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Multidimensional Elderly Poverty Index

Sukmyung Yun · Kyongpyo Ko

KIHASA
Korea Institute for Health and Social Affairs

【Principal Researcher】
Sukmyung Yun Research Fellow, Korea institute for Health and Social Affairs

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【Co-Researchers】
Kyongpyo Ko Researcher, Korea institute for Health and Social Affairs

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Korea Institute for Health and Social Affairs
Building D, 370 Sicheong-daero, Sejong city 30147 KOREA
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I Introduction

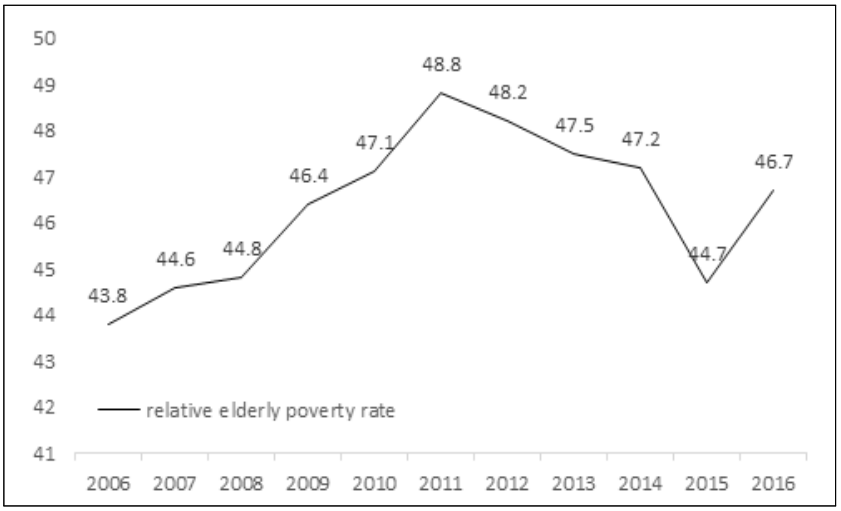
1. Research Background

South Korea nearly tops the list of member states of the Organisation for Economic Cooperation and Development (OECD) in terms of the relative poverty rate among the elderly[1]. Figure 1-1 shows that the elderly poverty rate in Korea rose continuously from 43.8 percent in 2006 to a peak of 48.8 percent in 2011. The rate dropped rather significantly from 2013 to 2015, when the old-age and basic pension benefits began to be paid, falling as low as 44.7 percent in 2015. However, the elderly poverty rate rose back up the following year, reaching 46.7 percent in 2016. Throughout the years under our analysis, nearly 50 percent of all seniors in Korea lived on less than 50 percent of the median income.

1) The relative elderly poverty rate refers to the percentage of seniors in the total elderly population that live on less than 50 percent of the equivalised median disposable income.

[Figure 1-1] Relative Poverty Rate among the Elderly in South Korea

(Unit: percentage)



Note: The poverty rates up to and as of 2012 were cited from Kang et al. (2016). The poverty rates from 2013 and afterward were estimated by the authors on the basis of the same study.

Source: Statistics Korea (each year), Household Trend Surveys.

The high relative elderly poverty rate in Korea was one of the central issues discussed by the National Assembly's Special Committee and Social Organization for Strengthening of Public Pension Benefits, which was launched in the latter half of 2015. The committee members, in particular, demanded that the existing indicators of elderly poverty be revisited, citing concerns over whether they actually reflect the real conditions facing seniors in Korea. This demand emerged because the relative elderly poverty rate was based solely upon cash flows and failed to take into account the concept of stocks. Real estate property

accounts for a significant portion of seniors' assets in Korea, and the unique Korean system of leasing homes, called *jeonse*, tends to contribute to the considerable disparity between actual elderly poverty and the statistics (National Assembly Budget Office (NABO), 2016, p. 302). Korean researchers have recently begun making attempts to re-estimate the income poverty rates of Korean seniors by converting the values of Korean seniors' assets into income (NABO, 2016, and Choi et al., 2016). However, there is still no standard methodology for converting asset values into income in Korea[2].

2. Research Purpose

It is now time to explore the possibility of developing and applying new, more accurate indicators of elderly poverty in Korea and devise a new concept of poverty rates that are reflective of such alternative indicators. In this study, we strive to satisfy this policy demand by attempting to measure elderly poverty in Korea on the basis of a multidimensional approach to poverty. The multidimensional approach to poverty may be

2) The methods and rates based on which asset values are converted into income have not been without controversy of their own. For instance, approximately 30 percent of Korean seniors live in rural areas, where real estate prices are relatively low compared to urban areas. Converting these rural seniors' assets into income may thus make it seem like these seniors have higher incomes than their actual living conditions and standards would indicate.

just what policymakers need, as it can overcome the shortcomings of the current unidimensional indicator of poverty, which is based upon income only. Most importantly, the multidimensional approach to poverty may provide a way of measuring poverty in terms of both assets and income without converting asset values into income.

II

Literature Review

1. Conventional Understanding of Poverty and Related Issues

Ⅱ Literature Review

1. Conventional Understanding of Poverty and Related Issues

A. Standard Methods of Measuring Poverty

The conventional measures of poverty include the headcount ratio and poverty gap index. Both measures are monetary measures that estimate poverty mainly in terms of income. The headcount ratio refers to the proportion of people in a given population that are living below a certain poverty line, while the poverty gap index is measured in terms of the difference between the income of all poor people and the poverty line[3]. These conventional measures have been widely used in part because they support the intuition that individuals' welfare is proportional to their income. There are, of course, theoretically better measures of poverty than these conventional ones[4]. Nevertheless, these two conventional measures are used widely around the world because they produce easy and readily applicable analyses of poverty (Blackorby and Donaldson, 1980; Haughton, 2009; and Kakwani, 1984).

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3) The headcount ratio measures the incidence of poverty, while the poverty gap index measures the intensity of poverty.

4) Well-known examples include the Sen and Watts poverty indices.

B. Issues with the Conventional Measures of Poverty

The first and foremost issue with the conventional measures of poverty is that they are unidimensional, measuring poverty in terms of income only. Economists agree that income is only one of many variables that can be used to measure utility (Sen, 1979, and Zheng, 1997). Income-based measures of poverty may satisfy the necessary condition of poverty estimation, but not the sufficient condition (Anand, 1977). Criticisms of income-based measures of poverty stem from not only theoretical considerations but also actual empirical findings. Callan et al. (1993), for example, found that the correlation between income and the possession of necessary goods was not as strong as commonly assumed and did not even show the same directionality as held by popular belief. A number of other studies have reaffirmed this finding (Klassen, 2000, and Townsend, 1979).

Another issue with the conventional measures of poverty involves deciding where to draw the poverty line. A poverty line refers to the threshold that divides the population of a given society into the poor and the non-poor. Where this line should be drawn is itself a source of controversy. Since the U.S. government first introduced the concept of "minimum necessities of merely physical efficiency" into policymaking to develop poverty-related measures, a growing number of states around

the world have been adopting similar concepts. However, the concept of what constitutes "minimum necessities" remains widely debated (Anand, 1977, and Kakwani, 1984).

