribution of income or not. The study results indicate that both of these institutional level variables are senseless and that these two sociopolitical

factors exert no effect on poverty reduction in the studied regions in Iran for 2014.

According to the individual level characteristics of the household, all of the existent variables, except for the gender of the family head and marital status, are found considerably dependent on the poverty occurrence likelihood. Based on table (2), the number of household members is the most important individual level factor. The increase in the number of household members (household aspect) brings about an increase in the poverty occurrence likelihood in such a way that absolute poverty occurrence likelihood is increased by 33% with every unit increase in the number of the household members. The next rank belongs to the family head's activity. The results indicate that the increase in household activity level causes a reduction in the occurrence likelihood of poverty to the household in such a way that a 22-percent reduction is evidenced for absolute poverty occurrence likelihood with every unit increase in the activity level. In addition, it is figured out that there is a negative relationship between the family head's age and the poverty occurrence likelihood. This negative age-poverty relationship might have come about due to the fact that the adolescents account for a substantial quotient of unemployment and that having work-related experiences is usually a precondition for recruitment and this is what the educated and young social classes usually lack.

The results of table (1) are reflective of the idea that, as expected, there is a negative relationship between the education level of the family head and the poverty occurrence likelihood. Increase in the family head's education level for a degree brings about a reduction of nearly 3% in the likelihood of being inflicted with poverty. This latter finding is a human capital theory, and it has also been affirmed as well as other studies in this field.

5 Conclusion

Poverty has been investigated as a macro-economic phenomenon from the perspective of the schools of thoughts and economists and, on the contrary, some studies have endeavored to state the idea that poverty is a microeconomic subject and it can be investigated using micro-level foundations and individual characteristics. Due to the methodological limitations encountered in the past decades, the simultaneous relationships between the individuals, families and policies as well as the socioeconomic structures are neglected. To overcome the problem, a newly emerging multilevel technique is utilized to examine and analyze poverty as a function of individual level, macro-level and institutional level variables. To do so,

both of the individual level (personality characteristics) and macro-level (institutional level) variables influencing poverty are taken into account in the new literature. Considering the fact that the issue has been so far neglected in Iran, the present study uses a hierarchical generalized linear model and considers the individual level and macro-level variables simultaneously to investigate the factors related to poverty in Iran.

The analysis of this idea shows that, amongst the macro-level and regional level variables, none has been able to explain the poverty occurrence likelihood in 2014 in the households of the studied regions. In other words, the trickle-down effect theory indicating the effect of economic development on poverty reduction is not confirmed. On the contrary, such theories as post-industrial society and bipolar work market theory are stated for explaining the lack of influence by economic development on poverty.

Unlike the macro-level variables, the majority of the individual level variables, including the number of household members, employment status, age and education level of the family head are found strongly and significantly associated with the impoverishment of the household. It is due to the same reason that any intervention made with the objective of preventing and/or reducing poverty should be focused on several individual level variables instead of just one variable. These findings feature the following political outcomes:

The first is related to the personality characteristics of the household. According to the present study's findings, the poverty status in households is correlated with the social and demographic characteristics of them. Specifically, the number of household members is the most important factor that can add to poverty likelihood. Therefore, birth control policies and culture-making strategies should be adopted to restrict the problem.

Another important individual level factor influencing the poverty occurrence likelihood is the family head's activity level. This variable speaks of the idea that the family head's being employed and his or her performing of activity causes considerable reduction in poverty likelihood but the significance of this variable and insignificance of unemployment rate in macro-level are possibly confirming of the bipolar labor market theory and the skill-driven and spatial mismatches in the workforce in confrontation with poverty meaning that even employment increase has no effect on eradication of poverty in these regions due to the low skill levels of the poor, disabled and old social classes as well as for the absence of job opportunities in slum regions. Under such circumstances, households' heads can bring down their impoverishment likelihoods via performing activities in informal and unstable

jobs (due to the governance of informal and unjust conditions). Thus, job security should be elevated for those who work in a part-time manner through increase in wage and provisioning of fringe benefits as well as by providing them with safe working conditions and social insurance of any type. Moreover, considering the employment status, the jobless individuals should be provided with proper jobs in the first place so that minimum sustenance can be guaranteed for them. In addition, these social classes can be guided towards more stable jobs by having them enhance their skills through the formation of entrepreneurship cooperatives.

