Asian Economic and Financial Review

journal homepage: http://www.aessweb.com/journals/5002

ESTIMATE OF POVERTY LINE AND ANALYZE OF POVERTY INDICES IN IRAN (1982-2007)

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ABSTRACT

The purpose of this paper is to answer this question that if poverty status regarding various indices follow similar trends during the war between Iran and Iraq and developmental plans for urban and rural areas in Iran in 1982-2007 period. Using the Granger Causality test and correlation analysis, the inter-relation of indices and correlations among areas is examined. Results indicate that while the monthly poverty line in urban areas from 1982 to 2007 increased 80 times, monthly poverty line in rural areas increased from 1982 to 2007 increased 77 times. Granger causality test shows that rural poverty type did not affect other types of poverty; but some kinds of poverty indices in urban areas are very effective on each other. Finally, it reveals that the politics impacts on indices are different in various regions.

Keywords: Poverty line, Linear expenditure system, Poverty indices, Correlation analysis, Granger causality, Iran.

JEL Classification: I32, C87, C22.

Contribution/ Originality

This study is one of very few studies which have computed and compared all available indices related to poverty in Iran. Furthermore, this study contributes to the existing literature with examining the correlations between all estimated poverty indices. The Granger causality of similar indices between rural and urban areas is also computed.

1. INTRODUCTION

Poverty is one of the oldest forms of social pathology in all areas. Since last decades of the twentieth century, eradicating poverty and supporting deprived people were at the core of UN plans. In Iran, although the efforts to protect and provide social security of poor and vulnerable

people have at least 40 years history, the achievements of development plans in Iran in terms of reducing poverty and income vulnerability is not remarkable. To measure poverty status and identify the number of poor and non-poor people, the poverty threshold or boundary as "Poverty Line" is necessary. However, the main issue is the fact that how to recognize the poor people. Here, the criterion is called Relative Poverty (RP) Line that is defined as the amount of revenue (or cost) which is required to provide the least subsistence with regard to cultural, social and economical background of the community.

It seems that, an estimating method using monetary value or cost of consumer goods and services (due to the capability of gathering it) through a system of Linear Expenditure System (LES) is the best way to calculate the relative poverty line. This method, based on the theory of consumer behavior and demand analysis for major groups of goods, estimates the poverty line using existing data. LES is a demand equation system that can provide demand theory restrictions through a defined utility function. Although there are various definitions for poverty, but (Ston, 1954), experimentally put LES as base for studying demand equations system, using utility function of the Klein and Rubin for the first time. Afterward, ignoring assumption of stability of minimum consumption over time, Pollak and Walles (1969), presented various models of spending system patterns with consumer habits, in which the minimum consuming expenditures (least subsistence) presents as a random variable in this model. In addition, Luch (1973) provided public linear expenditure system and presented Extended Linear Expenditure System (ELES) using CES, in which utility function of the Klein and Rubin is a specific type of this system.

Berges and Casellas (2002) conducted a research on a demand system analysis for food in Argentina's poor and non-poor households. A complete system of demand equations, the Linear Expenditure System (LES), has been used due to its relative empirical advisability. It includes the money value, the quantities and types of food purchased by the households over a period of one-week (March 96-April 97). The results showed that the estimated parameter change at different levels of income. Lower-income families choose to consume relatively more meat, chicken and bread. The marginal budget shares differ significantly between both groups. Poor households expend more of their supernumerary income on meat, bread and vegetables than non-poor households. Skoufias (2003) investigate the price and income effect on food and calorie demand. Using SUSENAS data of 1996 and 1999, main purpose of this study is examined the change of consumer behavior of consumption after the economic crisis. Nonparametric methods was applied to observe the differences in elasticity estimates of poor and non-poor households. The empirical findings revealed that the income elasticity of calorie demand is mildly higher in 1999 (post economic crisis period) compared to 1996 (pre-crisis period). This result indicates the calorie-income elasticity is not sensitive to price changes even when the price is very volatile in the crisis time. The households smooth their consumption in the time of crisis, as shown in this study, through the increase of cereals calorie-income elasticity while the calorie-income elasticity for other food decreased. Widodo (2006) estimated household demand function and welfare measurement using the Linear Expenditure System (LES) in the case of Japan and Indonesia. These

