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Inhoe Ku, Wonjin Lee, Aya Abe, Zhu Mengbing, Li Shi,

Chungyang Yeh, Dongjin Kim

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What Makes Old-Age Poverty in East Asian Societies so High?

Inhoe Ku* (Seoul National University)

Wonjin Lee (Korea Institute for Health and Social Affairs)

Aya Abe (Tokyo Metropolitan University)

Zhu Mengbing (Beijing Normal University)

Li Shi (Zhejiang University)

Chungyang Yeh (Soochow University, Taiwan)

Dongjin Kim (Seoul National University)

* Corresponding author: inhoeku@snu.ac.kr

Abstract

This study compares poverty among older adults in China, Japan, Korea, and Taiwan with that in selected Western societies and explores factors contributing to these high levels of poverty among older adults from a comparative perspective. Lower education levels of older people contribute to high poverty among East Asian older people while multigenerational living arrangements work toward lowering the poverty rate. Among income sources, low levels of income from public transfer programs account for high old-age poverty although high levels of market income and private transfer income partly offset this among older people. Meanwhile, taking account of financial assets and home ownership does not change the comparative features of high old-age poverty among East Asian older people. Our analyses suggest that the future prospect of economic well-being among older people in the region largely hinges on the further development of welfare state programs for older people.

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1. Introduction

Many societies have achieved astonishing success in eradicating extreme poverty over the past several decades, the most successful of which can be found in East Asia. At the same time, many East Asian societies including Japan have come to struggle with the rise in inequality and relative poverty during recent decades (Gustafsson and Sai 2020; OECD, 2006). In particular, older people suffer from poverty much worse in East Asian societies than in their Western counterparts. China, Japan, and South Korea (hereafter Korea) rank very high in terms of the relative poverty rate of older people among OECD member societies and other large economies (OECD 2019). Taiwan has also experienced a rising trend in older person poverty (Tai and Pixley, 2008). This is in stark contrast to older adults in the Western industrialized world who have become less likely to live in poverty relative to children over the past several decades (Marchand and Smeeding 2016).

This study examines what makes poverty among older adults so high in East Asia. We consider older people poverty in a broader perspective. The extant literature on developed Western societies focuses on the public dimension of old-age support (for a few exceptions, see Disney and Whitehouse 2002; Smeeding et al. 2008). It generally shows that older people poverty has been drastically reduced due to public old-age pension programs implemented over the past several decades (Engelhardt and Gruber 2006; Smeeding and Sandström 2005). In contrast, research on non-Western societies without mature public pension programs in place shows the importance of broad socio-economic factors, including the labor market activities of older people, their demographic characteristics and economic support from family members as potential contributors to (or protections against) poverty in old age (Gasparini et al. 2010). Recently, the literature has expanded the scope of this research by investigating the role of assets in explaining

old-age economic well-being (Gornick et al., 2009). We assess the contributions of socio-demographic characteristics of older people, their income sources and asset holdings.

We examine old-age poverty across East Asian societies and compare it with that among Western societies. Very few studies have examined poverty in East Asia using a comparative perspective (notable exceptions include Smeeding, Gao, Saunders and Wing, 2008; and Bradbury, Jantti and Lindahl, 2019). We attempt to fill this gap in the literature. Given that many of the societies under examination are among high- and middle-income societies, we apply a measure of relative poverty. China, which started to industrialize relatively late in the region, has become a society where a relative approach is proposed for the measurement of poverty (see Gustafsson and Sai, 2020). This study is among the few comparative studies of poverty in East Asia based on a relative concept of poverty. We examine older people poverty circa 2013 for four East Asian societies (China, Japan, Korea and Taiwan) and six Western societies (Australia, Denmark, Finland, Germany, Italy and the USA).

2. Contributors to poverty among older adults

Individuals become more vulnerable to poverty as their earning capacities wane as they get older. This is why older people are at high risk of poverty in general. Yet, older people poverty is affected by many factors and can be seen to varying extents across different societies. The determinants of older people poverty can be categorized into three main factors: socio-demographic characteristics; income level and sources; and asset holdings. First of all, the risk of poverty among older people depends on various socio-demographic factors. Age is clearly important. People after retirement age often lose their

earning capacities. In particular, older elderly people are more likely to be poor because most of them cannot work any longer. Thus, older people poverty increases as the share of older elderly people grows among older people. Gender and education are also significant risk factors. The economic status of older people often reflects their employment and earnings history during their working years, which is influenced by their education and gender. Among these socio-demographic factors, education levels of East Asian older adults are relatively lower than those of younger generations in their societies, which may significantly contribute to their high poverty rate.

Given the disadvantages faced by most older people, the most important demographic characteristic concerns economic support from family. In particular, living together with adult children has been an important way for older adults to maintain their living standards and avoid poverty. In multi-generational extended families, the market incomes of young family members can be shared with older adults (Smeeding et al., 2008). However, the tradition in East Asia of financially and physically supporting one's parents in old age has been waning, which can be seen through the changes in living arrangements across the region. Yet multi-generational extended families are still prevalent compared to Western societies and may be a factor lowering old-age poverty in East Asia (Murozumi and Shikata, 2008).

While economic resources in old age come from several sources, labor earnings are still an important source of income, accounting for a substantial portion of older people's income (OECD 2019). And although earned income declines in old age, longer and healthier lives could result in more paid work among older adults. Income from adult children has been another important source of income for a considerable number of older people in many Asian societies (Biddlecom et al., 2002). As more adult children move to

take up better jobs and live away from their parents, intergenerational inter-household money transfers gain more significance for the economic well-being of older people. On the other hand, demographic changes indicate that there are fewer children to support their older parents who live longer, suggesting a declining role of intra-family private transfer income as a source of income for older people. Given that older people's market income and private transfer income from their adult children remain significant in East Asia, those income sources continue to contribute toward lowering poverty among East Asian older people.[1]

Another important source of income for older people is benefits from public transfer programs. In many Western industrialized societies, public pension programs have been well developed. These programs lift the standard of living of older people and successfully reduce their poverty levels in those societies (Engelhardt and Gruber 2006; Marchand and Smeeding 2016). In contrast, public transfer programs for older people remain underdeveloped in East Asia. Except for Japan, societies in the region only started to expand contributory pension programs since the 1990s. Therefore, the inadequate coverage and level of income from less developed public pension programs may be a major reason for the high level of old-age poverty in East Asian societies. It may be even more significant in the context where traditional family support for older people has been waning.

