Poverty and Risk tendency

(Case study: shoushtar province)

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Abstract

This study is aimed at evaluating the relationship between poverty and the risk tendency level in a rural society. Equally Likely Certainty Equivalent Method (ELCE) and Foster-Greer-Thorbecke Poverty Indices were used to determine the farmers` risk level and poverty level, respectively. Using a questionnaire, information was gained from 162 rural households of Shoushtar city in 2008. Results show that 58/45 percent of the farmers are poor and 41/55 percent are not. Results also indicates that the poverty`s characteristics such as ratio, gap, and severity have a significant relationship in both risk taker and risk averse groups, which ratio, gap, and severity of poverty ,compared with other groups, are more in the risk averse one.

Keywords: poverty; risk tendency; Shoushtar

Introduction

Poverty and income distribution are considered as the most important issues of development; Todaro[1] believed that eradicating poverty and inequality in the developing countries is the main and the first objective of the development policy .In this regard,1990s has been named the decade of poverty eradication by the UN. Economical and development cooperation organizations have considered a 50 percent reduction of poverty until 2015.for this reason, measures were considered by the UN social-economical committee in Asia and Oceania to reduce the poverty until 2010 [2].Like other developing countries, Iran always comes across with the poverty issue as an anti-development factor .Jaafari Sani and Bakhshodeh [3] believe that the widespread poverty in Iran is the reason for supporting the vulnerable and low- paid people. Conceivably, one of the most important measures to counter poverty in Iran is the establishment of the ministry of welfare and social security [4]. Also, in addition to the 5 year development plants, other special supportive measures such as providing educational and health requirements, power and communication, construction, and promotional services were designed and performed to eradicate the poverty [5] .Government ,based on the article 84 of the fourth program about securing the food and nutrition, must establish the supreme council of health and food security, allocate resources for paying foodstuff subsides, and prepare a program for food security and foodstuff garble reduction [2].By expanding the justice through developing free training and health ,paying attention to the rural development ,developing the social security system , and governmental contribution for reducing the poverty and social inequality, government`s strategies for eradicating the poverty and inequality were effective but these strategies performed in a way which caused resource destruction ,efficiency reduction ,and generational injustice [6].Many studies such as those of Khaledi and Pormeh [2]Najafi and Shoushtarian[7],and Trazkar and Zibaee [8] showed that the issue of poverty and income inequality of the rural sector is more critical than the urban one. Trazkar and Zibaee [8] believed that inattention to this matter may increase the gap between cities and villages, the villagers` immigration, and dependence to importation due to the agriculture products reduction. Scholars like Leli believe that if poverty increases in the rural societies, resources would be limited, suitable technology could no be used, and lands would be vulnerable leading to an unsustainable agriculture[9]. According to the more extensive dimensions of poverty in the country`s rural society, several studies pay a particular attention to this sector of the society. Rahimi and Mohammadi [10] evaluated the poverty branches and the welfare changes of the rural households In Iran. Results show that the percentage of the poor was reduced from 79/8 percent to 45/8 percent between 2000 and 2003.Moreover, results of estimating the factors affecting poverty show that a household can jump from under the poverty line to above the poverty line by increasing the age of the household supervisor, Men supervision, cash and noncash agriculture income, transferring the employment from all sectors to the agriculture sector, and educational levels, while the growth of households population will reduce their welfare. Najafi and Shoushtarian [7] determined the poverty line and factors affecting it in the urban and rural regions of Iran. Results of this study show that poverty of rural sector was more than the urban one. Khaledi and Pormeh [4]evaluated