studies obtain some conclusions. First, for food consumptions, Indonesian households have maximum marginal budget shares on meat and the minimum marginal budget shares on fruits. Meanwhile, Japanese households have their maximum marginal budget shares on fish and shellfish, and their maximum budget shares on dairy products and eggs. Second, Indonesian households have a smaller gap between minimum food consumption (subsistence level) and average food consumption than Japanese households have. Third, with the same level of prices increase on foods, the simulation shows that in nominal exchange (Yen) Japanese households get greater welfare decrease than Indonesian households. However, in the percentage of total expenditure, Indonesian households get greater welfare decrease than Japanese households. Pangaribowo and Tsegai (2011) analyzed the demand responses of Indonesian households to food prices, income changes and other socioeconomic factors. They use the Indonesian Family Life Survey data and employed an extended form of the Quadratic Almost Ideal Demand System model which includes demographic and regional factors. The results revealed that the well-known pattern that food demand behavior varies significantly between urban and rural households similar to income groups. The poorest households consume relatively more staple food as well as alcohol and tobacco goods, while the richest households consume relatively more meat, snack and dried food. It is shown the poorest households expenditure elasticity of alcohol and tobacco is high, implying that the poorest households transfer their extra resources on alcohol and tobacco instead of other nutritious food items. Results also showed that price and expenditure elasticity have different value across time (1997-2007). Price elasticity increased for most food items implying that people become much responsive to the changes in food prices. Otherwise, the expenditure elasticity is low for most food items (except for 'alcohol and tobacco goods').

Thus, we are trying to estimate the poverty line using the Seemingly Unrelated Regression (SUR) and Linear Expenditure System for the period of 1982-2007 in this paper. Then we will concentrate on the results differences in urban and rural areas of Iran**,** calculated by various poverty estimation tools**,** followed by reviewing the relationships between indices using Granger Causality Analysis. Employing correlation analysis, the effects and the interdependence of the poverty indices in urban and rural areas are also examined.

1.1. Linear Expenditure System (LES)

The Klein-Rubin utility function (1947) is shown as follows:

$$(1) \qquad U_t = \prod_{i=1}^{n} (q_{it} - \gamma_{it})^{\alpha_i} \qquad \alpha_{\mathrm{it}} > 0$$

Where, q_{it} is the amount of i good consumption in the period of t, γ_{it} is the minimum consumption expenditure of each commodity group. If this function considered as a linear combination and by applying logarithm (Ston-Geary utility function), then we will have:

$$(2) \qquad U_t^* = \sum_{i=1}^{n} \beta_i \log(q_{it} - \gamma_{it}) \qquad Therefore, \beta_i = (\alpha_i / \sum_{i=1}^{n} \alpha_i), thus \sum_{i=1}^{n} \beta_i = 1$$

Now, if the minimum consumption expenditure on each commodity group in any period is considered as a random variable, the consumers' utility function will be the maximum, regarding to budget constraints, so the equation will be as:

$$L = \sum_{i=1}^{n} \beta_i \log[q_{it} - \gamma_i] + \lambda(I - \sum_{i=1}^{n} q_{it} p_{it}) \quad (3)$$

Where i is consumer income**,** if we maximize utility function, thus the demand function is:

$$E_{it} = p_{it} q_{it} = p_{it}\gamma_{it} + \beta_i (I - \sum_{i=1}^{n} \gamma_{it} p_{it}) \quad (4)$$

With this condition, $\sum_{i=1}^{n} \beta_i = 1$ the consumed spending equations are linear with cost and income variables and are nonlinear with parameters. However, based on definition, the relative poverty line is the expenditures one spends on subsistence level of each commodity group. (Ston, 1954):

$$Z_t = \sum_{i=1}^{n} \gamma_{it} p_{it} \,. \quad (5)$$

2. POVERTY INDICES

2.1. Head-Count Ratio Index

To calculate this index, the number of the poor divides into total population.

$$H = \frac{q}{n} \qquad 0 < H < 1 \quad (6)$$

Where, q is population of poor people and n is the total population of country. The amount of this index varies from zero (no poor people in the society) to one (all society people in the society are poor). The most important problem with Head-Count Ratio index is that it is insensitive to transferring income among the poor and even between the poor and others. Further, it is not sensible to the reduction of the poor income.