Assets of older people should be considered in tandem with income when discussing their economic well-being. Income measures account for wealth by including the income flow generated as interest income and other forms of property income in the current year. Yet wealth is a potentially important financial resource in other ways. It can be liquidated or used for credit when people do not have an adequate regular income to

meet their needs. According to the life cycle model of consumption and savings, people can smooth their consumption path over their life cycle, by saving during their working years and consuming their savings in retirement (Deaton, 1991). The model suggests that high levels of old-age income poverty need to be examined in relation to potential consumption support from assets. Assuming that private asset holdings function as an alternative to public pension benefits for old-age economic support, the inadequate level of public pension wealth may have led to more savings and asset buildings among older people in East Asia – in the same way that some argue that public pension schemes reduce savings in societies where pension schemes are fully developed.

We also consider home ownership. Housing, in particular as a primary residence, accounts for a major part of the asset holdings of low-wealth households (OECD, 2021). Poverty measures should reflect the value of housing services provided by owner-occupied dwellings less the value of their maintenance costs (Canberra Group, 2011; Kuypers and Marx, 2018). Studies suggest the flow of this 'imputed (net) rent' on owned homes affects consumption among older people (Johnson, Smeeding, and Torrey, 2005). Home ownership may be an additional pillar to retirement income (Yates and Bradbury, 2010; Bradbury, 2013). If home ownership is more prevalent among older people in East Asian societies, it may also mitigate the economic strains they face.

These arguments suggest the need for a comprehensive approach that incorporates the many factors contributing to poverty among older people. We account for older people poverty in East Asian societies based on socio-demographic characteristics of older people, their income sources and asset holdings.

3. Data and methods

We use nationally representative and comparable data for the 10 societies under examination from the Luxembourg Income Study (hereafter LIS), the Luxembourg Wealth Study (hereafter LWS) and comparable national surveys. LIS is the largest available income database of harmonized microdata collected since the early 1980s for what is now about 50 societies across the world. LWS, a more recently developed project within LIS, provides harmonized cross-sectional data on wealth and a range of socio-economic characteristics of households.

For analyses of income poverty, we analyze data from LIS for Korea, Taiwan, and six Western societies while we use the China Household Income Project (CHIP) for China and the Comprehensive Survey on Living Conditions (CLSC) for Japan. These two national datasets have comparable information on income and socio-demographic characteristics from samples larger than corresponding datasets available in the LIS database, which is necessary for our analyses using information for subgroups classified by different population characteristics in each society.

For the asset-based analyses, we use data on wealth from LWS for five Western societies, namely Australia, Finland, Germany, Italy, and the United States. For the other societies included in the analyses of income poverty, data fit for our analyses are not available.[2] To compare East Asian societies to the five Western societies with data available in LWS, we rely on national datasets. We find that Korea is the only society with a national dataset on wealth we can access. Data for Korea come from the Survey of Household Finances and Living Conditions (SHFLC), which collects information on assets and income of households and their social and demographic characteristics.

Our sample for the income-based analyses includes all older individuals aged 65 and over regardless of their type of living arrangement. We equivalize household income by the scale of the square root of the household size. The poverty thresholds are set at 50 per cent of the national median of equivalized personal disposable income.[3] For the analysis of asset holdings, we select all households with a head or a spouse aged 65 and over, following the convention in the literature (Gornick, Sierminska, and Smeeding, 2009). This rule is adopted because assets of households headed by non-elderly adults are unlikely to belong to older adults. As a result, we effectively exclude older people who live in extended families and who are neither the head nor the spouse of the head.[4] In adjusting for differences in household size, we apply the same equivalence scale, the square root of household size, adopted for the income-based analysis. To be consistent with the selection of households as a unit of analysis for asset holdings, we set the income poverty thresholds at 50 per cent of the national median of equivalized household disposable income. Thus, the poverty rate in this asset-based analyses indicates the share of poor households among all households with a head or a spouse aged 65 and over while the poverty rate in the income-based analyses shows the share of older poor individuals among all older individuals. We will discuss the measurement of asset poverty later.

Our method for examining income poverty involves comparing income distributions for a pair of societies. We select Germany as a reference Western society to be compared with each East Asian society. Germany, as a Western welfare state with a population size comparable to that of each East Asian society except for China, has achieved a low level of older people poverty.[5] In addition, we use Taiwan as a reference among East Asian societies to be compared with each remaining East Asian society. Taiwan, as a society with typical demographic characteristics representing traditional East

Asian societies, has avoided extremely high levels of poverty among older people.

We examine several factors contributing to old-age poverty. We first consider socio-demographic characteristics: living arrangements, education, age and gender. We think both age and gender are co-determined and thus combine the two factors to create a joint variable of age-gender.[6] We start by assessing the contribution of socio-demographic characteristics as a whole. We can use the following equation to decompose the total difference in poverty into the contribution of population characteristics and the residual:

$$P_w^c - P_w^r = \left(\sum_{g(L,E,A)=1}^{n} S_{g(L,E,A)}^c \cdot P_{g(L,E,A)}^c - \sum_{g(L,E,A)=1}^{n} S_{g(L,E,A)}^r \cdot P_{g(L,E,A)}^c\right)$$
$$+ \left(\sum_{g(L,E,A)=1}^{n} S_{g(L,E,A)}^r \cdot P_{g(L,E,A)}^c - \sum_{g(L,E,A)=1}^{n} S_{g(L,E,A)}^r \cdot P_{g(L,E,A)}^r\right) \quad (1)$$

where P_w^c indicates the poverty rate for the whole older person population in comparison society *c* while P_w^r indicates the poverty rate for the whole older person population in a reference society *r*. $S_{g(L,E,A)}$ indicates the share of each socio-demographic group, defined by living arrangement (L), education (E) and age-gender (A), while $P_{g(L,E,A)}$ indicates the poverty rate of the corresponding socio-demographic group. Equation (1) shows that the difference in poverty between the two societies can be decomposed into two parts: one due to the difference in population characteristics in the former parenthesis and one due to the difference in poverty rates of corresponding sub-populations in the latter parenthesis.[7] In the decomposition of the difference in mean wage, the first is often called the composition effect while the second is called the wage structure effect (Fortin, Lemieux, and Firpo, 2011). In a similar fashion, we may call the first the composition effect and the second the income structure effect.