In the end, the education level of the household head is found effective in not being poverty-stricken. According to the fact that the increase in the household head's education level causes reduction in the impoverishment of the household, as a whole, the family head, not only as a person who earns an income but also as a person who makes the most critical decisions on how to spend money and allocate family budget, plays a vital role in family expenses. Thus, parallel to the poverty eradication policies and preservation of income level, programs should be designed and implemented for the improvement of human capital via education and training, especially in economically deprived regions.

References

Albrecht, D. E., & Albrecht, S. L. (2000). Poverty in Nonmetropolitan America: Impacts of Industrial, Employment, and Family Structure Variables. *Rural Sociology*, 65(1), 87-103.

Alesina, A., & Rodrik, D. (1994). Distributive politics and economic growth. The quarterly journal of economics, 109(2), 465-490.

Anderson, W. L. (1964). Trickling down: the relationship between economic growth and the extent of poverty among American families. The Quarterly Journal of Economics, 78(4), 511-524.

Arab Mazar, A., & Hosseininejad, S. M. (2004). Factors Influencing Poverty in Working Rural Households of Iran. *Economic Searches*, 1(1), 67-94.

Arpino, B., & Aassve, A. (2014). The Role of Villages in Households' Poverty Exit: Evidence from a Multilevel Model for Rural Vietnam. *Quality & Quantity*, 48(4), 2175-2189.

Ashley, R. (2008). Growth may be good for the poor, but decline is disastrous: On the non-robustness of the Dollar–Kraay result. International Review of Economics & Finance, 17(2), 333-338.

Atkinson, A. B., Rainwater, L., & Smeeding, T. M. (1995). Income distribution in OECD countries: evidence from the Luxembourg Income Study.

Becker, G. (1975). *Human Capital: A Theoretical and Empirical Analysis, With Special Reference To Education*, New York: Columbia University Press.

Becker, G. S. (1993). *Human Capital: A Theoretical and Empirical Analysis, With Special Reference To Education*, Chicago: The University of Chicago Press.

Bound, J., Duncan, G. J., Laren, D. S., & Oleinick, L. (1991). Poverty Dynamics in Widowhood. *Journal of Gerontology*, 46(3), S115-S124.

Bourguignon, F., & Morrisson, C. (2001). The Size Distribution of Income among World Citizens: 1820–1992. Manuscript, World Bank.

Chen, K. M., & Wang, T. M. (2015). Determinants of Poverty Status in Taiwan: A Multilevel Approach. *Social Indicators Research*, 123(2), 371-389.

Chien, S., & Ravallion, M. (2001). How did the world's poorest fare in the 1990s?. Review of Income and wealth, 47(3), 283-300.

Da Costa, L. P., & Dias, J. G. (2014). Perceptions of Poverty Attributions in Europe: A Multilevel Mixture Model Approach. *Quality & Quantity*, 48(3), 1409-1419.

Da Costa, L. P., & Dias, J. G. (2015). What Do Europeans Believe To Be The Causes of Poverty? A Multilevel Analysis of Heterogeneity within and Between Countries. *Social Indicators Research*, 122(1), 1-20.

Dafermos, Y., & Papatheodorou, C. (2013). What Drives Inequality and Poverty in the EU? Exploring the Impact of Macroeconomic and Institutional Factors. *International Review of Applied Economics*, 27(1), 1-22.

Doeringer, P. B., & Piore, M. J. (1985). Internal Labor Markets and Manpower Analysis. ME Sharpe.

Dollar, D., & Kraay, A. (2002). Growth Is Good for the Poor. *Journal of Economic Growth*, 7(3), 195-225.

Eggebeen, D. J., & Lichter, D. T. (1991). Race, family structure, and changing poverty among American children. American Sociological Review, 56(6), 801.

Ellwood, D. T. (1988). *Poor Support: Poverty in the American Family*. (P. ix). New York: Basic Books.

Ellwood, D. T., & Crane, J. (1990). Family change among black Americans: What do we know?. Journal of Economic perspectives, 4(4), 65-84.

Förster, M. (1993). Comparing Poverty in 13 OECD Countries Traditional and Synthetic Approaches (No. 100). LIS Working Paper Series.

Foster, J. E., & Székely, M. (2008). Is economic growth good for the poor? Tracking low incomes using general means. International Economic Review, 49(4), 1143-1172.