2.2. Income-Gap Ratio Index (Poverty Gap)

This index is the average income gap of the poor to the poverty line:

$$I = \frac{1}{q} \sum_{i=1}^{q} (z - y_i) / Z = (z - \bar{y}_p) / z = 1 - \frac{\bar{y}_p}{z} \quad (7)$$

Where i indicate Income-Gap Ratio, $\bar{y}_p = \frac{1}{q} \sum_{i=1}^{q} y_i$ is the average income of the poor, z shows the poverty line, and $z\text{-}y_i$ reflects the poverty gap. Unlike Income-Gap Ratio, this index is sensitive to transfer of income from one to another. It must be noted that the poverty gap would be zero for the poor (Sen Amartya, 1973).

2.3. Sen Poverty Index

The Sen Poverty index, which is based on ordinal welfare of people, indicates that if Gini coefficient of poor people income $(y_1, y_2, ..., y_q)$ is shown as:

$$G = 1 + \frac{1}{q} - \frac{1}{q^2 y_p}\left(y_1 + 2y_2 + 3y_3 + ...qy_q\right) \quad (8)$$

In addition, if q is high enough, then:

$$P = H[I + (1 - I)G] \quad (9)$$

Where H shows Head-Count Ratio index, I is Income-Gap Ratio Index and G is Gini coefficient of poor people. The amount of this index varies between zero (indicate no one is poor) and one (all or the people are poor) (Sen Amartya, 1973).

2.4. Poverty Index of Foster, Greer and Thorbeack (FGT)

Foster, Greer and Thorbeack believed that a good poverty index should be experimental, so they introduced a new poverty index. This index is based on the assumption that the poverty rate could be an aggregation of various population subgroups poverty rates. Thus, one can compute a unit rate of poverty of whole population. Therefore, they introduced the index as follows:

$$FGT = \frac{1}{nz^2}\sum_{i=1}^{q} g_i^2 \quad (10)$$

This index is based on difference between poor individual (household) income and the poverty line. Further, those who have the most distance to poverty line have the greatest weight in this index. Therefore this index concentrates on the poorest people conditions. In other words, this index calculates the poverty gap and thus, the lower rate reflects a lower poverty gap (Foster *et al.*, 1984).

2.5. Sen, Shorrocks and Thon (SST) Index

Shorrocks used SST index in 1995. The SST index is shown as:

$$SST = \frac{1}{n^2}\sum_{i=1}^{n}(2n - 2i + 1)\frac{g_i}{z} \quad (11)$$

Where, n is the population, g is the poverty gap and z reflects poverty line. Shorrocks then developed the index as follows:

$$SST = HI(1 + G_s) \quad (12)$$

In this index, H: Head-Count Ratio index, I: the Income Gap Index, $G_s = 1 - \frac{1}{n^2 HI}\sum_{i=1}^{n}(2n - 2i + 1)\frac{g_i}{z}$ Gini coefficient of gap between the poor. Note that the index value in the worst condition is two and in the best value is zero (Xu and Osberg, 2001).

3. METHODOLOGY

Data used in this research are:

- Expenditure and income of urban and rural households in the period of 1982-2007 are crude and in current Iranian Rials (IRR);
- Consumer Price Index is used for eight groups of goods and services during 1982-2007 as constant prices in 1997;
- The number of sampled households is based on income groups for the period of 1982-2007;
- The average income in IRR for the period of 1982-2007; (Statistical Center of Iran, 1982-2008).