An easy way to evaluate the contribution of socio-demographic composition to

the difference in poverty between comparison society *c* and reference society *r* is to reweight the data of society *c* to estimate a hypothetical poverty rate which would have prevailed had the composition changed to be the same as that in society *r*. A re-weight for group *g*, defined by the three socio-demographic characteristics, in society *c* is $\psi_{g(L,E,A)} = S^r_{g(L,E,A)} \div S^c_{g(L,E,A)}$, where $S^r_{g(L,E,A)}$ and $S^c_{g(L,E,A)}$ denote the probability of being in group *g*, i.e., the share of group *g*, among the total older people population in society *r* and *c*, respectively. Then, comparing the actual poverty rate of society *c* and the poverty rate estimated from the society *c* sample weighted by the re-weight, $\psi_{g(L,E,A)}$, would produce the counterfactual difference in poverty due to socio-demographic characteristics.

There are likely to be some potential interdependences between the socio-demographic characteristics. For example, the young male elderly may have an education level higher than the old female elderly. We are interested in separately assessing the independent contribution of each population characteristic (education), holding the composition of another characteristic (age-gender) fixed, to the observed difference in poverty.[8] To evaluate the independent contribution of each factor, we implement a conditional re-weighting method in the spirit of DiNardo, Fortin and Lemieux (1996). As before, we re-weight the data to construct a counterfactual distribution. We apply the above re-weighting method explained for exogenous factors (age and gender). If a group is defined by an endogenous factor (education), however, we apply a new re-weight based on this conditional re-weighting method.

We first calculate the probabilities of being in a group (for example, the younger male elderly group) defined by an exogenous characteristic (for example, age-gender) in

society *r* and *c.* The unconditional re-weight is the ratio of the probability in society *r* and the corresponding probability in society *c*. Secondly, we calculate the probability of being in a group (for example, the low education group) conditional on being in a group (for example, the younger male elderly group) in society *r*. The conditional re-weight is the ratio of this probability in society *r* and the corresponding conditional probability in society *c*. Then, comparing the poverty rate estimated from the society *c* sample weighted by the first unconditional re-weight and the poverty rate estimated from the society *c* sample weighted by the second conditional re-weight produces the counterfactual difference in poverty due to the educational difference after holding age-gender fixed. A similar conditional re-weight is applied to living arrangements, assuming that living arrangements depend on education and age-gender. (see Ku, Lee, Lee and Hahn (2018) for more details.)

We analyze the contributions of each factor in a sequential manner from the most endogenous one to the most exogenous one. As mentioned above, we regard living arrangements as dependent on education and age-gender. We also regard education as dependent on age-gender. We think age-gender is exogenously determined. Thus, our decomposition starts from age-gender through education to living arrangements. For societies where the information is available, we consider the contribution of urban/rural residence. We assume that the area of residence is also dependent on other related characteristics such as age, gender, and education.[9]

Next, we examine the contributions of income sources. Here we are interested in contributions of market income, private transfer income and public transfer income. A widely used method is to compare poverty rates before and after an income source is considered. We start by considering the contribution of market income. For market

income, we simply define the difference in market income poverty between two societies as the contribution of market income. For assessing the contribution of private transfer income, we measure the difference in poverty based on the sum of market income and private transfer income and poverty based on the extent to which market income alone differs between two societies. We similarly measure the contribution of public transfer income as the difference in poverty of the sum of market income and private and public transfer income and poverty of the sum of just market income and private transfer income.

Finally, we investigate the extent to which high old-age income poverty may be buffered by financial assets in East Asian societies. A standard measure of household wealth is net worth constructed as all marketable assets (the sum of household financial and non-financial assets) net of household debts.[10] For the analyses of asset poverty, however, our preferred measure of wealth is financial assets that can be easily monetized (Haveman and Wolff, 2004; Brandolini, Magri, and Smeeding, 2010). This is because we do not expect that people without income have to (or are able to) run down all their wealth holdings to avoid poverty. In our approach, asset poverty is seen as the situation whereby financial asset holdings are insufficient to meet the basic needs of household members when income is not available. Following Gornick et al. (2009), we define households as asset poor if their financial assets are less than six months of income at the poverty threshold level.[11] We examine how many of the income poor are not asset poor in the societies under examination. In addition, we consider the possibility that home ownership may lessen the economic needs of poor older people. We look at home ownership rates among poor older people.

4. Determinants of Income Poverty among Older People

Table 1 presents poverty rates for 10 societies circa 2013. Among the four East Asian societies, China shows the highest poverty rate at 21.2 per cent. Taiwan has the lowest at 10.7 per cent, with Japan and Korea somewhere in between. For Japan, the poverty rate is 16.1 per cent, while the rate for Korea is 14.6 per cent. Among the six Western societies, Denmark achieved the lowest poverty rate at 5.7 per cent, followed by Finland with 6.8 per cent and Germany with 9.3 per cent, while Australia is next at 12.5 per cent. The United States and Italy show a higher poverty rate of 16.7 per cent and 14.2 per cent, respectively.