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the poverty situation in the rural and urban region of Iran from 1996 to 2003.In this study, household`s food absolute poverty line was calculated based on the proper nutrition and the total household`s absolute poverty line was estimated using three different methods. Results, during the study period, showed that the amount of the absolute and relative poverty, proportional with cost enhancement, had an ascending course. Moreover, the relative poverty line`s rate of the rural regions is less than the urban ones but the absolute poverty of the rural regions is more. Khaledi et al [11] evaluated factors affecting the rural poverty from 1971 to 2003. Results showed that although investment in the agriculture sector has caused an economical growth, poverty has not been reduced in the rural societies. Poghe et al [12] evaluated the economical and social poverty determinants in the Kolaleh rural regions. Median of income method was used to calculate the poverty line. Results showed that about 16 percent of this village`s people are under the poverty line. In addition, there is a relationship between poverty and the social and economical characteristics such as sex, village distance to city, village population, accessibility to the agricultural inputs and educational tools, the rate of social communion, and professional factors. The nature of the agriculture sector as the most important income resource in the villages should be considered when the poverty issue in the rural society is evaluated and discussed. Being risky is one of the most important characteristics of the agricultural activities. This characteristic usually leads the farmers to carry out activities having a secure income. Farmers, in other words, prefer activities with a low and secure income than those with high and unsecured income. Mahmoodi and Samimifar [13] believe that this point of view of the villagers about the risk issue is one of the factors affecting the village and agriculture development process, which being afraid of the future ,more poverty ,and losing the minimum income has become one of the most important poverty fundamentals so many studies are carried out t7o evaluate the relationship between risk and poverty. Yusuf et al [14] studied the poverty of Ethiopia`s rural society. Factor affecting the villagers` risk tendency was evaluated in this study. Results showed that there is a positive and significant relationship between poverty degree and the villagers` risk avoidance behavior. Batter, in his book entitled "poverty, risk, and insurance", pointed out the relationship between risk and poverty in the rural societies. He introduced the risk as one of the factors affecting the rural poverty and believed that this relationship can be evaluated by both temporary and sustainable relations. Macoca[15], in his thesis, pointed out the relationship between risk and poverty in Malawi. Results showed that vulnerability to poverty, in this country, was highly correlated with risk. In Iran, as well, Shirvanian and Torkamani [16] evaluated the relationship between risk tendency and poverty in the rural regions of Fars province. Results showed the dissimilarity of poverty features among villagers with different risk tendencies. This study is also aimed at evaluating the relationships between the villagers risk tendencies and poverty in the rural society of Khuzestan province. Shuoshtar`s rural regions are the statistical societies of this study.

Methods

FGT[1] was used to evaluate the different aspects of poverty. This index can be illustrated as follow:

$$= (\ ) = -\prod \quad \langle \longrightarrow \rangle \qquad (1)$$

Where n is the total number of households (case of study), q is the poor households. z is poverty line, and   is the ith household's income. α is a parameter, by changing it, different aspects of the poverty may possibly be explained. Considering α equal to zero, the above equation will be:

$$= (\quad =$$

This equation, named the Headcount Ratio, indicates the ratio of poor people to all society and is the easiest method for measuring the poverty. This index`s most important problem is that this index cannot illustrate the changes of income distribution occurred under the poverty line .In other words, if there are policies causing income transfer from the rich to the poor or vice versa under the poverty line, this index cannot be a suitable explainer of these policies` effectiveness .If, in equation 1, α parameter is equal to 1, then it can be rewritten as follow:

$$= (\quad =$$

This index is named Poverty Gap Ratio. Depth of the poverty, unlike the previous index, is illustrated by this index. The problem of this index is that it is sensitive to the number or percent of the under poverty line people. Like the previous index, it cannot explain the income redistribution. A third index called the Severity of Poverty is used to consider the income redistribution. To attain this index, α parameter, in equation 1, should be 2.considering this amount for α parameter, more sensitivity is given to the poverty. In other words, the income distribution issue and transferring it to the different groups of the society become important when this parameter`s amount is more than 1 [١٧]

$$= (\ ) =$$

Orshansky`s method is used to calculate the poverty line in this study:

$$= \quad \times$$

Where Z is the total percapita`s poverty line, A is the percapita food poverty, B is the total cost (food and nonfood), and C is the average cost of the food. Consumption of 2300 calories,