There is also the persistent difficulty of measuring income itself. For example, should we recognize only income earned by working, i.e., wages and other such earnings, as income? Should our concept of income include benefits and transfers from various public social security programs? If so, should only cash benefits transferred from such programs be recognized or in-kind benefits and services also? We can measure poverty in terms of income only after answering these and other related questions. Moreover, there is also the problem of deciding the exact span of time over which income is to be measured. The shorter the time span of income analysis, the greater the volatility of income and the greater the risk of generating a distorted view of the overall distribution of income in the given society (Wagle, 2008).

III

Research Content and Methods: Developing a Multidimensional Poverty Index

1. Necessity of Multidimensional Poverty Index
2. Multidimensional Poverty Index: Analysis
3. Definition of the Multidimensional Poverty Index
4. Decomposition of the Multidimensional Poverty Index

III Research Content and Methods: Developing a Multidimensional Poverty Index

1. Necessity of a Multidimensional Poverty Index

The main problem with income-based measures of poverty is that they look at only one—income—of the various factors of poverty (Nam, 2013, p. 186). When we delve into this problem a little deeper, multidimensional indices of poverty naturally emerge as alternatives to these unidimensional measures. Multidimensional poverty indices are designed to consider diverse aspects of life in measuring the poverty of a given population or society. In particular, a multidimensional poverty index considers a host of other factors in addition to income and assets and affords policymakers a more complex and richer understanding based on which they can design anti-poverty measures that cater to specific groups, such as seniors.

We should not, of course, presume that multidimensional indices are always better than unidimensional ones. Multidimensional poverty indices are just as subject to controversies over issues such as which dimensions or variables of poverty should be included and where the poverty line should be drawn as unidimensional ones. Nevertheless, multidimensional poverty indices are being increasingly looked to as possible alternatives that are free of the major defects of unidimensional indices. In fact, the Japanese government considered developing its own

poverty index in 2012, acknowledging the criticism that the OECD's relative poverty rate fails to capture the reality of poverty in Japan (*Aju Business Daily*, 2012). At the time, the Japanese Ministry of Welfare and Labor considered adding unemployment rates, availability of healthcare, nutrition, purchases of daily essential goods, and other such factors of daily living to the poverty index.

2. Multidimensional Poverty Index: Analysis

1) Deciding Dimensions and Weights

The most important task in developing a multidimensional poverty index is deciding which aspects of individuals' lives should be included and analyzed as dimensions. Because there is not yet an absolute set of criteria based on which the exact dimensions to be included in our understanding of poverty can be decided, the dimensions that a given index includes essentially reflect the researcher's choice and social acceptance thereof. In an effort to minimize the arbitrariness of our index design, we first consider the dimensions commonly used in multiple studies and also take into account the availability of data, experts' opinions, and possible policy applications in designing our multidimensional poverty index.

The weights of dimensions represent the relative importance of the dimensions in measuring poverty. Deciding these weights, too, calls for normative (and arbitrary) value judgments, as does deciding the dimensions. Extensive academic and theoretical considerations and social acceptance should therefore precede the decision on these weights. However, deciding the specific weights of dimensions lies outside the scope of this study. We thus apply equal weights to the dimensions of poverty we have chosen to include in our analysis.

2) Deciding the Deprivation Cutoff for Each Dimension and the Multidimensional Poverty Cutoff

Deciding the deprivation cutoff for various dimensions of poverty and the multidimensional poverty cutoff is often a matter of choice, depending on the specific policy purposes involved[5]. Deciding the poverty lines at 40, 50, or 60 percent of median income under the relative poverty rate, on the one hand, and deciding the dimension-by-dimension or multidimensional poverty cutoff (k), on the other, are essentially the same task (Choi. et al., 2011, p. 102). Under conventional measures of poverty based upon income, assets, or both, rela-

5) Governments arbitrarily draw poverty lines for the implementation of policy programs, and these are referred to as decision-making or policy poverty lines (Seo, 2008, quoted in Choi et al., 2011, p. 102). Poverty lines of 50 percent or less of median income and the minimum cost of living, which are used for policy programs in Korea, are examples of policy poverty lines.

tive poverty lines (e.g., 50 percent of median income) or absolute poverty lines (e.g., minimum cost of living) are used. There are no commonly used guidelines or standards for deciding the poverty lines for other dimensions, such as health (e.g., subjective satisfaction with one's own health).

In drawing a multidimensional poverty cutoff (k), we first need to understand the technical significance of poverty cutoff. In light of the coefficients of given dimensions, a poverty line must range between zero and one. When k is drawn close to one, only individuals who are deprived along almost all dimensions are classified as multidimensionally poor. When k is drawn close to zero, on the other hand, individuals who are deprived along one or only a few dimensions are regarded as multidimensionally poor. The greater the k, the more underestimated the actual poverty; the smaller the k, the more overestimated the actual poverty. We could overcome this technical dilemma by drawing k at the middle of all the number of dimensions.

More important than the technical implication is the actual meaning of the poverty cutoff (k). As this line serves as the standard for deciding how many dimensions of deprivation are involved in poverty, the line can be understood as representing a given society's tolerance of poverty. People in a relatively poor country where the majority of the population is poor, for example, would have greater tolerance of poverty than people in

a relatively affluent country. The poverty line of the former may therefore be drawn higher than the poverty line of the latter.

3. Definition of the Multidimensional Poverty Index

The adjusted headcount ratio can be defined as follows:[6)]

$$M_0 = H \times A.$$

M_0 indicates the intensity of the deprivations that the multidimensionally poor are actually experiencing in a given society, where the probability of the entire population experiencing deprivations across all dimensions is 100 percent. Let's look at a population of 100 people. If all 100 of these people are multidimensionally poor, experiencing deprivations across all dimensions, M_0 would equal one. If only 50 percent of this same population is experiencing deprivations at an average level, M_0 would equal 0.5. If, on the other hand, 80 people of the same population are multidimensionally poor and the average number of dimensions along which these 80 people are deprived make up one half of the total number of dimensions given, M_0 would equal 0.4(0.8×0.5).

6) For a more detailed discussion of the Alkire-Foster approach to dimensional coefficients, see Alkire et al. (2015) and Yun and Ko (2017).

For greater clarity, we may break down M_0 into two factors: H and A. H represents the multidimensional headcount ratio, while A represents the average deprivation share across the poor. In other words, H represents the incidence of poverty, while A measures the intensity of poverty. Moreover, H counts how many individuals of a given population are multidimensionally poor, while A measures the average number of dimensions along which those multidimensionally poor individuals are deprived. The greater the number of poor individuals, the greater the H (up to a maximum of one). The larger the number of dimensions along which the poor are deprived, the larger the A (up to a maximum of one). That M_0 is a multiple of H and A signifies that two or more given populations may share a similar M_0 but show quite different aspects of poverty, calling for different policy solutions.