Freeman, D. G. (2003). Poverty and the Macro-Economy: Estimates from US Regional Data. *Contemporary Economic Policy*, 21(3), 358-371.

Garivani, F., Ahmadi Shadmehri, M. T., & Fallahi, M. A. (2014). Investigating the Factors Influencing the Poverty of Urban Households in Khorasan-E-Shomali Province Using Tobit Pattern. *Urban and Regional Studies and Research*, 5(20), 183-202.

Harrington, M. (1981). *The Other America: Poverty in the United States*. New York: Penguin Books.

Hasanzadeh, A. (2000). Investigating the Factors Influencing Poverty (A Case Study of Iran). *Seasonal Journal of Economic Research in Iran*, 3(4-5), 135-184.

Hoynes, H., Page, M., & Stevens, A. (2005). *Poverty in America: Trends and Explanations*. (No. w11681), National Bureau of Economic Research.

Iceland, J. (2003). Why poverty remains high: The role of income growth, economic inequality, and changes in family structure, 1949–1999. Demography, 40(3), 499-519.

Kelso, W. A. (Ed.). (1994). Poverty and the underclass: Changing perceptions of the poor in America. NYU Press.

Khaledi, K., & Yazdani, S. (2008). Studying Rural Poverty in Iran and Determining Factors Influencing It with an Emphasis on Investment in Agriculture Sector. *Seasonal Journal of Economic Research in Iran*, 10(35), 205-228.

Kim, K. S., Lee, Y., & Lee, Y. J. (2010). A Multilevel Analysis of Factors Related To Poverty in Welfare States. *Social Indicators Research*, 99(3), 391-404.

Leu, C. H. (2010). Profiles and explanations of child poverty in Taiwan. Taiwanese Journal of Social Welfare, 9(1), 97-137.

Lewis, O. (1969). The culture of poverty. In D. P. Moynihan (Ed.), On understanding poverty: Perspectives from the social sciences (pp. 187–200). New York: Basic Books.

Lindsay, B. L. (1999). Skilled Temporary Specialty Workers in the United States. *People and Place*, 7(1), 24

Mitchell, D. (1991). Income transfer in ten welfare states. Brookfield: Gower Publishing Company.

Mohammadi, D., Shirvaniyan, A., & Chabokrou, Gh. (2016). Investigating Economic Poverty of Nomads Settled Down In Fars Province and Determining Factors Influencing It. *Seasonal Journal of Village and Development*, 19(3), 101-119.

Niloofar, P., & Ganjali, M. (2008). Factors Influencing Poverty Using Bayesian Networks. *Seasonal Journal of Social Welfare*, 7(28), 107-128.

Oxley, J., Fildes, B., Ihsen, E., Charlton, J., & Day, R. (1997). Differences in traffic judgements between young and old adult pedestrians. Accident Analysis & Prevention, 29(6), 839-847.

Rank, M. R., & Hirschl, T. A. (1999). Estimating the Proportion of Americans Ever Experiencing Poverty During Their Elderly Years. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 54(4), S184-S193

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical Linear Models: Applications and Data Analysis Methods*, (Vol. 1), Sage.

Ren, Z., Ge, Y., Wang, J., Mao, J., & Zhang, Q. (2017). Understanding the inconsistent relationships between socioeconomic factors and poverty incidence across contiguous poverty-stricken regions in China: multilevel modelling. Spatial Statistics, 21, 406-420.

Ritakallio, V. M. (2002), Trends of Poverty and Income Inequality in Cross-National Comparison. *European Journal of Social Security*, 4(2), 151-177.

Smith, J. P. (1988). Poverty and the family. In G. D. Sandefur & M. Tienda (Eds.), Divided opportunities: Minorities, poverty, and social policy (pp. 141–172). New York: Plenum Press.

Smolensky, E., Plotnick, R., Evenhouse, E., & Reilly, S. (1994). Growth, inequality, and poverty: A cautionary note. Review of Income and Wealth, 40(2), 217-222.

Stiglitz, J. (2003). Globalization and the economic role of the state in the new millennium. Industrial and corporate change, 12(1), 3-26.

Tsai, P. L., & Huang, C. H. (2007). Openness, growth and poverty: The case of Taiwan. World Development, 35(11), 1858-1871.

United Nations, Department of Economic & United Nations, Department of Public Information, (2015). *Millennium Development Goals Report*, United Nations Publications.