

A Comparison of the Poverty and the Consumption Between Poor and Non-poor Elderly Households

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Abstract

Background/Objectives: Our study examines poverty ratios, characteristics of expenditure trends, determinants of both total expenditure and individual expenditure items of poor households and non-poor households among elderly households. **Methods/Statistical Analysis:** We use the 1st–4th Korean Retirement and Income Study as a biannual panel data, and calculate the poverty rate, which is the ratio of the number of people (in a given age group) whose income falls below the poverty line of the total population. Also we compare poor elderly households with non-poor elderly households by estimation results of a regression model. **Findings:** Total expenses in poor elderly households are half as much as those of non-poor households. The income increase in non-poor households shows remarkable marginal effects on consumption expenditure, but poor households do not show a statistical significance except for food, housing and utilities. Marginal effects for necessary goods in poor households are bigger than those for non-necessary goods. On the other hand, marginal effects for clothing, transportation/communication, culture and health goods in non-poor households are bigger than those for non-necessary goods. **Application/Improvements:** Empirical results say that it is desirable to convert ongoing integrated benefit into individual benefit in the minimum living system in the near future.

Keywords: Consumption, Marginal Effects, Non-Poor Household, Poor Household, Poverty Ratio

1. Introduction

The aging population has increased in Korea since 2000, and in 2012, the ratio of old people to the total population had grown by 11.7%. Statistics Korea anticipates that the ratio of old people to the total population will be 24.1% in 2030, and 37.3% in 2050.

Meanwhile, life expectancy has increased, but the problem is that old people need money to live after retirement but the money they have is not sufficient. This means that the elderly are likely to fall into the poverty trap. Furthermore, less money leads old people to the deterioration. Relevant studies in this area include: Choe and Lyu¹, Choi², Hong³, and Seok and Kim⁴. In addition, Kim and Lee⁵ studied the psychological determinant of successful aging of elderly people living in Korea.

Meanwhile, the rich do not face income poverty. In this context, we investigate how poor elderly people are different from non-poor elderly people in terms of income and expenditure trends. We use the Korean Retirement and Income Study (hereafter, KReIS) panel data released biannually. In this context, we examine poverty ratios, characteristics of the expenditure trends of poor households and non-poor households among elderly households, and regression equations for determinants of both total expenditure and individual expenditure items, using the 1st–4th KReIS.

2. Data and Trends of Poverty

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Ratio and Expenditure

We use the 1st–4th KReIS, which has been surveyed since 2005 on a biannual basis. About 5,000 households that have family members over 50 years of age are surveyed. This survey employs a cohort panel data and longitudinal data. We chose 3,702 households for a balanced panel and the number of household heads older than 65 was 2,144. Note that the baseline year for the income, the expenditure and the asset is the previous year, and thus we follow the baseline year.

Now we describe the trends of the absolute poverty ratio with the 1st–4th wave. We divided the income into two types, specifically, market income and current income (see Table 1).

The poverty ratio of households over 65 years old to market income is 63.06%, showing decreasing trends year by year from the retrospective years. This measure is higher than 48.2% (including 1-person households) in the year of 2010 released in “Yearly Poverty Statistics in 2013” released by the Korea Institute for Health and Social Affairs (KIHASA).

Table 1. Trends of the poverty ratio of the elderly (Unit:%)

| Year | # of Observation | | Absolute Poverty Ratio | | | |
|------|------------------|----------------|------------------------|----------------|---------------|----------------|
| | Market Income | Current Income | Head count ratio | | | |
| | | | Market Income | Current Income | Market Income | Current Income |
| 2004 | 2,146 | 2,144 | 43.93 | 33.18 | 39.89 | 30.22 |
| 2006 | | | 48.38 | 36.22 | 41.48 | 31.07 |
| 2008 | | | 51.12 | 37.11 | 45.10 | 32.41 |
| 2010 | | | 63.06 | 47.16 | 57.30 | 42.69 |

The poverty ratio of households over 65 years old to current income is 47.16%, which is lower than one based on market income, 31.1% (including 1-person households) in the year of 2010 released in “Yearly Poverty Statistics in 2013” released by the Korea Institute for KIHASA. Note that the difference before the global financial crisis and after the crisis is the greatest, implying that the financial crisis has the biggest influence on the poor.