H, like a unidimensional (income-based) measure of poverty, is intuitive and easy to apply. From a theoretical perspective, however, H lacks the property of dimensional monotonicity required of a multidimensional poverty index, and is therefore insufficient by itself to serve as a poverty index. Dimensional monotonicity requires that, as the number of dimensions along which the multidimensionally poor are deprived increases, the multidimensional poverty level also rises. The adjusted headcount ratio (M_0), on the other hand, satisfies this principle of dimensional monotonicity thanks to A, and is thus theoretically

superior to H (Alkire et al., 2015).

4. Decomposition of the Multidimensional Poverty Index

M_0 can be decomposed into not only the incidence and intensity of poverty but also other forms of poverty as well. The subgroup decomposition of the index, for example, can be expressed as follows:

$$M_0 = \sum_{l=1}^{m} v_l \, M_0^l .$$

If we could divide a given population into m-number of subgroups, M_0^l would represent the adjusted headcount ratio of the l-th subgroup, and v^l, the share of the l-th subgroup in the total given population. In other words, M_0 can be made to reflect the adjusted headcount ratio of a specific subgroup as the weighted sum of the adjusted headcount ratios of all subgroups. The contribution of each subgroup to the aggregate poverty rate can be defined as follows:

$$D_l^0 = v^l \frac{M_0^l}{M_0}.$$

In other words, D_l^0 represents the l-th subgroup's contribution to M_0. Diverse criteria can be used to break a given population into multiple subgroups, such as age, sex, region, and the like.

Alternatively, M_0 can also be broken down into different dimensions (i.e., dimensional breakdown), as shown below.

$$M_0 = \sum_{j=1}^{d} w_j h_j.$$

Here h_j represents the censored headcount ratio of dimension j. The (censored) headcount ratio of each dimension represents the percentage of the population that is multidimensionally poor and experiencing deprivation along the given dimension at the same time. The contribution of each dimension to the overall (adjusted) headcount ratio can be expressed as follows:

$$\phi_j^0 = w_j \frac{h_j}{M_0}.$$

The deprivation rates in each indicator are applied before identifying the multidimensionally poor and thus differ from the (censored) headcount rate of each indicator.

IV Results: Diverse Indicators of Elderly Poverty

1. Household Trend Surveys and Unidimensional Elderly Poverty Index
2. Korean Welfare Panel Surveys and the Adjusted headcount Ratio of Poverty Among Seniors
3. Conclusion of Analysis

IV Results: Diverse Indicators of Elderly Poverty

1. Household Trend Surveys and Unidimensional Elderly Poverty Index

Before developing a multidimensional poverty index, let us first measure the relative elderly poverty rate based on income. The unidimensional (income-based) elderly poverty rate has significance on its own and is also necessary for comparison with our multidimensional poverty index.

It is important to base our unidimensional elderly poverty rate upon representative data. In this study, the data we use for this purpose are from the urban Household Trend Surveys. Setting the unit of analysis as the individual, our analysis thus also includes households whose heads are not seniors. The period of time under analysis spans the years 2013 through 2016, and the poverty line is set at 50 percent of the median personal disposable income.

Based upon the forgoing, the relative elderly poverty rate in Korea was found to be 47.5 percent in 2013, 33.7. percent in 2015, and 46.7 percent in 2016. The increase in the amounts of basic pension benefits, paid as of the latter half of 2014, contributed to the significant drop in the relative elderly poverty rate in 2015. However, the rate rose again in 2016, suggesting that the effect of the increased basic pension benefits was

short-lived (Table 4-1).

〈Table 4-1〉 Relative Elderly Poverty Rate Trend (2013 to 2016)

Year	2013	2014	2015	2016
Rate (%)	47.5	47.2	44.7	46.7
Difference (%p)	-	-0.3	-2.5	+2.0

Note: The relative elderly poverty rate refers to the percentage of seniors in the total elderly population that live on less than 50 percent of the equivalised median disposable personal income.
Source: Statistics Korea (each year), Household Trend Surveys.

Table 4-2 shows the trend of poverty rates among different sociodemographic subsets of seniors. Women are nearly 10 percentage points more likely than men to be poor. This is because female seniors in Korea have participated less in the labor market during their working years than their male counterparts, which has reduced the amounts of National Pension benefits they are eligible to claim. Women's longer life expectancy also increases the likelihood of female seniors being widowed and living alone in old age. The gender divide in the poverty rate continues to grow wider over time. The poverty rates for both male and female seniors declined continuously until 2015, before beginning to rise again in 2016.

The relative poverty rates also tend to be higher among older seniors. That the rate is particularly high among seniors in their 80s and older appears to stem from the fact that the majority of seniors in this age group are widows living alone who experienced drastic drops in their income after their husbands

—typically the beneficiaries of National Pension benefits—died. The age divide in poverty grows even larger than the gender divide over time, mainly because the percentage of widows living alone increases with age.

In terms of the types of areas of living, seniors living in rural communities (eup and myeon) have higher poverty rates than those living in urban areas (dong), and this regional divide in poverty grows over time. This suggests the growing urban-rural income divide as well as the delays in the payout of National Pension benefits to seniors who have lived in rural areas all their lives.

The patterns of elderly poverty in relation to sex, age, and other such factors are similar to those found in other OECD member states. Elsewhere in the developed world, too, women and older seniors tend to be poorer than men and younger seniors. However, the gender and age divides in poverty elsewhere are not as they are stark as in Korea, and such gaps have not grown wider over time in other countries. Poverty among Korean seniors, on the contrary, has grown increasingly polarized over the years.

〈Table 4-2〉 Relative Elderly Poverty Rates Among Seniors by Sex, Age, and Region

Year	Sex (%)		Age (%)			Region (%)	
	Male	Female	60s	70s	80s	Urban	Rural
2013	41.5	51.5	35.0	54.1	54.8	45.7	55.5
2014	40.0	51.9	31.4	52.9	62.2	45.1	56.6
2015	36.0	50.3	32.2	48.8	57.2	42.4	55.0
2016	38.7	51.8	32.7	51.3	58.9	44.3	57.4

Note: The relative elderly poverty rate refers to the percentage of seniors in the total elderly population that live on less than 50 percent of the equivalised median disposable personal income.
Source: Statistics Korea (each year), *Household Trend Surveys*.

2. Korean Welfare Panel Surveys and the Adjusted headcount Ratio of Poverty Among Seniors

Let us now estimate the multidimensional poverty rate of Korean seniors using the Alkire-Foster (AF) counting approach. When estimating poverty in terms of income only, we used the Household Trend Survey data for their representativeness and the reliability of the income variables they provide. To estimate multidimensional poverty, however, we need data on a wider range of subjects, such as assets, housing status, and the like. We thus rely upon panel data involving specific households and individuals in an effort to obtain information on a broader array of poverty indicators. As the Korean Welfare Panel Surveys (KWPS) are commonly used in poverty research, we used these surveys as well.[7)]

1) Deciding Dimensions, Dimensional Indicators, and Deprivation Cutoffs

Deciding which dimensions are to be included bears crucial importance to the development of multidimensional poverty indices. Much of the existing literature uses dimensions that were decided based on expert opinions and/or the available data. Income, assets, and housing are some of the common dimensions found in these studies. Therefore, we will focus upon these three dimensions in our analysis as well. In a similar fashion, we sought to base our selection of dimensional indicators and deprivation lines on universal common sense and the existing literature as much as possible.