However, in this paper, eight goods and services integrated into four groups as:

Food=Food and Tobacco, Social affairs=Clothing, Health, Education and Entertainment, Housing= Housing and Services, Other=other goods and services and transportation

Further, as others, social affairs and housing groups include several other groups, we have used weighted average of indices. For this reason, the share of each group in entire group is computed at first then the weighted average of index is calculated; i.e. to calculate other index, have used the following formula:

(13)

$$E_{other} = \sum_{i=1}^{2} E_i \Rightarrow w_i = \frac{E_i}{E_{other}} \Rightarrow p_{other} = \sum_{i=1}^{2} w_i p_i$$

Where, i indicate other group and transportation sector in miscellaneous group, E, P and W are expenditures indexes and the share of spending in a group respectively.

4. ESTIMATING SUBSISTENCE AMOUNT USING LES

- A) **Estimating β_i :** For calculating the share of commodity groups from income, the Engel coefficient, i.e. $E_i = f(I)$, is used in the system. In this approach, $n-1$ equation is estimated and the share of the last group is approximated through $1-\sum_{i=1}^{n-1}\beta_i$. Engel coefficient equation could be either linear or logarithmic. However, in this research the linear model used to estimate. Thus, the Engel coefficient for three groups of Food, Social affairs and others was estimated and the Engel coefficient for housing is computable by deducting the sum of other groups from one. The estimated results using $E_i = \alpha_i + \beta_i I$ are shown in table 1. The figures are estimated through Ordinary Least Squares and we have used AR variable to remove any probable autocorrelation in our models.

Table-1. Results of commodity group shares in urban and rural areas

Commodity Group	Food	Social affaires	Housing	Other
Urban	0.21	0.18	0.36	0.25
(t-ratio)	(5.88)	(111.5)	(51.7)	(18.7)
Rural	0.31	0.2	0.26	0.23
(t-ratio)	(2.75)	(53.9)	(26.5)	(18.18)

B) Estimating γ_i : To estimate γ_i , having groups' share of income, we have employed Stone-Gary utility function based on linear expenditures systems. To estimate equations for commodity groups for the period of 1982-2007, we have employed Seemingly Unrelated Regressions. In the case of autocorrelation, AR variable is used.

Table-2. Subsistence amount of commodity groups in urban and rural areas (IRR)

commodity group	Food	Social affaires	Housing	Other
Urban	40268	17577	38716	26236
Rural	39113	14832	15744	9891

As shown in table 2, the food group has a very high share in subsistence of urban and rural areas.

5. POVERTY LINE ESTIMATION

Using estimated subsistence of commodity groups, we have calculated the commodity poverty line and total poverty line for both groups, based on $\gamma_{it} p_{it}$ and $Z_t = \sum_{i=1}^{n} \gamma_{it} p_{it}$ equations respectively. Calculating poverty line based on commodity groups has the advantage that it shows the minimum income necessary for a family to provide a group of commodity. Furthermore, this approach enables us to conclude absolute poverty from poverty line of food group. In other words, the minimum income to provide food group is an index for poverty line. To summarize the results, we have shown only the commodity poverty line of food groups in table 3. Monthly poverty line is obtained via dividing into 12 annual poverty lines.

Table-3. Commodity poverty line of food group and annual and monthly total poverty line for urban and rural areas as current IRR

	Urban			Rural		
Year	Food group (monthly)	Poverty line	Monthly poverty line	Food group (monthly)	Poverty line	Monthly poverty line
1982	16778	460911	53409	16297	392474	32714
1983	19463	738547	61546	18905	457295	38108
1984	21476	815015	67918	20860	508500	42375
1985	22818	868657	72388	22164	534303	44525
1986	29194	1086333	90528	28357	664784	55399
1987	38590	1444843	120404	37484	878549	73212
1988	50334	1863956	155330	48892	1164501	97042
1989	59394	2200573	183381	57692	1392986	116082
1990	64763	2433764	202814	62907	1550906	129242
1991	76508	2896394	241366	74315	1819069	151589