Next, we explain the trends of the consumption expenditure of poor elderly households and non-poor elderly households for 2004–2010 (see Table 2). First, the total expenditure differs by year between the two types of

elderly household, but those in poor elderly households are almost half as many as those in non-poor old households. Second, expenditure for beverages and food has a constant ratio of 37% more or less, and has the same trends as the total expenditure for both types of elderly household. Third, when it comes to housing and utilities, the proportion of this to total expenditure in poor elderly households is higher than that in non-poor elderly households, followed by the food and beverage sector. This means that more than 60% of the total expenditure is on food and housing. Fourth, expenditure for health and medical needs in poor elderly households is lower than in non-poor elderly households in terms of the amount itself, but their proportions in poor elderly households are still higher than those in non-poor elderly households, implying a greater burden compared to those in non-poor elderly households. Fifth, expenditure for transport and communication in poor elderly households is lower than in non-poor elderly households in terms of the amount itself, implying less use of the mobile phone. But we could not find yearly trends for that.

Now we discuss the trends by year for poor elderly households. Decreasing trends have been shown for food and beverages and culture, but health and medical expenditure and household appliances/home services have shown increasing trends. Housing/utilities and clothes show irregular trends.

3. Empirical Results

3.1 Summary Statistics

Now we describe the summary statistics for demographic variables (see Table 3). Current income increased until 2008 but after that it decreased. Also, the current income of poor elderly households is a lot less than that of non-poor elderly households. Head age increased from the characteristics of the panel data. Also, the proportion of males in the sample was 67.4% in 2004 and decreased to 60.5% in 2010, due to death.

The average number of years of education for household heads is 5 years in poor elderly households, and 7.5 years for non-poor elderly households. This implies that school career is strongly related to income level. The other variables are referred to in Table 3.

Table 2. Consumption expenditure trends of 65-year-old or more elderly households
(Unit: Ten Thousands, %)