<Table 1> around here

One feature prominent among East Asian societies is that elderly poverty rates are higher than poverty rates for other age groups.[12] In Korea, in particular, the elderly poverty rate is 47.2 per cent which is extremely high compared to poverty rates for other age groups. The ratio of the poverty rate for older adults to the rate for total population reaches 3.23. On the other hand, the poverty rate for older adults in Japan is much closer to the rate for the whole population, showing a ratio of 1.18. Older people in the Western societies under review display a different pattern. In the four European societies, poverty rates among older people are quite low and the ratios of the poverty rate for older adults to the rate for the total population are about one or less. The old-age poverty rate in the US is relatively high but similar to the rate for children. Australia is an exception where the elderly poverty rate is 26.5 per cent, much higher than other age groups. When we use 40 per cent of the national median income as the poverty threshold, the poverty rate for older people in Australia is only 6.6 per cent, close to the poverty rates for other age

groups in the society. This is because the 50% poverty line in Australia is close to the benefit level of the unique income-tested age pension in the society.

High poverty rates for older people in East Asian societies may be related to several population characteristics. According to Table 2, the composition of age and gender does not vary much across societies. Most societies show similar age distributions where people aged 75 and older comprise more than 40 per cent of the elderly population. Only in China and Korea is the share of people aged 75 and older between 32 per cent and 35 per cent. Over 50 per cent of the elderly are females in most societies. Thus, age and gender composition of older people do not seem to be related to the high levels of older people poverty in East Asian societies.

On the other hand, there is significant variation in the composition of educational groups. Less than 10 per cent of the elderly population have a high educational level (i.e., college graduation) in most East Asian societies except for Japan while 20 per cent or more of older people have graduated from university in the Western societies under review except for Italy. Living arrangement shows a substantial variation in its composition across societies. About 60 per cent of older people lived with adult children in China and Taiwan, while 40 per cent or more of older people did so in Korea and Japan. Among the Western societies, around 30 per cent of older people co-resided with adult children in Australia, Italy and the US while 13 per cent did so in Denmark, Finland, and Germany. Finally, the majority of older people lived in urban areas in most societies, except in China where 50 per cent of older people lived in rural area.

<Table 2> around here

Table 2 also shows the poverty rates for sub-populations classified by major

characteristics. Age is an important factor showing a large variation in poverty rates for Korea, Taiwan, Australia and the USA.[13] Gender differences are discernible for some societies such as Korea, Japan, Germany and the USA. On the other hand, poverty rates show a large variation by educational level across all the societies. For instance, the elderly with low education level show poverty rates at least a few times higher than high education groups. A large variation in poverty prevalence is found across different types of living arrangement. In most of the societies, single older people show a very high poverty prevalence. Older couples show a higher poverty rate than older people living with adult children in Korea, Taiwan and Australia. For societies with information on residence area available, we found no significant difference in the poverty rate between urban and rural residents except for China.

In Table 3, we present estimates of the average income of older people as a percentage of the average income of the total population for each of the 10 societies in the first row. The row shows that average income of older people ranges from 63.5 per cent (for Korea) to 104.1 per cent (for Italy) of the average income of the whole population in each society. In the second row, we see that the poverty rates for market income for older people are very high for most societies, ranging from 0.60 for Denmark to 0.81 for Germany. As an exception, Finland shows a very low market income poverty rate at 0.20, which may be because market income takes into account the significant benefits received from occupational pensions. It is also notable that older Taiwanese show a much lower market income poverty rate of 0.426, reflecting the high prevalence of multi-generational families in the society as presented in Table 2. In contrast, older people are much poorer with regard to market income in Germany and Italy. In the other rows, the table also shows the poverty rates by other income sources such as private and public

transfer income and tax cumulatively added to market income.

<Table 3> around here

The levels of income of the older people population reported in the first row tend to be positively related to the poverty rate for disposable income, as shown in the last row.[14] For example, Korea has the lowest average income and the highest poverty rate while Italy has the highest average income and the low poverty rate. However, the correlations are not perfect. Denmark, showing the lowest poverty rate at 3.8 per cent, has an average income lower than the US with a poverty rate at 18.9 per cent.

While private transfers have virtually no effect on older people poverty in Western societies, it significantly reduces older people poverty in many East Asian societies. The most prominent example is Taiwan, followed by China and Korea. On the other hand, when public transfer income is added to the sum of market income and private transfer income, older people poverty is dramatically reduced in Japan and in all six Western societies under examination. This suggests that a major reason for the high elderly poverty rate in East Asia is the low level of public transfer income through public transfer programs. In East Asian societies other than Japan and, to a lesser degree, China, income from public transfers does not reduce older people poverty anywhere near as much as in Western societies. Older Koreans are particularly exposed to extremely high poverty rates after both public and private transfer incomes are added.

In Table 4, we present results from the conditional re-weighting analyses. In the top panel, we estimate the poverty rates which would have prevailed had the compositions of population characteristics in each society changed to be the same as those in Germany. In the first column, we report the difference in the poverty rate between each East Asian

society and Germany as observed in the data (as reported in the fifth row in Table 3). In columns (B) to (D) (or (D')), we present the estimated contributions of each factor to the difference in poverty rates using the re-weighting methodology described earlier.

Starting from the Chinese case, when we adjust the composition of age-gender, the difference in poverty rates between China and Germany reduces by -0.002. If the composition of education of older Chinese had changed to be the same as that of their German counterparts, conditional on age-gender, the poverty rate for China would have dropped by 0.051, which is 29 per cent of the total difference between the two societies. If we further adjust the composition of living arrangements of older Chinese, conditional on age-gender and education, to be the same as that of their German counterparts, the poverty rate for China would have barely changed. This is because poverty rates do not differ across older people living in different types of living arrangements.[15] The difference in poverty with Germany remains substantial at 0.132 (74 per cent of the total difference) after accounting for variations in the population characteristics, as shown in the fifth column. On the other hand, rural residence is an important factor affecting poverty for China. If the composition of the residence, conditional on age-gender and education, had changed to be the same as that of older Germans, the poverty rate would have further dropped by 0.057. The difference in poverty with Germany reduces to 0.073 (41 per cent of the total difference), as shown in the seventh column.