Continue

1992	93622	3245378	295448	90938	2190051	182504
1993	114762	4353252	362771	111473	2686496	223791
1994	162076	6000791	500066	157431	3724594	31038
1995	255698	8848379	737365	248369	5676623	473052
1996	298985	10949145	912429	290416	6948629	579052
1997	335561	12917223	1076435	325943	7957908	663159
1998	391600	14864011	1238668	380376	9144077	762006
1999	470792	17296594	1441383	457299	10916599	909717
2000	513409	19343022	1611919	498693	12194527	1016211
2001	542938	21627594	1802300	527376	13382887	1115241
2002	616761	25073749	2089479	599084	15175651	1264638
2003	694947	29113200	2426100	675029	17364544	1447045
2004	781522	34135436	2844620	759122	19872384	1656032
2005	858365	38378521	3198210	833763	22179570	1448298
2006	962054	43413792	3617816	934480	25299305	2108275
2007	1175135	51060112	4255009	1141454	29907242	2492270

As seen in the above table, all poverty line indices during the study period have increasing trend. This may be due to inflation rate and increasing trend of price index during the study period.

As results show, the monthly income of an urban family should have been increased from 53,000 Rls in 1982 to 4,250,000 Rls in 2007 (79 times greater) if they want to keep the same urban living standard. Further, if an urban household just wants to survive, its income should have been increased from 16,000 Rls in 1982 to 1,170,000 Rls in 2007.

However, for a rural family, monthly income in 2007 was 76 times greater than 1982; i.e. from 32,000 Rls in 1982 to 2,490,000 Rls in 2007, to keep the same rural living standard. Further, a household minimum income necessary to survive should have been increased from 16,000 Rls in 1982 to 1,140,000 Rls in 2007, the amounts similar to those in urban areas.

6. CALCULATING POVERTY INDICES

In this section, described indices such as Head-Count poverty (H), Income Gap (I), Sen Index (P), FGT index and SST index are calculated. To compute Sen Index, however, we need to estimate the Gini coefficient of the poor (G) and to calculate SST index, we need to estimate the Gini coefficient of poverty gap (G_s).

Table-4. Poverty indices in urban areas (percent)

Year	(SST)	(Gs)	(FGT)	(P)	(G)	(I)	(H)
1982	25	94	17	19	39	43	30
1983	31	92	23	22	35	51	32
1984	32	96	25	25	27	33	50
1985	37	95	35	27	25	38	50
1986	37	97	31	29	25	31	61
1987	46	93	37	30	25	48	49
1988	62	94	65	39	19	44	72
1989	73	95	30	52	42	53	71
1990	65	98	13	62	53	37	88

Continue

1991	62	96	23	46	41	46	68
1992	59	96	28	46	41	43	70
1993	52	96	26	37	34	46	58
1994	53	96	35	40	29	38	71
1995	74	97	22	58	41	43	88
1996	57	97	27	43	32	39	74
1997	53	98	10	44	49	44	61
1998	46	98	13	41	39	35	67
1999	50	97	12	39	43	44	57
2000	45	98	12	39	45	39	58
2001	40	96	14	32	44	44	47
2002	37	96	17	30	38	40	48
2003	31	96	21	26	32	34	47
2004	29	95	16	22	39	44	34
2005	35	98	16	31	31	29	61
2006	45	97	18	35	32	38	61
2007	56	96	22	39	32	47	61

Table-5. Poverty indices in rural areas (Percent)

Year	(SST)	(Gs)	(FGT)	(P)	(G)	(I)	(H)
1982	48	76	10	5	49	51	6
1983	47	94	15	22	44	50	30
1984	55	96	15	35	43	49	50
1985	60	96	15	35	43	50	49
1986	65	96	19	40	42	51	55
1987	68	96	24	43	32	45	68
1988	69	96	31	45	30	46	72
1989	66	95	36	44	28	53	66
1990	72	98	12	55	48	45	78
1991	60	97	14	49	44	49	68
1992	59	98	16	55	45	46	79
1993	70	97	14	44	47	51	60
1994	61	97	20	45	40	43	69
1995	54	95	30	47	36	54	66
1996	53	95	35	41	30	49	64
1997	55	96	17	41	44	48	58
1998	52	96	21	39	37	44	61
1999	45	98	8	48	55	43	65
2000	41	97	10	42	52	47	56
2001	21	97	11	35	49	48	48
2002	33	97	16	33	38	41	52
2003	14	97	13	21	36	29	38
2004	42	96	13	28	43	40	42
2005	58	97	6	15	49	29	24
2006	48	97	17	34	32	35	61
2007	47	97	22	45	34	39	76