First, we use disposable income and net wealth per member of each household—both commonly used measures—as the indicators of income and assets, respectively. We equivalised household disposable income by dividing it by the number of household members. Net wealth, too, was converted into net wealth per capita using methods established in the existing literature (e.g., Kim, 2011, and Nam, 2013). The deprivation lines of income and assets can be either absolute or relative (Choi et al., 2016, p. 118); we use the relative kind, i.e., 50 percent or

7) KWPS 2016 involved 6,700 or so households. The survey ensures the representation of all regions of Korea by including households on Jeju Island and in rural villages as well. These surveys are also suited to poverty research as they over-sample low-income households.

below of the median values. There is, however, no such clear consensus on how to define and use the dimension of housing and related indicators, with different authors proposing different examples and definitions. In this study, we use the minimum housing criterion (housing area) as the housing indicator and base our deprivation line on the minimum housing area that should be ensured for each member of the given household.

2) Deprivation Rates by Dimension

Prior to estimating the multidimensional poverty rates, let us first examine the deprivation rates by dimension. This is to assess the extent to which a specific subgroup of the population is deprived along each dimension rather than across all dimensions. The income deprivation rate, for example, shows how deprived the given group is, irrespective of whether and to what extent it is deprived along other dimensions, such as assets and housing.

Table 4-3 shows the dimension-by-dimension deprivation rates estimated using the KWPS data of 2016. As of 2105, Koreans' income deprivation rate was found to be 13.5 percent overall. The deprivation cutoff here is 50 percent of the equivalised median annual disposable income, which is identical to the OECD's relative income poverty line. The income deprivation rate, in other words, is equivalent to the relative income

poverty rate.

Next, the income deprivation rate (i.e., the relative income poverty rate) of the elderly population was 46.3 percent in 2015. In other words, nearly half of all seniors in Korea are deprived in terms of income. This estimate is 1.6 percentage points higher than the relative elderly poverty rate of 44.7 percent for 2015 that we estimated earlier using the HTS data. This difference may seem insignificant, but it appears to stem from the difference in the representativeness of the samples involved. The income deprivation rate of the non-senior population was 8.5 percent in 2015, which is 38 percentage points lower than that of the senior population. In other words, Korean seniors are significantly more deprived in terms of income than the younger population.

Next, the asset deprivation rate (i.e., the relative asset poverty rate) was 30.3 percent for all Koreans. Specifically, it was 30.4 percent for the younger population and 29.6 percent for the elderly population. In other words, seniors are relatively less deprived in terms of assets than the younger population. Finally, in terms of housing (area), the deprivation rate was 1.7 percent for all Koreans and the same for the younger population. The housing deprivation rate for seniors was slightly lower, at 1.4 percent. However, measuring housing deprivation in terms of the minimum housing area runs the risk of significantly underestimating the actual status of housing poverty.[8)]

Korean seniors are relatively far more deprived than the younger population in terms of income, while relatively less deprived, albeit by a tiny margin, than the younger population in terms of assets and housing. Income deprivation is not necessarily tied to asset and housing deprivation. To understand how these deprivations are correlated, we need to use a multidimensional poverty index.

〈Table. 4-3〉 Deprivation Rates by Dimension: KWPS 2016 (Concerning 2015)

Dimension (Indicator)	Income (equivalised annual disposable income in 2015)	Assets (net wealth per household member as of the end of 2015)	Housing (minimum housing area as of the end of 2015)
Overall			
Deprivation rate (%)	13.5	30.3	1.7
Seniors (aged 65+)			
Deprivation rate (%)	46.3	29.6	1.4
Younger population			
Deprivation rate (%)	8.5	30.4	1.7
Deprivation cutoff	KRW 13.653 million	KRW 30.1 million	Minimum housing area per household member

Note: The deprivation cutoffs for income and assets are 50 percent of the median values, while the deprivation cutoff for housing is the minimum housing area per household member.

Source: KIHASA-Seoul National University (SNU) Social Welfare Research Center (2016), Korean Welfare Panel Survey 2016.

8) Applying the minimum housing area criterion underestimates the housing deprivation rate. In inter-group comparisons, however, this does not seem to pose a significant problem.

3) Multidimensional Elderly Poverty Index Analysis

The multidimensional poverty rate, based upon the AF counting approach, involves first estimating the adjusted headcount ratio (M_0), and then decomposing it into the incidence (H) and intensity (A) of poverty. H measures how many individuals of a given population are multidimensionally poor, while A measures how many dimensions along which the multidimensionally poor are deprived. In this study, we define those who are deprived along at least two of the three dimensions as multidimensionally poor. Table 4-4 lists the numbers of individuals so deprived.[9)]

As of 2015, the adjusted headcount ratios were 5.5 percent for all Koreans, 14.3 percent for seniors, and 4.2 percent for the younger population. Seniors' M_0 is 10.1 percentage points higher than that of the younger population. When the multidimensional poverty index is applied, seniors still emerge as poorer than the younger population, but the gap between the two groups narrows significantly. This is most likely because, although seniors are significantly more deprived in terms of income than the younger population, they are slightly less likely than the younger population to be deprived in terms of assets

9) The multidimensional poverty cutoff is set at 0.5 when we decide to regard individuals who are deprived along at least half of the given dimensions as multidimensionally poor. For more on multidimensional poverty cutoffs, see Yun and Ko (2017).

and housing.

To understand this phenomenon, let us decompose the adjusted headcount ratios into the incidence and intensity of poverty. The incidence of multidimensional poverty (H) for all Koreans is 8.1 percent, meaning that approximately eight out of every 100 Koreans are multidimensionally poor. The incidence of multidimensional poverty is slightly lower in the younger population, at around six percent.

On the contrary, the H is 21.1 percent for seniors, indicating that almost one out of every five Korean seniors is multidimensionally poor. The incidence of poverty for seniors is 13 percentage points higher than for non-seniors, but this gap is significantly smaller than the income poverty difference of 35 percentage points.

The intensity of multidimensional poverty (A), on the other hand, is about 68 percent for all Koreans, seniors, and the younger population alike. This means that the multidimensionally poor in Korea are deprived along two dimensions (68 percent of all three dimensions) on average.[10)]

Seniors' nominal M_0 is significantly higher than that of non-seniors. However, non-seniors contribute 65.9 percent to

10) That the average deprivation rates remain similar across population subgroups appears to be mainly due to the fact that only three dimensions were considered. This technical problem should be avoided, and more in-depth analysis of the intensity of poverty should be conducted in the future by diversifying the dimensions of poverty.

Koreans' overall M_0, while seniors contribute 34.1 percent. This is because the younger population makes up 86.8 percent of the total Korean population.