<Table 4> around here

For the other three East Asian societies, the second column shows the adjustment of the age-gender composition does not make a significant difference as it did for China. The difference in education, conditional on age-gender, does not significantly matter for

Japan. For Korea and Taiwan, however, education substantially reduces the poverty rate by 0.047 (12%) and 0.036 (21%), respectively. A stronger contribution is found for the difference in living arrangement conditional on age-gender and education in the three comparison societies. It considerably increases the poverty rate for Japan by 0.051, for Korea by 0.138, and for Taiwan by 0.179. Rural residence is not significant in explaining the difference in poverty between Japan and Germany. Overall, the differences in poverty with Germany remain substantial after accounting for differences in the population characteristics, as shown in the fifth and seventh columns. This is because the contributions of education and living arrangements cancel out each other.

In the bottom panel of Table 4, we show changes in the poverty rate which would have occurred had the compositions of population characteristics in the three East Asian societies changed to be the same as those in Taiwan. Note that there are no large differences in poverty between Taiwan and China and between Taiwan and Japan in the first place, as shown in the first column. Population characteristics explain little of the difference in poverty between Taiwan and China and between Taiwan and Japan. For Korea, differences in the share of older people living with adult children seem to be important in explaining the high poverty rate relative to their Taiwanese counterparts. If the composition of living arrangement conditional on age-gender and education had changed to be the same as that in Taiwan, the poverty rate for older Koreans would have decreased by 0.108.

In Table 5, we present results from an analysis of contributions of different income sources. In the top panel, the differences in poverty rates between each of the four East Asian societies and Germany are examined. The results in the first column are reproduced from Table 4 for comparison. For example, the poverty rate for disposable

income in China is 0.179 larger than the rate in Germany. The second column shows that the poverty rate for market income in each East Asian society is smaller than the rate in Germany. The poverty rate for China is 0.154 smaller than the rate for Germany. The corresponding figures are 0.144 for Japan and 0.165 for Korea. Meanwhile, it is enormous (0.38) for Taiwan. It seems that market income earned by non-elderly adults living with older people explains a large portion of the contribution of market income in East Asian societies.[16] In the third column, we find that the poverty rate for the sum of market income and private transfer income in each East Asian society further decreases compared to the poverty rate in Germany. The additional decrease due to private transfer income is larger for Taiwan (0.098) than for Japan (0.026). A similar reduction in poverty is found for China (0.054) and Korea (0.055).

In contrast, considering public transfer income in addition to market income and private transfer income enormously increases the poverty rates in each East Asian society compared to the rate in Germany, as reported in the fourth column. For China, the poverty rate increases by 0.406, more than offsetting the decrease in poverty rate due to market income (-0.154) and private transfer income (-0.054). For Japan, the poverty rate sees a far lower increase by 0.261, showing the significant contribution of its mature public pension program to poverty reduction. The figures for Korea (0.618) and Taiwan (0.637) clearly show that the poverty rates for older Korean and Taiwanese are much higher than the rate for their German counterparts due to their low public transfer income.

<Table 5> around here

In the bottom panel of Table 5, the second column shows that the poverty rate for market income in each of the three East Asian societies is larger than the rate in Taiwan.

The difference is 0.226 for China, 0.236 for Japan and 0.215 for Korea, suggesting that market income plays a crucial role in poverty reduction in Taiwan. Private transfer income also significantly increases the differences with Taiwan to an extent smaller than market income. This suggests that family ties remain stronger in Taiwan. Its contribution varies from 0.043 for China and Korea to 0.071 for Japan. On the other hand, public transfer income generally decreases the poverty rates in the three societies relative to the rate in Taiwan. This is especially true for older Chinese and Japanese with larger public transfer incomes.

5. Asset Holdings and Poverty among Older People

Some studies argue that wealth holdings in addition to income streams should be considered in explaining differences in the economic well-being of older people (Gornick, Sierminska, and Smeeding, 2009). One may argue that the high income-poverty rate among East Asian older people may be compensated by a higher level of wealth. Private asset holdings may function as an alternative to inadequate public pension benefits for older people. Owner-occupied dwellings, accounting for a major part of the asset holdings among older people, provide housing services and may affect their consumption. Given the possibility that asset holdings and home ownership may lessen the economic needs of poor older people, we examine how many of the income poor are not asset poor in the societies under examination. As discussed earlier, we define households as asset poor if their financial asset holdings are less than six months of income at the poverty threshold level. We also look at home ownership rates among poor older people.

To what extent is income poverty paired with asset poverty among older people?

Moreover, do older poor East Asians show a level of wealth higher than their Western counterparts? Figure 1 shows how income poverty interacts with asset poverty across the six societies for which wealth data fit for our analyses are available. In the left-hand panel, wealth is measured as total net worth, i.e., the difference between the monetary value of all of a household's assets and its total liabilities. The share of older poor Koreans in terms of both income and assets is 11.3 per cent while that of the income-only poor is 44.9 per cent.[17] This shows that taking account of net worth as is done here considerably reduces the number of older people counted as poor. It is also true for Western societies presented in the figure wherein the shares of older people who are both income and asset poor are 5 per cent or less.

<Figure 1> around here

As discussed earlier, however, we prefer to measure asset poverty based on financial assets. Non-financial assets including housing cannot be counted as emergency funds to be spent down in hard times. In the right-hand panel, we only consider financial assets, which can be easily liquidated, as wealth. In this panel, older poor Koreans in terms of both income and assets comprise 33 per cent while the share of income-only poor is 23 per cent. Note that a substantial share of older poor Koreans remains poor even after their assets are additionally accounted for. On the other hand, taking assets into account reduces the number of older poor people by nearly two fifths. More important is the reason for the reduction of older poor people, which arises not because the share of asset poor (the sum of asset-only poor and both poor) is small but because the share of income poor (the sum of income-only poor and both poor) is large. In fact, the share of asset poor is 47 per cent in Korea while the corresponding shares in the Western societies range from 36.5 per cent (Australia) to 43.8 per cent (the United States). Thus, the Korean

case is characterized by a high poverty rate in terms of both income and assets.