7. REVIEW AND ANALYSIS OF POVERTY INDICES DURING THE FIVE YEAR DEVELOPMENT PLANS

7.1. Head-Count Index

Results show that Head-Count Index in urban and rural areas has a constant increase during Iraq-Iran war period (1980-1988). During first year of first development plan, the percentage of

poor increased in both urban and rural areas but economic growth in 1990 led to a positive impact on poverty reduction. In early years of Second Development Plan, while Iran was experiencing the highest inflations rate, amount of poor people in urban and rural areas were at the highest level, though it was higher in urban areas. This may be due the fact that inflation has had more effect on urban areas. However, the country experienced the lowest level of poor people during the Third Development Plan, with the beginning of the Fourth Development Plan; the poverty status experienced a reverse trend in the amount of poor people in both urban and rural areas, while many government policies concentrated on poverty reduction and improvement in income distribution.

7.2. Income Gap Index

Results in tables 4 and 5 show that, while income gap has declined in urban areas during the war it was almost constant in rural areas. This means that poor people had experienced a better condition during the war period. During the First, Second and Third Development Plan, this index was almost fixed for both urban and rural areas, though it was lower in urban areas compared with rural areas. This trend, however, reversed in the final years of the Third Development Plan and during the Fourth; i.e. the income gap began to increase in both urban and rural areas, though lower in rural areas.

7.3. Sen Index

As mentioned, Sen Index is similar to both previous indices, but it involves the Gini Coefficient of poor people in the formula. Reviewing the results, Sen Index show that poverty was increasing in urban areas but decreasing in rural areas during the war period. In general, the results from Sen Index are similar to Head-Count Index during the four development plans. However, in 1992 and 1999 the poverty index show reductions in urban areas but increase in rural areas.

7.4. FGT Index

Results of this index show deterioration in poverty situation in both rural and urban areas during the war period. The poverty index was at the highest level in the final years of the war. However, the condition of the poorest people in rural areas were better than the condition of the poorest people in urban areas. While experiencing the highest economic growth at the beginning of First Development Plan in 1990, the poorest condition improved dramatically. In 1994, the index was at the maximum level of the Second Development Plan. This index, however, show a stable condition during the Third and Forth Development Plan.

7.5. SST Index

Results of this index represent poverty intensity similar to those of Sen results during the war period. In other words, the poverty intensity has had an increasing slope in urban areas but decreasing in rural areas. This index, however, experienced results relatively similar to Sen index during the years after the end of war with two highest levels in 1990 and 1995.

8. ESTIMATING GRANGER CAUSALITY BETWEEN POVERTY INDICES

In this section, we have examined the probable causal relationship among all estimated poverty indices in this research. For this reason, the Granger Causality Test was employed using Vector Auto Regressions (VAR) in ten two-sided equations (twenty equations) for each region. No causality were shown between indices of poverty in rural areas. Results show that the poverty indices in rural areas are independent. However, there were causality relationships among some of the poverty indices in urban areas. we have presented only the indices that showed causal relationship in table 6 in brief.

Table-6. Granger no-causality of poverty indices (urban)

Null hypothesis	F-Statistic	Prob	Null hypothesis	F-Statistic	Prob
I: granger no-causality of H	5.86	0.010	H: granger no-causality of I	3.5	0.05
SST: granger no-causality of P	8.25	0.001	SST: granger no-causality of H	5.3	0.015
FGT: granger no-causality of H	5.15	0.016	SST: granger no-causality of I	3.5	0.05
FGT: granger no-causality of P	6.3	0.007	FGT: granger no-causality of SST	3.8	0.04

The results show that all null hypotheses were rejected, so the causality relationship exists. This means that when the income gap increases the percentage of poor people has also increased**,** and vice versa. In addition, the intensity of poverty is affected by income gap, Head-Count and Sen Index. In fact, with an increase in percentage of poor people and income gap or a decrease in relative welfare, the intensity of poverty will increase; considering that the causality of other side has not been confirmed. The depth of poverty is also affected by three indices: Head-Count, Sen and SST of poverty; that means an increase in the percentage of poor people or in relative welfare or a decrease in poverty intensity, depth of poverty will deteriorated. However, the causality of other side has not been confirmed**.**