| Category Total | | 2004 | | | 2006 | | |
|----------------------------------|------------|----------------|--------------------|-------|----------------|--------------------|-------|
| | | Poor Household | Non-Poor Household | Total | Poor Household | Non-Poor Household | Total |
| Total Expend. | Amount | 77.0 | 51.1 | 89.7 | 87.5 | 54.6 | 105.9 |
| | Proportion | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Food and Beverage | Amount | 27.2 | 19.3 | 31.1 | 29.6 | 20.4 | 34.7 |
| | Proportion | 35.3 | 37.8 | 34.6 | 33.8 | 37.4 | 32.8 |
| Housing and Utilities | Amount | 15.6 | 11.7 | 17.5 | 16.0 | 11.9 | 18.2 |
| | Proportion | 20.3 | 22.9 | 19.5 | 18.2 | 21.8 | 17.2 |
| Clothes | Amount | 3.6 | 1.9 | 4.5 | 3.6 | 1.7 | 4.6 |
| | Proportion | 4.7 | 3.8 | 5.0 | 4.1 | 3.1 | 4.4 |
| Transport/ Communication | Amount | 13.6 | 6.7 | 17.0 | 17.4 | 8.2 | 22.6 |
| | Proportion | 17.7 | 13.2 | 18.9 | 19.9 | 14.9 | 21.3 |
| Culture | Amount | 3.1 | 1.3 | 4.0 | 3.5 | 1.3 | 4.7 |
| | Proportion | 4.1 | 2.6 | 4.5 | 3.9 | 2.4 | 4.4 |
| Health and Medical | Amount | 9.7 | 7.3 | 10.9 | 12.9 | 9.3 | 14.8 |
| | Proportion | 12.6 | 14.2 | 12.2 | 14.7 | 17.1 | 14.0 |
| Home Appliances/ Home Service | Amount | 1.3 | 0.7 | 1.6 | 2.5 | 1.1 | 3.2 |
| | Proportion | 1.7 | 1.5 | 1.8 | 2.8 | 2.0 | 3.1 |
| Education/Care | Amount | 3.0 | 2.4 | 3.3 | 2.4 | 0.7 | 3.3 |
| | Proportion | 3.9 | 4.6 | 3.7 | 2.7 | 1.4 | 3.1 |
| Current Income | Amount | 119.0 | 37.2 | 165.6 | 125.6 | 41.8 | 178.7 |
| Total Expend. | Amount | 89.5 | 57.1 | 108.2 | 84.6 | 64.1 | 102.2 |
| | Proportion | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Food and Beverage | Amount | 29.6 | 21.2 | 34.5 | 30.6 | 23.4 | 37.0 |
| | Proportion | 33.1 | 37.1 | 31.9 | 36.2 | 36.6 | 36.2 |
| Housing and Utilities | Amount | 18.6 | 13.3 | 21.6 | 18.4 | 14.4 | 21.9 |
| | Proportion | 20.7 | 23.3 | 19.9 | 21.8 | 22.5 | 21.5 |
| Clothes | Amount | 4.3 | 1.9 | 5.7 | 5.0 | 3.4 | 6.4 |
| | Proportion | 4.8 | 3.4 | 5.2 | 5.9 | 5.3 | 6.3 |
| Transport/ Communication | Amount | 16.1 | 7.8 | 20.9 | 14.6 | 9.6 | 19.0 |
| | Proportion | 17.9 | 13.7 | 19.3 | 17.2 | 15.0 | 18.6 |
| Culture | Amount | 3.5 | 1.6 | 4.7 | 2.2 | 1.2 | 3.1 |
| | Proportion | 4.0 | 2.8 | 4.3 | 2.6 | 1.8 | 3.0 |
| Health and Medical | Amount | 13.7 | 9.4 | 16.3 | 13.5 | 10.8 | 15.9 |
| | Proportion | 15.4 | 16.4 | 15.0 | 15.9 | 16.8 | 15.5 |
| Home Appliances/ Home Service | Amount | 2.1 | 1.0 | 2.6 | 2.1 | 1.4 | 2.8 |
| | Proportion | 2.3 | 1.8 | 2.4 | 2.5 | 2.2 | 2.7 |
| Education/Care | Amount | 1.9 | 1.0 | 2.4 | 1.3 | 1.0 | 1.5 |
| | Proportion | 2.1 | 1.7 | 2.2 | 1.5 | 1.6 | 1.4 |
| Current Income | Amount | 128.4 | 44.2 | 186.3 | 119.1 | 42.5 | 191.1 |

Table 3. Summary statistics trends (Unit: Ten Thousands, %)

| Category | Whole Households | | | | Non-poor Elderly Households | | | | Poor Elderly Households | | | |
|-------------------------|------------------|-------|-------|-------|-----------------------------|-------|-------|-------|-------------------------|------|------|------|
| | 2004 | 2006 | 2008 | 2010 | 2004 | 2006 | 2008 | 2010 | 2004 | 2006 | 2008 | 2010 |
| Current Income | 119.0 | 125.6 | 128.4 | 119.1 | 165.6 | 178.7 | 186.3 | 191.1 | 37.2 | 41.8 | 44.2 | 42.5 |
| Head Age | 68.1 | 70.0 | 71.9 | 73.7 | 66.8 | 68.7 | 70.7 | 72.5 | 70.7 | 72.4 | 74.0 | 75.2 |
| Head Sex | 67.4 | 65.9 | 63.7 | 60.5 | 73.8 | 73.7 | 71.3 | 68.8 | 54.3 | 51.8 | 50.6 | 50.9 |
| Head Education (year) | 6.6 | 6.6 | 6.5 | 6.4 | 7.6 | 7.7 | 7.6 | 7.7 | 4.6 | 4.6 | 4.6 | 5.0 |
| # of Household Members | 2.14 | 2.08 | 2.00 | 1.93 | 2.24 | 2.22 | 2.13 | 2.08 | 1.93 | 1.84 | 1.76 | 1.76 |
| Children below 19 | 0.11 | 0.11 | 0.07 | 0.09 | 0.09 | 0.09 | 0.07 | 0.09 | 0.15 | 0.14 | 0.08 | 0.09 |
| # of Members having job | 0.78 | 0.73 | 0.67 | 0.57 | 0.92 | 0.88 | 0.80 | 0.73 | 0.51 | 0.47 | 0.44 | 0.38 |
| Metropolitan | 39.5 | 39.4 | 38.9 | 38.7 | 40.4 | 40.0 | 39.2 | 38.4 | 37.5 | 38.2 | 38.4 | 39.0 |