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[1] Foster-Greer-Thorbecke Poverty Indices

according to Bani Asadi and Zare Mehrjerdi [۱۸] are considered to attain the per capita poverty line; 90 percent of the calories are provided by corn and 10 percent by protein, fat, and carbohydrates. This quantity of calorie is gained through daily consumption of 402/5 g wheat, 172/5 g rice, and 72 g red meat (lamb). Poverty line is calculated based on the average price of these products, but another index, which needs to be calculated in this study, is the villagers risk tendency. In literature, various methods such as mathematical planning patterns, interview extract modules like Von Neuman- Morgenstern method, ELCE, Ramsey method, and equally likely bur risky outcome method (ELRO), and /or using econometric patterns are introduced to assess these tendencies. Because ELCE method is an easier method and needs less information, it is used to evaluate the farmers` risk tendency in this study. In addition, no prejudgment is done about the process of farmers` risk tendency in this method [۱۹].giving a similar answer, both equally likely certainty equivalent with a purely hypothetical risky prospect (ELCE-PH) and equally likely certainty equivalent with a purely hypothetical but realistic risky prospect (ELCE-R) techniques can be used in this method [۲۰].the first technique is used in this study. In this method, persons are asked to suggest a secure   income indifferent between the insecure and secure (two equivalent amounts or probabilities) incomes .if this safe income is more ,less ,or equal to the expected value of risky incomes ,the person will be risk taker, risk averse , risk neutral ,respectively. Information and statistics of this study were collected by investigation from Shoushtar city`s villages in 2009. Based on the country capitation in 1385, Shoushtar is divided into Central and Shadravan sectors. Shadravan sector with 56 villages was selected for this study. First, To collect information , the rural regions of this sector, based on the accessibility to health center, bank, schools(number and quality),road, phone ,and other welfare services, were divided into three suitable ,average ,and weak welfare levels. Then, by the proportionate relation method, 41, 53, and 68 samples were studied in each level, respectively.

Results

total percapita`s poverty line was calculated according to the foodstuff price, households` costs, and the minimum calorie of 2300 for each person. Based on the foodstuff price in the study region, food per capita`s poverty line is 1/263/950 Rials per day, 46/134/180 Rials per year. Also, the average of total cost and the mean food cost are 19/200/000 and 5/800/000 Rials, respectively so the average poverty line for each person is 15/272/000 Rials .the average number of household members is 5 so, showing a mean of 63/633/350 Rials per month, the poverty line for this number of members will be 76/360/020 Rials. The status of the villagers` risk tendency is evaluated in Table 1.Data of this table show that 31 persons, 19 percent of the villagers, are risk takers, while 75 ones, 46 percent, are risk avoiders; so it is confirmed that the studied rural society is risk avoider which is a feature of the rural society of Iran. When we evaluate the issues related to the rural development, risky agricultural activities, because the villagers are risk avoiders, are considered as the most important income resource for them. In addition, most villagers prefer a low expected income but with high security, which indicate the reduction of the villagers` expected incomes and it is a barrier for the rural development.

Table 1.The status of the villagers` risk tendency

Percent of frequency	Number of persons	Reaction to risk
19	31	Risk taker
46	75	Risk averse
35	56	Risk neutral
100	162	sum

Resource: study finding

In table 2, the status of the poverty capitation proportion index is illustrated for the case study. Data indicate that about 57 percent of the society is poor and 43 percent is not. In other words, more than half of the case study is under the poverty line.

Table 2.poverty capitation proportion index of Shoushtar`s villagers

Percent of frequency	Number of persons	Poverty index
57	93	Under poverty line
43	59	Above the poverty line
100	162	sum

Resource: study findings

Separating the poor and rich groups, in table 3, the status of risk tendency is evaluated .It is seen that risk avoiders and risk lovers are mostly in the poor and rich villagers` groups, respectively.

Risk tendency of the poor and rich villagers

Poor villagers		Rich villagers		Risk tendency
Percent of frequency	number	Percent of frequency	number	
25	23	39	27	Risk taker
44	41	28	19	Risk averse
31	29	33	23	Risk neutral
100	93	100	69	sum

Resource: study findings

In the above table, the risk averse group is belonged to the poor villagers group including 41 persons (44 percent) of the studied population, while about 39 percent are the risk takers of the rich villagers group. This information indicates that most of the poor villagers are risk averse .It can be justified that, in order to get the minimum income for livelihood, poor villagers usually do not do risky activities. In other words, they prefer to do activities with low income but without risk than those of high risk. It can be said that risk avoidance is a way poor farmers select to keep their minimum livelihood level secure. Spearman correlation coefficient was used to evaluate the

difference`s statistical significance between these two groups. The resulted amount of this coefficient was 0/52 and was significant at a 1 percent level. This amount shows that the difference between risk tendency in the poor and rich groups, at a 1 percent level, is statistically significant. Poverty Gap Ratio for persons with different risk tendencies is illustrated in table 4.