In most of the Western societies except for Australia, the majority of the income-poor elderly remain poor after their assets are considered. This is related to the fact that the share of the income-poor is small in the first place, as shown in Figure 10.1. For example, the United States shows the income-poverty rate at 15.7 percent while the other three societies have the rate at less than 10 per cent. On the other hand, the share of older poor people reduces almost by half after assets are considered in Australia. This may result from the fact that Australia has the lowest asset-poverty rate. Yet it also reflects the fact that Australia has an income-poverty rate (21.4%) much higher than the other Western societies do. The Australian case is contrasted to the Korean case where both income-poverty and asset-poverty rates are high.

There is another possibility that the economic needs of the older income-poor can be partly met by home ownership. Home ownership is a consumer good which provides a rental service. If many poor older people own their housing, the conventional income-based measure of poverty may exaggerate their economic plight. In Table 6, we examine the home ownership rate among older people across the six societies for which data on wealth and housing ownership are available. One may believe that private assets such as housing may function as an alternative to public pension assets. For example, home ownership was considered as the fourth retirement pillar in Australia (Bradbury, 2013). This suggests that older people in societies with less developed public pension systems may have a higher rate of home ownership as a safeguard against poverty in retirement. On the contrary, older Koreans with less public pension income show a lower rate of home ownership as shown in Table 6. About 68 per cent of older households own a home in Korea while the corresponding rates surpass 80 per cent in Australia and the United

States. The home ownership rate in the European societies ranges from 53 per cent (Germany) to 78 per cent (Finland and Italy). These results may be affected by the perceived role of housing policy in different societies, community attitudes to home ownership and the treatment of home ownership in the tax and social security systems. For instance, the private rental sector is much more prevalent in some European societies than in Australia.

<Table 6> around here

Older income-poor households show a home ownership rate lower than all older households in many societies. Older income-poor Koreans show the lowest rate of home ownership at 57.3 per cent next to older income-poor Germans (42.0 per cent). In the United States and Italy, more than 60 per cent of income-poor households own their home. Income-poor households show the highest rates at about 80 per cent in Australia and Finland. Interestingly, the home ownership rates among the income-poor are close to the rates among all households in the two above-mentioned societies. Overall, the pattern of home ownership across the societies is not entirely different for older income-poor people. There is no evidence that home ownership is more prevalent among older income-poor Koreans compared to their counterparts in Western societies. This finding is corroborated in the home ownership rates among income-only poor households. The rate in Korea is only 43.8 per cent while the corresponding rates in the Western societies vary from 72.3 per cent to 89.2 per cent. On the other hand, older Koreans who are both income- and asset-poor show a home ownership rate of 66.8 per cent, which stands at an intermediate level among the societies under examination. It may be that poor households living in owner-occupied housing do not have additional financial assets. In any case, we can conclude that income-poor Koreans do not relieve their economic hardship by home

ownership more than their Western counterparts do.

6. Discussion and conclusion

This study has examined what makes old-age poverty so high in China, Japan, Korea, and Taiwan. When older East Asians are compared to their Western counterparts, we have found that lower education levels of older people contribute to high old-age poverty while multigenerational living arrangements work toward lowering the poverty rate. Low levels of income from public transfer programs account for much of the high poverty rate among the East Asian elderly although high levels of market income and private transfer income partly make up for this. It is possible that the inadequate development of public transfer programs can be compensated by increased private savings and asset holdings among the East Asian elderly. However, our empirical evidence does not support this argument. The share of the East Asian poor in terms of both income and financial asset seems to be much larger than among those living in the West. Home ownership is also less prevalent than among their Western counterparts.

Our findings confirm the high rate of old-age poverty across East Asian societies. Low levels of income from less developed systems of public transfer, which cannot be made up for by traditional family support systems or private savings and asset holdings by older people, have led to high levels of old-age poverty in the region. We have noted some societal differences within the region. For instance, Korea is a case with an extremely high level of poverty among older people compared to other age groups and compared with their Western counterparts. With the most developed public pension system, Japan shows a pattern relatively similar to Western societies. In the middle, China

and Taiwan have avoided extremely high levels of poverty by relying on their family-based support systems, which may be very difficult to sustain in an era of population aging accompanied by low fertility.

Our findings suggest that old-age economic well-being cannot be secured without adequate levels of public transfer income. Japan already has developed public pension programs, albeit recently retrenched. Fortunately, other East Asian countries have been expanding public transfer programs. Non-contributory social pension programs such as the New Rural Pension Scheme in China and the Basic Pension in Korea have been growing substantially (Cheng et al., 2017; Lee, Ku and Sohn, 2019). In the meantime, public transfer income from contributory pension programs has become more critical for older people in Taiwan.[18] These developments suggest that the future prospects for the economic well-being among older people in the region largely hinges on the further development of welfare state programs for older people.