3.2 Estimation Model

Generally, basic consumption, defined by necessary consumption expenditure related closely to survival, is not related to income. Therefore, we use a regression model with the constant as follows:

$$\log EXP_i = \log \alpha + \beta_1 \log Y_i + \beta_2 HAGE_i + \beta_3 HSEX_i + \beta_4 HEDU_i + \beta_5 WON_i + \beta_6 KID_i + \beta_7 EMPWON_i + \beta_8 REG_i + \varepsilon_i$$

where *EXP* : household expenditure, α : basic consumption, *Y* : current income, *HAGE* : head age, *HSEX* : sex of head, *HEDU* : education level of household head, *WON* : the number of household members, *KID* : the number of children below 19 years old, *EMPWON* : the number of family members who have a job, *REG* : dummy for metropolitan, *i*: household.

Now we suggest four empirical results for 2004, 2006, 2008 and 2010 with a balanced panel. We apply the income and the consumption variables to the logarithm in order to derive a marginal effect.

3.3 Empirical Results

We compare poor elderly households with non-poor elderly households in regression results (see Table 4).

First, when it comes to current income, the coefficients in poor elderly households have a positive statistical significance of 0.042 in 2004, 0.088 in 2006 and 0.058 in 2008, but have no negative statistical significance in 2010. These are less than those in non-poor elderly households. This implies that poor elderly households have a small marginal effect of the consumption to the income. Second, regression results for head age indicate that the higher the head age, the less the expenditure. The marginal effect in poor elderly households is even bigger than that in non-poor ones. Third, the coefficient for head sex in poor elderly households is larger than that in non-poor ones. Fourth, the coefficients for education level in poor elderly households have decreased since 2006, while non-poor elderly households have the same level, except for 2008. Fifth, the number of family members has a positive influence on the consumption for both types of households. The increased gap for poor elderly households is bigger than for non-poor ones, implying that the burden on the consumption per member gets bigger. Sixth, the number of children below 19 years old has no statistical significance in non-poor elderly households, while it has a negative statistical significance for 2004 and 2006 in poor elderly households. Seventh, the dummy for metropolitan has no statistical significance for non-poor elderly households, meaning that living in the metropolitan area is to be more expensive for non-poor elderly households. This is in line with the empirical results in Table 4.

Table 4. Regression results: poor elderly households vs. non-poor elderly households