〈Table 4-4〉 Multidimensional Poverty Index: KWPS 2016 (Concerning 2015)

Index	Adjusted headcount ratio ($M_0 = H \times A$, %)	Incidence of poverty (H, %)	Intensity of poverty (A, %)	Subgroup's contribution to M_0 (%)
Overall	5.5	8.1	68.2	100.0
Seniors	14.3	21.1	68.1	34.1
Younger	4.2	6.2	68.2	65.9

Note: The same weights were applied to all dimensions. 0.5, meaning that people who are deprived along at least two of the three dimensions are considered to be multidimensionally poor.
Source: KIHASA-SNU (2016).

The adjusted headcount ratio is then decomposed by dimension to estimate the percentage of the population that is multidimensionally poor and also deprived along each given dimension, i.e., the censored headcount ratio of each dimension (Table 4-5).

The censored headcount ratio for income, i.e., the percentage of the population that is multidimensionally poor and also deprived of income, is 7.1 percent. The censored headcount ratio for asset is 8.1 percent, slightly higher than the censored headcount ratio for income. The censored headcount ratio for housing is 1.4 percent. As for contributions to the adjusted

headcount ratio (M_0) of the entire Korean population, asset poverty accounts for the largest proportion, at 48.6 percent, followed by income at 43.0 percent and housing at 8.4 percent.

The censored income, asset, and housing headcount ratio for non-seniors are 5.1 percent, 6.1 percent, and 1.4 percent, respectively. Asset deprivation accounts for the greatest proportion of non-seniors' multidimensional poverty, at 48.6 percent, while housing accounts for the least (11.2 percent).

As for seniors, the percentages of seniors who are multidimensionally poor and deprived in terms of either income or assets are 21 percent in both cases. Seniors are slightly less deprived of housing (1.3 percent) than the younger population. Income and asset deprivations account for 48.5 percent of seniors' multidimensional poverty, while housing accounts for only 3.0 percent.

〈Table 4-5〉 Dimensional Breakdown: KWPS 2016 (Concerning 2015)

Dimension (Indicator)	Income (equivalised annual disposable income in 2015, %)	Assets (net wealth per household member as of the end of 2015, %)	Housing (minimum housing area as of the end of 2015, %)	Sum of weighted averages (weight: w_j, %)
Overall				
censored headcount ratio ($h_j(k)$)	7.1	8.1	1.4	5.5(= M_0)
Contribution to poverty ($\phi_j^0(k)$)	43.0	48.6	8.4	100.0
Seniors				
censored headcount ratio ($h_j(k)$)	20.8	20.9	1.3	14.3(= M_0)
Contribution to poverty ($\phi_j^0(k)$)	48.4	48.6	3.0	100.0
Younger population				
censored headcount ratio ($h_j(k)$)	5.1	6.1	1.4	4.2(= M_0)
Contribution to poverty ($\phi_j^0(k)$)	40.2	48.6	11.2	100.0

Note: $k = 0.5$, with equal weights applied to all dimensions.
Source: KIHASA-SNU (2016).

4) Socio-demographic Characteristics of Seniors

The senior population was divided into two groups: the income-deprived and the non-income-deprived. The income-deprived were further subdivided into the multidimensionally non-poor and the multidimensionally poor. The income-deprived make up 46.3 percent of all seniors in Korea, while the remaining 53.7 percent are not income-deprived. In other words, the

relative income poverty rate among Korean seniors is 46.3 percent. Of income-deprived seniors, 45.0 percent are multidimensionally poor and 55.0 percent are multidimensionally non-poor.

With the multidimensional poverty line (k) set at 0.5, individuals who are deprived along at least two of the three dimensions are categorized as multidimensionally poor. The multidimensionally non-poor of income-deprived seniors are therefore those who are deprived of income but not of assets and housing. The multidimensionally poor, who make up 45.0 percent of income-deprived seniors, are deprived of not only income but also assets, housing, or both.

Table 4-6 shows the distribution of assets by type of elderly poverty. Here, assets are total assets, not net wealth, divided by the number of household members. Seniors are divided into four levels depending on the value of the assets they possess, i.e., lowest, low, high, and highest. The lowest group belongs to the bottom 25 percent of the total population asset distribution; the low group, to the next 25 percent (26th to 50th percentiles); the high group, to the next 25 percent (51st to 75th percentiles); and the highest, to the top 25 percent (76th to 100th percentiles). Currently in Korea, the 25th percentile of the total population asset distribution per capita is KRW 31.48 million; the 50th percentile, KRW 74.33 million; and the 75th percentile, KRW 148.75 million.

The average total asset value per household member among seniors in Korea is KRW 155.98 million. This figure rises to KRW 218.84 million among non-income-deprived seniors and drops to KRW 83.02 million among income-deprived seniors. Whereas the average total asset value per household member among income-deprived and multidimensionally non-poor seniors is KRW 141.88 million, that figure drops drastically to KRW 11.18 million for income-deprived and multidimensionally poor seniors.

In terms of asset distribution, 28.2 percent of seniors belong to the lowest group, and 33.4 percent, to the highest group. This suggests severe asset polarization among Korean seniors. Note that nearly half (46.3 percent) of non-income-deprived seniors belong to the highest asset group. By contrast, 44.0 percent of income-deprived seniors (i.e., relatively poor seniors according to the OECD standards) belong to the lowest asset group.

Interestingly, whereas only 2.0 percent of income-deprived and multidimensionally non-poor seniors belong to the lowest asset group, 33.3 percent and 33.0 percent of these seniors belong to the high and highest asset groups, respectively. On the other hand, 95.2 percent of multidimensionally poor seniors, who make up 46.3 percent of income-deprived seniors, belong to the lowest asset group, while only 0.4 percent belong to the highest asset group. In other words, nearly half of income-deprived

seniors belong to relatively high asset groups, while the other half remain in the lowest asset group.

〈Table 4-6〉 Distribution of Seniors by Asset (2015)

Type	Avg. assets (total assets per household member; million KRW)	Asset distribution (%)				
		Total	Lowest	Low	High	Highest
All seniors (100%)	155.98	100.0	28.2	18.0	20.4	33.4
Non-income-deprived (53.7%)	218.84	100.0	14.7	16.8	22.2	46.3
Income-deprived (46.7%)	83.02	100.0	44.0	19.4	18.3	18.3
Multidimensionally non-poor (55.0%)	141.88	100.0	2.0	31.7	33.3	33.0
Multidimensionally poor (45.0%)	11.18	100.0	95.2	4.3	0.1	0.4

Notes: 1) Non-income-deprived seniors make up 53.7 percent of all seniors, while income-deprived seniors account for 46.3 percent (relative poverty rate among Korean seniors = 46.3 percent). Of income-deprived seniors, 55.0 percent are multidimensionally non-poor, while 45.0 percent are multidimensionally poor.