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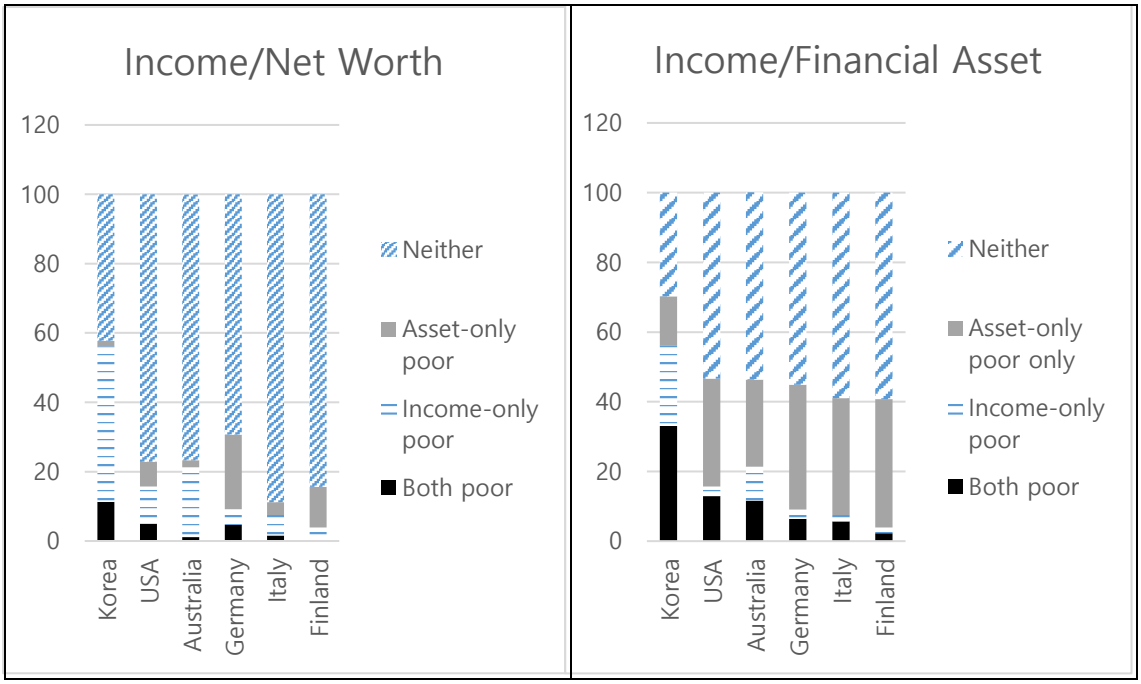

Figure. 1 Income and Asset Poverty among Older People

Source: Luxembourg Wealth Study for five Western societies and SHFLC for Korea.

Table. 1 Poverty rate for total population and different age groups, circa 2013

	Total	Child (~18)	Adult (18~64)	Old Adult (65~)	Ratio of Old Adult to Total	No. of cases (Older adults in brackets)
Australia	0.125	0.114	0.097	0.265	2.12	33,841 (5,279)
China	0.212	0.224	0.195	0.269	1.27	61,365 (6,108)
Denmark	0.057	0.036	0.069	0.040	0.70	183,962 (33,725)
Finland	0.068	0.044	0.075	0.071	1.04	27,142 (4,135)
Germany	0.093	0.097	0.093	0.089	0.96	41,657 (5,344)
Italy	0.142	0.227	0.143	0.074	0.52	19,366 (5,579)
Japan	0.161	0.163	0.145	0.190	1.18	51,212 (15,068)
Korea	0.146	0.091	0.095	0.472	3.23	36,027 (6,808)
Taiwan	0.107	0.087	0.072	0.262	2.45	50,518 (8,746)
U.S.	0.167	0.187	0.154	0.189	1.13	139,060 (16,529)

Notes: 1. The survey year for the data is 2012 for Korea and Japan. For Australia and Italy, the survey year is 2014. For other societies, the survey year is 2013.
2. Poverty threshold is 50% of the median income.
Source: Luxembourg Income Study for six Western societies, Korea and Taiwan, CHIP for China, and CLSC for Japan.

Table. 2 Share of Older People and their Poverty Rate by Population Characteristics, circa 2013

	China		Japan		Korea		Taiwan		Germany	
	share %	pov. rate	share %	pov. rate	share %	pov. rate	share %	pov. rate	share %	pov. rate
Age										
65-69	41	0.27	29	0.14	35	0.37	30	0.21	24	0.09
70-74	28	0.25	25	0.19	30	0.52	27	0.26	31	0.07
75+	32	0.28	46	0.20	35	0.54	43	0.30	45	0.10
Gender										
Male	50	0.27	44	0.14	42	0.42	49	0.25	44	0.06
Female	50	0.27	56	0.21	58	0.51	51	0.27	56	0.11
Education										
Low	84	0.31	37	0.26	77	0.52	80	0.30	17	0.20
Medium	11	0.05	49	0.15	18	0.34	11	0.14	58	0.08
High	6	0.02	14	0.06	5	0.26	9	0.07	25	0.04
Living Arrangement										
Single	6	0.34	17	0.39	22	0.76	9	0.61	39	0.15
Couple	35	0.24	39	0.14	38	0.60	29	0.44	48	0.05
With other adult(s)	59	0.28	45	0.14	40	0.20	62	0.13	13	0.05
Residence										
Urban	50	0.04	87	0.18					69	0.09
Rural	50	0.50	13	0.22	n.a.	n.a.	n.a.	n.a.	31	0.09
	Australia		Denmark		Finland		Italy		USA	
	share %	pov. rate	share %	pov. rate	share %	pov. rate	share %	pov. rate	share %	pov. rate
Age										
65-69	34	0.22	35	0.02	34	0.04	28	0.07	34	0.14
70-74	25	0.25	25	0.02	23	0.04	23	0.07	24	0.16
75+	41	0.32	40	0.06	43	0.11	49	0.08	42	0.24
Gender										
Male	47	0.25	46	0.03	43	0.05	45	0.05	44	0.15
Female	53	0.28	54	0.05	57	0.09	55	0.09	56	0.22
Education										
Low	54	0.31	41	0.06	53	0.10	76	0.09	16	0.35
Medium	26	0.25	38	0.03	25	0.06	18	0.02	50	0.19
High	20	0.15	20	0.01	22	0.01	6	0.03	33	0.11
Living Arrangement										
Single	27	0.47	38	0.08	40	0.17	28	0.10	28	0.34
Couple	46	0.24	48	0.01	47	0.00	39	0.04	43	0.12
With other adult(s)	27	0.11	13	0.02	13	0.02	34	0.10	29	0.14
Residence										
Urban			89	0.03	65	0.06	78	0.08		
Rural	n.a.	n.a.	11	0.06	35	0.09	22	0.07	n.a.	n.a.

Notes: Poverty threshold is 50% of the median income.
Source: Luxembourg Income Study for six Western societies, Korea and Taiwan, CHIP for China, and CLSC for Japan.