Table 4:Poverty Gap Ratio status and income differences to get released of poverty for risk different levels

income differences to get released of poverty(Rials per month)	Poverty Gap Ratio	Risk tendency
611500	0.23	Risk taker
1382700	0.43	Risk averse
1645380	0.47	Risk neutral
1273884	0.39	sum

Resource: study findings

It is seen that, in the above table, the minimum and maximum poverty gaps are related to the risk lover and risk avoider groups, respectively. In other words, the poverty gap rate will be reduced in the rural society if the villagers' tendency changes from risk avoidance tendency to a risk - loving one. Generally, risk averse villagers desire to spend a part of their income to counter the risk. In the above table, it is also seen that a household`s income differences having a mean population with the poverty line of the risk averse, risk taker, and risk neutral groups are 1/645/380,1/382/700,and 611/500 Rials ,respectively. These numbers indicate that the income difference of the poor risk averse villagers is more than the poverty line, so more supports are necessary to improve this group than both risk neutral and risk taker groups. The relationship of this ratio and risk tendencies, like the previous ratio, was evaluated by the Spearman test and, being statistically significant at a 1 percent level, this coefficient was 0/54.Severity of poverty ratio of the 93 studied poor samples is illustrated in table 5.

Table 5:The status of Severity of poverty ratio and poverty escaping ratio for different risk levels

Poverty escaping ratio	Poverty gap ratio	Risk tendency
0.0000031	0.12	Risk taker
0.0000036	0.18	Risk averse
0.0000058	0.28	Risk neutral
0.0000041	0.20	sum

Resource: study findings

This scale, actually, illustrate the poor`s suffer rate of poverty. In the above table, like the previous ratio, the severity of poverty rate is more for the risk averse groups than the other two groups, means that risk averse villagers, more than the other two groups, suffer from poverty.

For this ratio, Spearman correlation coefficient shows the number of 0/61 which is significant at a 1 percent level, means that there is a positive relationship between the risk avoidance degree and the growth of suffer from poverty in the rural sample. In the last column of the table, it is illustrated that the poverty escaping rate in the risk averse group is more than the other two groups. In general, compared with the other two groups, the risk averse villager group is more sensitive to the income distribution, means that any kind of policy making in order to change the income distribution will mostly affect the risk averse group.

Discussion and suggestions

The most important result of this study is that there is a significant relationship between the villagers risk tendencies and poverty features of the sample, means that the poor groups features, based on their reactions to the risk, is different. Yusuf et al [۱۴] and Shirvanian and Torkamani [۱۶] confirmed this matter. Thus, the issue of the villagers` risk tendency should be considered in any kind of policy making to counter the poverty of rural society .Results show that the poor villagers are more than a half of the studied sample .In other words 0.57 percent of the sample is under the poverty line ,so executing different programs in order to reduce the rural poverty as one of the main rural development tool is suggested. Khaledi and Pormeh [۴]Najafi and Shoushtarian [۷] ,Tarazkar an Zibaee [۸] have pointed out the efforts to reduce the rural poverty in their studies. Results show that the risk avoidance degree is more among the poor villagers than the rich ones. Results of studies, like Macoca[۱۵], show that the villagers` risk tendency`s type have many effects on their characteristics. This illustrates the necessity of making policies such as insurance in order to reduce the risk avoidance degree especially among the rural poor groups.

Evaluating the poverty gap and severity ratios, they, statistically, have a significant difference among the risk averse farmers and the risk taker groups. Superiority of these ratios among the risk averse poor groups indicates that not only this group needs more contributions, but its impressibility of the related policies is more than the other two groups; the same result was achieved by Shirvanian and Torkamani [16] in Fars province. Based on the results, the type of the rural society`s risk tendencies can cover the different aspects of the poverty issue in the villages, so making any kind of policies and plans in the rural society in order to counter the poverty is suggested.