2) Asset values were measured in terms of total assets, not wealth, divided by the number of household members. There are four asset groups depending on the values of assets they possess, i.e., lowest, low, high, and highest. The lowest group belongs to the bottom 25 percent of the total population asset distribution; the low group, to the next 25 percent (26th to 50th percentiles); the high group, to the next 25 percent (51st to 75th percentiles); and the highest, to the top 25 percent (76th to 100th percentiles). Currently in Korea, the 25th percentile of the total population asset distribution per capita is KRW 31.48 million; the 50th percentile, KRW 74.33 million; and the 75th percentile, KRW 148.75 million.

Source: KIHASA-SNU (2016).

Table 4-7 shows the distribution of poor seniors by sex and region. Women make up 58.2 percent of all seniors as well as 64.6 percent of income-deprived seniors. Women also make up 60.8 percent and 69.3 percent of income-deprived and multi-

dimensionally non-poor and income-deprived and multidimensionally poor seniors, respectively. In other words, senior women in Korea experience poverty more than senior men do.

Irrespective of poverty, far more Korean seniors are living in urban areas (Seoul, metropolitan cities, and other cities) than rural areas. However, the likelihood of seniors living in counties and other such rural areas increases with their level of income deprivation and multidimensional poverty. For example, whereas 18.1 percent of income-deprived and multidimensionally non-poor seniors live in rural areas, 20.1 percent of income-deprived and multidimensionally poor seniors live in rural areas.

〈Table 4-7〉 Distribution of Seniors by Sex and Region (2015)

Type	Sex (%)			Region (%)			
	Total	Male	Female	Total	Cities	Counties	Rural areas
All seniors (100%)	100.0	41.8	58.2	100.0	84.7	13.9	1.4
Non-income-deprived (53.7%)	100.0	47.3	52.7	100.0	87.9	10.9	1.2
Income-deprived (46.3%)	100.0	35.4	64.6	100.0	81.0	17.5	1.5
Multidimensionally non-poor (55.0%)	100.0	39.2	60.8	100.0	81.9	16.2	1.9
Multidimensionally poor (45.0%)	100.0	30.7	69.3	100.0	79.9	19.1	1.0

Note: Non-income-deprived seniors make up 53.7 percent of all seniors, while the income-deprived make up 46.3 percent (relative poverty rate among Korean seniors = 46.3 percent). Of income-deprived seniors, 55.0 percent are multidimensionally non-poor, while 45.0 percent are multidimensionally poor.
Source: KIHASA-SNU (2016).

Table 4-7 shows the distribution of seniors by household size and housing status. Seniors living alone make up 24.1 percent of all seniors in Korea. Whereas only 10.3 percent of non-income-deprived seniors live alone, 40.2 percent of income-deprived seniors live alone. Specifically, the percentage of seniors living alone among income-deprived and multidimensionally non-poor seniors is 31.3 percent, while the percentage among income-deprived and multidimensionally poor seniors rises to 51.0 percent. In other words, seniors living alone tend to be poorer than seniors who live with spouses and/or other family members.

Nearly 70 percent of all seniors live in homes that they own. Of income-deprived seniors, 56.4 percent own homes, while 78.8 percent of non-income-deprived seniors own homes. The home ownership rate rises to 84.0 percent among income-deprived and multidimensionally non-poor seniors, as opposed to only 22.7 percent among income-deprived and multidimensionally poor seniors. The largest percentage of this last group of seniors, amounting to about 43.2 percent, live in rented homes for which they pay monthly rent. Compared to income-deprived and multidimensionally non-poor seniors, the percentage of income-deprived and multidimensionally poor seniors paying monthly rent is 31.7 percentage points higher, while the percentage of home owners is 61.3 percentage points lower.

〈Table 4-8〉 Distribution of Seniors by Household Size and Housing Status (2015)

Type	Household size			Housing status					
	Total	Alone	Other	Total	Own home	Monthly rent	Monthly rent with deposit	Monthly rent without annual contract	Other
All seniors (100%)	100.0	24.1	75.9	100.0	68.5	7.0	10.8	1.2	12.5
Non-income-deprived (53.7%)	100.0	10.3	89.7	100.0	78.8	5.6	7.1	0.6	7.9
Income-deprived (46.3%)	100.0	40.2	59.8	100.0	56.4	8.7	15.2	1.9	17.8
Multidimensionally non-poor (55.0%)	100.0	31.3	68.7	100.0	84.0	8.9	2.5	0.1	4.5
Multidimensionally poor (45.0%)	100.0	51.0	48.9	100.0	22.7	8.3	30.8	4.1	34.1

Note: Non-income-deprived seniors make up 53.7 percent of all seniors, while the income-deprived make up 46.3 percent (relative poverty rate among Korean seniors = 46.3 percent). Of income-deprived seniors, 55.0 percent are multidimensionally non-poor, while 45.0 percent are multidimensionally poor.
Source: KIHASA-SNU (2016).

Table 4-8 shows the distribution of seniors by working capacity and subjective health condition. Of all seniors, 61.6 percent are capable of normal work. The remaining 38.4 percent are capable of working only at home, not capable of working at full capacity, or not capable of working at all. Of income-deprived seniors, 51.1 percent are capable of normal work, compared to 70.7 percent of non-income-deprived seniors capable of normal work. Of income-deprived and multidimensionally poor seniors, only 39.0 percent are capable of normal work, as opposed to 61.0 percent of income-deprived and multidimensionally non-poor seniors.

Irrespective of poverty, more seniors assessed themselves as unhealthy rather than healthy. Among income-deprived and multidimensionally non-poor seniors, 22.7 percent think they are in good health, as opposed to only 12.9 percent among income-deprived and multidimensionally poor seniors. Of this last group, 57.0 percent think they are in poor health.

〈Table 4-9〉 Distribution of Seniors by Working Capacity and Subjective Health Status (2015)

Type	Working capacity			Health status			
	Total	Capable of normal work	Other	Total	Good health	Neutral	Poor health
All seniors (100%)	100.0	61.6	38.4	100.0	25.8	32.6	41.6
Non-income-deprived (53.7%)	100.0	70.7	29.3	100.0	32.3	33.4	34.3
Income-deprived (46.3%)	100.0	51.1	48.9	100.0	18.3	31.7	50.0
Multidimensionally non-poor (55.0%)	100.0	61.0	39.0	100.0	22.7	33.1	44.2
Multidimensionally poor (45.0%)	100.0	39.0	61.0	100.0	12.9	30.1	57.0

Note: Non-income-deprived seniors make up 53.7 percent of all seniors, while the income-deprived make up 46.3 percent (relative poverty rate among Korean seniors = 46.3 percent). Of income-deprived seniors, 55.0 percent are multidimensionally non-poor, while 45.0 percent are multidimensionally poor.
Source: KIHASA-SNU (2016).

3. Conclusion of Analysis

Below is a summary of the results of our analysis. To ensure the robustness of comparison, we provide analysis results based

upon Statistics Korea's Household Finance and Welfare Survey 2016 (HFWS) data as well.