9. ANALYSIS OF THE CORRELATION BETWEEN INDICES OF POVERTY

In general, many macro-level policies in society affect income distribution and, thus, poverty condition. Since in this paper, the poverty condition in both urban and rural regions are studied separately, in the present section it is tried to understand how poverty condition in urban and rural areas is affected by policies in macro level. The correlation analysis help us to examine the correlation between two variables regardless of being exogenous or endogenous. Thus, the correlations between poverty indices in urban and rural areas were computed. Results are shown in table 7.

Table-7. Correlation coefficients of indices of poverty in urban and rural areas

Variable	SST	FGT	P	I	H
r	0.86	0.56	0.79	0.43	0.75

Results show that any policy to reduce poverty intensity (SST Index) will have the same effect on urban and rural areas by 86 percent. Furthermore, policies to improve poverty gap in society has by 43 percent similar effect on urban and rural areas. However, policies affecting FGT, I and H in society have similar effect on urban and rural areas by 56%, 79% and 75% respectively.

10. CONCLUSION

In this paper, using budget data for rural and urban households for the period of 1982-2007, total poverty line and commodity poverty line in Iran was estimated. To estimate poverty line, based on society subsistence computed by the Linear Expenditure System using utility function of Stone-Gray, we have employed Seemingly Unrelated Regressions. The poverty line data, then, used to compute some related poverty indices such as Head-Count, income-gap, Sen, FGT and SST, resulted data are analyzed to compare poverty condition in Iraq-Iran war (1980-1988), as well as first three development plans. Finally, we have examined and analyzed the Granger causality relationship between poverty indices and correlation analysis of poverty indices in urban and rural areas.

The results showed that the monthly income of an urban household must have been increased from 53,000 Rls in 1982 to 4,250,000 Rls in 2007 (increasing 79 times) to keep its condition above poverty line. Further, for a household to survive, the income must have been increased from 16,000 Rls in 1982 to 1,170,000 Rls in 2007. Similarly, the rural households' monthly income should have been increased from 32,000 Rls in 1982 to 2,490,000 Rls in 2007 (79 times increase) to keep its condition above poverty line. Furthermore, for a rural household to survive, its monthly income should have been increased from 16,000 Rls in 1982 to 1,140,000 Rls in 2007. Results also show that the subsistence income is almost equal in both rural and urban areas.

The calculated poverty indices show that the poor percentage in the society is increased and relative welfare of the poor and the poverty intensity deteriorate during war. All poverty indices show relative improvement during the first three development plans. However, from the beginning of the Fourth Development Plan**,** the condition changed and the indices show deterioration. The poor income gap has almost similar condition during the war period and first and second plans, but during the third and the fourth plans, a reduction was experienced. The depth of poverty was deteriorated during war period but after a relative improvement, over the first and second plans, it showed a significant improvement during third and fourth development plans.

Causality test results showed no significant relationship for rural areas but for urban areas. It is concluded that an increase in the percentage of urban poor will cause an increase in poverty gap**,** and vice versa. Further, the poverty intensity is affected by the poor percentage, income gap and relative welfare reduction Likewise, the depth of poverty is influenced by the poor percentage, reduction in intensive poverty and relative welfare.

Finally, the correlation analysis suggests that policies affecting poverty indices such as Head-Count index, income gap, relative prosperity, and depth of poverty have similar effect on urban and rural areas by 75%, 43%, 79%, 56% and 86% respectively.

As results of this research**,** following policies can be suggested to policy makers:

1- It is clear that the policies should lead to reduction of inflation rate as the main factor affecting the increase in relative poverty.

2- As was mentioned above, each kind of poverty in rural areas is not affected by other kinds of poverty; on the contrary, in urban areas all kinds of poverty have close relationship to each other. Thus, it is recommended that depending poverty target policy makers should be aware of different results of poverty reduction policies in urban and rural areas.

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