| Category | Poor Elderly Households | | | |
|---|-------------------------|-----------------------|-----------------------|-----------------------|
| | 2004 | 2006 | 2008 | 2010 |
| Dependent Variable | Log (Total Consumption) | | | |
| Log (Current Income) | 0.042 (1.585) | 0.088*** (2.938) | 0.058** (1.968) | -0.011 (-0.357) |
| Head Age | -0.010*** (-3.652) | -0.015*** (-5.463) | -0.014*** (-5.205) | -0.013*** (-3.787) |
| Sex of Head | 0.098** (2.192) | 0.087* (1.954) | 0.108*** (2.697) | 0.113** (2.291) |
| Education Level of Head | 0.025*** (5.931) | 0.028*** (6.534) | 0.021*** (5.144) | 0.018*** (3.763) |
| Number of Family Members | 0.344*** (11.876) | 0.273*** (8.341) | 0.242*** (10.496) | 0.275*** (8.204) |
| Number of Children Below 19 Years Old | -0.145*** (-3.371) | -0.129** (-2.539) | 0.000 (0.025) | -0.017 (-0.257) |
| Number of Family Members who Have a Job | -0.021 (-0.809) | -0.008 (-0.295) | 0.006 (0.236) | 0.040 (1.269) |
| Dummy for Metropolitan (Metropolitan=1) | 0.124*** (3.345) | 0.131*** (3.549) | 0.097*** (2.729) | 0.088** (2.161) |
| Constant | 3.457*** (15.283) | 3.889*** (16.981) | 4.072*** (17.855) | 4.228*** (14.641) |
| R ² | 0.466 | 0.408 | 0.381 | 0.269 |
| N | 705 | 766 | 780 | 984 |
| Log (Current Income) | 0.342*** (15.807) | 0.382*** (16.340) | 0.486*** (16.372) | 0.280*** (7.247) |
| Head Age | -0.004* (-1.793) | -0.005** (-2.367) | -0.002 (-0.676) | -0.005 (-1.475) |
| Sex of Head | 0.071** (2.220) | 0.027 (0.797) | 0.056 (1.361) | 0.129** (2.456) |
| Education Level of Head | 0.024*** (8.664) | 0.024*** (8.381) | 0.015*** (4.492) | 0.024*** (5.283) |
| Number of Family Members | 0.131*** (7.774) | 0.134*** (7.231) | 0.060*** (2.633) | 0.125*** (4.095) |
| Number of Children Below 19 Years Old | 0.004 (0.097) | 0.008 (0.208) | 0.059 (1.164) | 0.083 (1.269) |
| Number of Family Members who Have a Job | -0.053*** (-3.244) | -0.064*** (-3.853) | -0.098*** (-5.020) | -0.051** (-1.977) |
| Dummy for Metropolitan (Metropolitan=1) | 0.018 (0.789) | -0.034 (-1.373) | -0.012 (-0.420) | 0.040 (1.066) |
| Constant | 2.459*** (13.541) | 2.534*** (12.392) | 1.995*** (7.964) | 2.881*** (8.737) |
| R ² | 0.571 | 0.546 | 0.453 | 0.322 |
| N | 1241 | 1213 | 1139 | 1057 |

4. Summary and Concluding Remarks

Our study examines poverty ratios, characteristics of the expenditure trends of poor and non-poor households among elderly households, and regression equations for determinants of both total expenditure and individual expenditure items, using the 1st–4th KReIS. Empirical findings are as follows: First, poverty ratios as market income and current income as of 2010 are 63.06% and 47.16%, respectively, which are higher than the released in the “Poverty Statistical Yearbook 2013”. Second, total consumption expenses in poor elderly households are half as much as those of non-poor households. Also, poor elderly household expenses for food and housing are almost 60% of total expenditures, which is even higher than for non-poor households. Third, the coefficients of the current income to total expenditure have increased since 2004 and fell in 2010. The coefficients of poor elderly households are lower than those in non-poor ones, implying less marginal effect for income. Fourth, the income increase in non-poor households shows remarkable marginal effects on the consumption expenditure, but the poor do not show a statistical significance except for food, housing and utilities. Also, marginal effects for necessary goods among the poor are bigger than those for non-necessary goods. On the other hand, marginal effects for clothing, transportation/ communication, culture and health goods among the non-poor are bigger than those for non-necessary goods, meaning that they spend more on necessary goods up to the poverty line, but have a

tendency to convert to luxury goods more when their income goes over the poverty line. The following implication can be derived from the above. It is desirable to convert ongoing integrated benefit into individual benefit in the minimum living system in the near future.

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6. References

1. Choe HS, Lyu YG. Trends of poverty of old people and composition of poverty in Korea. *Journal of Korean Gerontology Society*. 2003; 23(3):143–60.
2. Choi O. Factors influencing poverty of the elderly: utilizing the panel data model. *Korean Academy of Social Welfare*. 2007; 59(1):5–25.
3. Hong B. Factors influencing the economic status of the elderly in Korea. *Journal of Korean Academy of Social Welfare*. 2005; 57(4):275–90.
4. Seok SH, Kim HS. Determinants of poverty in elderly-headed households in Korea. *Korean Journal of Public Finance*. 2012; 5(3):99–124.
5. Kim YJ, Lee CS. Effects of grit on the successful aging of the elderly in Korea. *Indian Journal of Science and Technology*. 2015 April; 8(7):373–78.