1) Unidimensional Elderly Poverty Index

Table 4-9 lists the unidimensional poverty measures (i.e., OECD's relative poverty rate based on 50 percent of the equivalised median disposable income) in Korea based upon different sources of data. The relative poverty rate of Korean seniors is around 45 percent across all three sources.

〈Table 4-10〉 Relative Elderly Poverty Rates in Korea

Type	HTS				KWPS (as of 2015)	HFWS (as of 2015)
	2013	2014	2015	2016		
Relative (unidimensional) elderly poverty rate (%)	47.5	47.2	44.7	46.7	46.3	46.2

Note: The poverty line lies at 50 percent of the equivalised median disposable income per capita (weighted).
Sources: KIHASA-SNU (2016); Statistics Korea (2016), Household Finance and Welfare Survey; and Statistics Korea (each year).

As of 2015, the poverty gap between seniors and the younger population was 37.8 percentage points when based upon the KWPS data and 34.7. percentage points when based upon the HFWS data (Table 4-10). Irrespective of the data source, the poverty gap between seniors and the younger population remains large.

〈Table 4-11〉 Poverty Gaps in Korea

Type		KWPS	HFWS
Relative poverty rate, 2015 (%)		13.5	16.3
	Seniors (A) (%)	46.3	46.2
	Younger (B) (%)	8.5	11.5
	Difference (A - B) (%p)	37.8	34.7

Note: The poverty line lies at 50 percent of the equivalised median disposable income per capita (weighted).
Sources: KIHASA-SNU (2016); Statistics Korea (2016); and Statistics Korea (each year).

2) Adjusted headcount Ratios Among Seniors

Table 4-11 summarizes the adjusted headcount ratios by source of data. The adjusted headcount ratios (i.e., multidimensional poverty rates, M_0) among seniors based upon the KWPS data and HFWS data are 14.3 percent and 13.4 percent, respectively. The incidence of multidimensional poverty among seniors is 21.1 percent based upon the KWPS data and 19.6 percent based upon the HFWS data. This means that one out of every five seniors in Korea is multidimensionally poor. With the multidimensional poverty cutoff (k) at 0.5, these multidimensionally poor seniors are deprived in terms of income and assets, income and housing, assets and housing, or income, assets, and housing together.

The difference between seniors and the younger population in terms of the adjusted headcount ratio is 14.9 percentage points based upon the KWPS data and 10.4 percentage points based upon the HFWS data. The poverty gap is significantly

narrower than when the unidimensional income measure was applied to the relative poverty rates.

〈Table 4-12〉 Adjusted headcount Ratios and Multidimensional Poverty

Type	KWPS				HFWS			
	Adjusted headcount ratio, % (M_0)	Incidence of multidimensional poverty, % (H)	Average ratio of deprived individuals, % (A)	Each group's contribution (%) to M_0	Adjusted headcount ratio, % (M_0)	Incidence of multidimensional poverty, % (H)	Average ratio of deprived individuals, % (A)	Each group's contribution (%) to M_0
Overall	5.5	8.1	68.2	100.0	7.4	10.6	69.3	100.0
Seniors (A)	14.3	21.1	68.1	34.1	13.4	19.6	68.1	26.5
Younger (B)	4.2	6.2	68.2	65.9	6.4	9.2	69.8	73.5
A - B	10.1	14.9	-0.1	-31.8	7.0	10.4	-1.7	-47.0

Note: $k = 0.5$, with equal weights assigned to all dimensions.
Sources: KIHASA-SNU (2016) and Statistics Korea (2016).

Table 4-12 shows that the percentage of Korean seniors who were multidimensionally poor and income-deprived at the same time as of 2015 (i.e., the (cut) income poverty rate) was 20.8 percent based upon the KWPS data and 18.9 percent based upon the HFWS data. This means that one out of every five seniors in Korea is deprived in terms of income and either assets or housing or both. On the other hand, only 0.3 percent of multidimensionally poor seniors were deprived of assets and housing(21.1 percent minus the percentage of income-deprived seniors, or 20.8 percent).

While 46 percent of Korean seniors would be categorized as income-poor according to the OECD's standard, only 21 percent of Korean seniors are deprived of income as well as hous-

ing and/or assets. The remaining 25 percent are deprived of income only.

〈Table 4-13〉 Income and Other Deprivations

Type		KWPS (%)			HFWS (%)		
		Income deprivation (relative income poverty rate)	Incidence of poverty (H)	censored headcout ratio for income	Income deprivation (relative income poverty rate)	Incidence of poverty (H)	censored headcout ratio for income
Overall		13.5	8.1	7.8	16.3	10.6	8.6
	Seniors	46.3	21.1	20.8	46.2	19.6	18.9
	Younger	8.5	6.2	5.1	11.5	9.2	7.0

Note: $k = 0.5$, with equal weights assigned to all dimensions.
Sources: KIHASA-SNU (2016) and Statistics Korea (2016).

3) Characteristics of Income-Deprived and Multidimensionally Poor Korean Seniors

Earlier, we looked into the different characteristics of income-deprived seniors by dividing them into the multidimensionally poor and multidimensionally non-poor. Now, we will summarize our comparison of asset distribution. Table 4-13 shows the distributions of total assets per household member by source of data.

Both sources of data confirm that the lowest and highest groups comprise a relatively large proportion of all Korean seniors (with the asset groups defined by asset values at the 25th, 50th, and 75th percentiles). Second, the percentage of seniors in the high asset groups is relatively higher among seniors who

are not income-deprived (i.e., not relatively poor, according to the OECD's standard). Of non-income-deprived seniors, 68.5 percent belong to the high asset groups, according to the KWPS data. Third, the percentage of seniors in the low asset groups is relatively higher among seniors who are income-deprived (i.e., relatively poor, according to the OECD's standard). Of income-deprived seniors, 63.4 percent belong to the low asset groups, according to the KWPS data.

The distribution of assets differs significantly between multidimensionally poor seniors and multidimensionally non-poor seniors. Among income-deprived but multidimensionally non-poor seniors, only 2.0 percent belong to the lowest asset group; 31.7 percent, to the low asset group; 33.3 percent, to the high asset group; and 33.0 percent, to the highest asset group. Among income-deprived and multidimensionally poor seniors, on the other hand, 95.2 percent belong to the lowest asset group, while only 0.4 percent belong to the highest income group. These figures are based upon the KWPS data, and the analysis based upon the HFWS data shows similar results. Figure 4-1 visualizes the extreme difference in asset distribution between these two groups of seniors.