Resources

1. Todaro, M (1998), economical development in the 3rd world, translated by Gholam Ali Farjadi. Supreme institute of research of planning and development
2. Khodad Kashi,F ,Hydari .Kh (2009).measuring the poverty ratios based on the nutrition performance of the Iranian households. Bulletin of economy,9th year,3rd volume.pp 205-231.

3. Jafari sani,M & Bakhshodeh,M (2008).Survey of poverty local distribution and food insecurity in Iranian rural and urban family with province detection. Journal of agriculture economy and development .61th voulume.pp 103-123

4. Khaledi, K and Pormeh,J (2005).evaluating the poverty status in the rural and urban regions of Iran(1375-1382),Journal of agriculture economy and development .49th voulume.pp 57-81.

5. Raghfar ,H ,Ebrahimi ,Z (2007) .poverty in Iran from 1368 to 1383. Science and research journal of social welfare, 6th year, 24th volume .pp 55-82

6. Hadi Zenoz ,B (2005).poverty and income inequality in Iran. Journal of economical researches of Iran.9th year.33rd volume.pp 21-195.

7. Najafi ,B ,Shoushtarian ,A(2007).estimating the poverty line and poverty size and evaluating its determinants in the rural and urban households of Iran. Journal of agriculture economy and development,15th year,59th volume.pp 1-24.

8. Tarazkar M. H ,Zibaee M (2004) .evaluating the scales of social welfare ,income distribution ,and povertyin the rural and urban regions.casestudy of Fars ,Isfahan ,ans Semnan provinces, journal of agriculture economy and development.12th year.48th volume.pp 137-164.

9. Lele,S. (1991).Sustainable development: A critical review. World development. 19(6),607-621

10. Rahimi ,M ,Mohammadi ,H (2007) ratios of poverty and welfare changes of the rural households, Science and research journal of social welfare, 6th year, 24th volume. pp 105-123

11. Khaledi, K ,Yazdani ,S ,HaghighatNejad Shirazi ,A(2008).studying the rural poverty of Iran and determining the effective factors on it with an emphasis on the investment in the agriculture sector. journal of economical researches of Iran,10th year,35th volume,pp 205-228.

12. Paghe,Noor M ,Azkia,M ,Rezvanfar,A(2001).social and economical determinants in the Kolaleh rural regions. Journal of agriculture economy, 9th year, 24th volume:pp 257-280.

13. Mahmoodi ,V ,Samimifar ,S.GH (2005).capability poverty. Journal of social welfare .31st volume.pp 4-9.

14. Yesuf,M and Randall A. Bluffstone(2009). Poverty, Risk Aversion, and Path Dependence in Low-Income Countries: Experimental Evidence from Ethiopia. American Journal of Agricultural Economics.Vol. 91, No. 4 ,pp. 1022-1037.

15. Makoka,D (2007).Risk management and vulnerability to poverty at household level in Malawi.University of Bonn, Center foe development research, Germany

16. Shirvanian ,A ,Torkamani J (2010) .poverty and risk tendency in the rural regions of Fars province, Journal of agriculture economy. Volume 4.2.pp 83-105

17. Zheng,B.(2000).Minimum Distribution-Sensitivity, Poverty Aversion and Poverty Orderings. Journal of economic Theory, 95:116-137.

18. Bani Asadi ,M .Zarea Mehrjerdi ,M (2010).evaluating the effect of optimum culture model on the rural poverty in the Arzoeye sector of Baft –Kerman. Journal of the agriculture economy, 4th volume.2:pp 183-209.

19. Torkamani,j,(1996).decision making in the uncertainty situations, articles of the first agriculture economy conference of Iran,1st volume, Sistan and Baluchistan university,Zabol agriculture faculty: pp152-166

20. Torkamani,J.and Abdolahi,M.(2001)Empirical comparison of direct techniques for measuring attitude toward risk. Journal of Agricultural Science and Technology, 3:163-170.