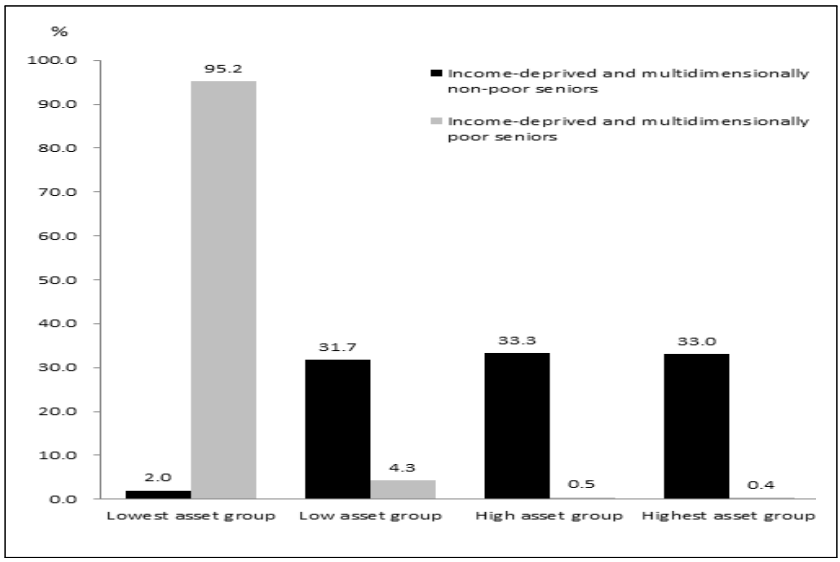
〈Table 4-14〉 Asset Distributions Among Seniors by Source of Data (2015)

Source of data	Asset group distribution (%) (total assets per household member)				
	Total	Lowest	Low	High	Highest
KWPS					
All seniors (100%)	100.0	28.2	18.0	20.4	33.4
Not income-deprived (53.7%)	100.0	14.7	16.8	22.2	46.3
Income-deprived (46.3%)	100.0	44.0	19.4	18.3	18.3
Multidimensionally non-poor (55.0%)	100.0	2.0	31.7	33.3	33.0
Multidimensionally poor (45.0%)	100.0	95.2	4.3	0.1	0.4
HWFS					
All seniors (100%)	100.0	28.0	21.3	20.5	30.2
Not income-deprived (53.7%)	100.0	16.5	20.0	23.5	40.0
Income-deprived (46.3%)	100.0	41.5	22.7	16.9	18.9
Multidimensionally non-poor (55.0%)	100.0	3.5	36.3	28.3	31.9
Multidimensionally poor (45.0%)	100.0	96.1	3.0	0.5	0.4

Note: Asset values were measured in terms of total assets, not wealth, divided by the number of household members. There are four asset groups, depending on the value of the assets they possess, i.e., lowest, low, high, and highest. The lowest group belongs to the bottom 25 percent of the total population asset distribution; the low group, to the next 25 percent (26th to 50th percentiles); the high group, to the next 25 percent (51st to 75th percentiles); and the highest, to the top 25 percent (76th to 100th percentiles). Currently in Korea, the 25th percentile of the total population asset distribution per capita is KRW 31.48 million; the 50th percentile, KRW 74.33 million; and the 75th percentile, KRW 148.75 million.

Sources: KIHASA-SNU (2016) and Statistics Korea (2016).

[Figure 4-1] Total Asset Distribution Among Income-Deprived Seniors: Multidimensionally Poor and Non-Poor (2015)



Note: Asset values were measured in terms of total assets, not wealth, divided by the number of household members. There are four asset groups, depending on the value of the assets they possess, i.e., lowest, low, high, and highest. The lowest group belongs to the bottom 25 percent of the total population asset distribution; the low group, to the next 25 percent (26th to 50th percentiles); the high group, to the next 25 percent (51st to 75th percentiles); and the highest, to the top 25 percent (76th to 100th percentiles). Currently in Korea, the 25th percentile of the total population asset distribution per capita is KRW 31.48 million; the 50th percentile, KRW 74.33 million; and the 75th percentile, KRW 148.75 million.

Sources: KIHASA-SNU (2016) and Statistics Korea (2016).

V

Policy Implications

V Policy Implications

This study begins with the question of how well the OECD's relative poverty rate captures and reflects the reality of poverty among seniors in Korea. This question is already being asked among policymakers. The National Assembly's Special Committee and Social Organization for Strengthening of Public Pension Benefits, held in the latter half of 2015, called for a review of the relative elderly poverty rate, suggesting the existence of a significant gap between the relative elderly poverty rate and the reality of poverty among Korean seniors. This study was thus conducted to answer the question: "Although the OECD's relative poverty standard indicates that nearly half of all Korean seniors are poor, are they actually?" To answer this question, we had to revisit the meaning of poverty.

The income-centered and unidimensional measures of poverty determine who is poor and not poor according to income level only. However, a growing number of researchers are pointing out that the income-based, unidimensional measure of poverty may satisfy the necessary condition of gauging poverty but not the sufficient condition. Numerous studies show that the correlation between income and the possession of essential goods is not as strong as commonly believed. The income-based approach to poverty tends to categorize those who

do not earn income but have enough savings and/or own decent homes as "poor" and is particularly prone to categorizing elderly retirees, who no longer work for income, as poor as well.

This study adopts the AF counting approach to set up an alternative, multidimensional index of poverty with the goal of capturing the diverse aspects of seniors that have so far eluded the unidimensional, income-based poverty index. Our multidimensional poverty index regards seniors who are deprived along at least x-number of dimensions (among income, assets, housing, etc.) as poor.

Whereas the income poverty rate among Korean seniors reached around 46 percent as of 2015, according to the OECD's standard, about 45 percent of income-deprived seniors (nearly 21 percent of all seniors) were multidimensionally poor seniors deprived in terms of assets, housing, or both, in addition to being deprived in terms of income. The vast majority of these multidimensionally poor seniors belonged to the lowest asset group (95.2 percent). The remaining 55 percent of income-deprived seniors (25 percent of all seniors), on the other hand, were not multidimensionally poor. As a matter of fact, 66.3 percent of these income-deprived and multidimensionally non-poor seniors belonged to the high and highest asset groups, with only two percent of them belonging to the lowest asset group.

Concerning the question as to whether half of all Korean seniors are as poor as the OECD's relative poverty standard in-

dicates, based upon our foregoing analysis, we can say that they are not, at least from a multidimensional perspective on poverty. Policymakers thus need to revisit and consider whether they should prioritize all seniors categorized as poor under the OECD's standard as primary targets of policy efforts to alleviate poverty. Poverty policy measures targeting seniors should take into account not only income distribution but also the combined distribution of other indicators of poverty, including health and assets.

The policy implications of our analysis can be summarized as follows. First, policymakers should identify the subset of income-deprived seniors who are in need of urgent and substantial policy aid in order to better establish their policy priorities. Second, policymakers should consider the combined distributions of various dimensions of poverty and design policy solutions accordingly in order to ensure the efficient use of limited resources. Third, it is important to collect and update more basic data in order to improve the quality of studies on multidimensional poverty indices. Although multidimensional poverty indices are growing in popularity as a research topic in Korea, studies of sufficient breadth and depth have yet to be done. To improve the policy application of multidimensional poverty indices, experts need to continue their research on the topic. Further research on multidimensional poverty will help Korean policymakers gain a better understanding of elderly

poverty in Korea. Supplementary measures of poverty should also be developed and used, in addition to the existing income-based measure, in order to improve the effectiveness of policy measures aiming to alleviate elderly poverty.

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