Table. 3 Income of Older People and their Poverty Rate by Income Source Added, circa 2013

	China	Japan	Korea	Taiwan	Germany	Australia	Denmark	Finland	Italy	U.S.
Average total income %	93.5	89.7	63.5	78.1	86.1	71.8	80.9	84.9	104.1	95.3
Poverty, Market income	.651	.662	0.641	0.426	0.806	0.656	0.602	0.202	0.785	0.584
Poverty, +Private transfer	.596	.634	0.585	0.327	0.805	0.654	0.600	0.202	0.784	0.582
Poverty, + Public transfer	.259	.151	0.459	0.220	0.061	0.264	0.006	0.044	0.071	0.186
Poverty, + Tax	.268	.182	0.472	0.262	0.089	0.265	0.038	0.071	0.074	0.189
No. of cases	6,105	13260	6,808	8,746	5,085	5,279	32446	4,135	5,579	16529

Notes: Average income of older people as a % of average income of total population. Poverty threshold is 50% of the median income.

Source: Luxembourg Income Study for six Western societies, Korea and Taiwan, CHIP for China, and CLSC for Japan.

Table. 4 Contributions of Population Characteristics to the Difference in Poverty Rates for Older People

	(A) Total Difference with Germany	(B) Difference due to age/gender	(C) Difference due to education	(D) Difference due to living arrangement	(E) Residual	(D') Difference due to rural residence	(E') Residual
China	0.179 (100%)	-0.002 (-1%)	0.051 (29%)	-0.002 (-1%)	0.132 (74%)	0.057 (32%)	0.073 (41%)
Japan	0.093 (100%)	0.000 (0%)	0.013 (15%)	-0.051 (-55%)	0.131 (141%)	-0.005 (-6%)	0.085 (91%)
Korea	0.383 (100%)	-0.010 (-2%)	0.047 (12%)	-0.138 (-36%)	0.484 (126%)	n.a.	n.a.
Taiwan	0.173 (100%)	-0.003 (-2%)	0.036 (21%)	-0.179 (-104%)	0.320 (184%)	n.a.	n.a.
	Difference with Taiwan	Difference due to age/gender	Difference due to education	Difference due to living arrangement	Residual	Difference due to urban/rural residence	Residual
China	0.006 (100%)	-0.001 (-15%)	0.009 (158%)	-0.001 (-21%)	-0.001 (-22%)	n.a.	n.a.
Japan	-0.081 (100%)	0.005 (-6%)	-0.007 (9%)	0.021 (-26%)	-0.099 (123%)	n.a.	n.a.
Korea	0.210 (100%)	-0.007 (-3%)	0.007 (3%)	0.108 (52%)	0.102 (49%)	n.a.	n.a.

Notes: Poverty threshold is 50% of the median income.
Source: Luxembourg Income Study for Korea, Taiwan, and Germany, CHIP for China, and CLSC for Japan

Table. 5 Contributions of Income Sources to the Difference in Poverty Rate for Older People

	Total Difference in poverty rate with Germany	Difference in poverty rate with Germany due to Market income	Difference in poverty rate with Germany due to Private transfer income	Difference in poverty rate with Germany due to Public transfer income
China	0.179	-0.154	-0.054	0.406
Japan	0.093	-0.144	-0.026	0.261
Korea	0.383	-0.165	-0.055	0.618
Taiwan	0.173	-0.380	-0.098	0.637
	Total Difference in poverty rate with Taiwan	Difference in poverty rate with Taiwan due to Market income	Difference in poverty rate with Taiwan due to Private transfer income	Difference in poverty rate with Taiwan due to Public transfer income
China	0.006	0.226	0.043	-0.231
Japan	-0.081	0.236	0.071	-0.376
Korea	0.210	0.215	0.043	-0.019

Notes: Poverty threshold is 50% of the median income.
Source: Luxembourg Income Study for Korea, Taiwan, and Germany, CHIP for China, and CLSC for Japan

Table. 6 Home Ownership Rate among Older People (unit: %)

society	Korea	USA	Australia	Germany	Italy	Finland
All Households	68.1	83.4	84.1	52.9	77.5	78.1
Income-Poor Households	57.3	64.1	80.8	42.0	60.8	80.0
Income-only Poor Households	43.8	80.3	89.2	72.3	72.9	80.3
Income & Asset-Poor Households	66.8	60.7	73.7	29.2	57.0	79.8
# of households	4,386	1,381	3,671	3,386	3,739	2,698

Notes: Asset poverty is measured based on financial assets.
Source: Luxembourg Wealth Study for five Western societies and SHFLC for Korea.

[1] The contribution of transfers from non-resident adult children is not easy to assess because inter-household transfers are often poorly reported in social surveys (Canberra Group, 2011). On the other hand, the role of multigenerational living arrangements cannot be evaluated without errors. Although we assume that intra-household income sharing is perfect under the standard approach in the poverty literature, the approach may not adequately reflect the reality in the multigenerational living arrangements.

[2] Data for Japan are available in the LWS. Yet the sample size is small and relevant information is missing for many cases.

[3] Equivalized household disposable income is an indicator of the economic resources available to each member of a household. For the income-based analysis, we use person-weighted data, rather than household-weighed data, to find the median equivalized income across individuals. Then we compare the median equivalized income across individuals, or the median of equivalized personal income, to equivalized personal income of individuals for determining their poverty status. As will be discussed, we select households as a unit of analysis for asset holding. For this analysis, we set the income poverty thresholds at 50 per cent of the national median of equivalized household disposable income.

[4] The share of those excluded older people is less than 10 per cent of older adults for the Western societies. It is substantial, reaching 22 per cent for Korea.

[5] The population size for Germany is about 84 million in 2021. The corresponding figures are 1.412 billion for China, 126 million for Japan, 52 million for Korea, and 24 million for Taiwan. On the other hand, the population size for other potential reference societies with low poverty among older people is much smaller (e.g., less than 6 million for Denmark and Finland).

[6] We create four groups: elderly males aged between 65 and 74, elderly males aged 75 and over, elderly females aged between 65 and 74, and elderly females aged 75 and over.

[7] To get stable results from the tabulation, we need an adequate number of cases for every cell. For this reason, we reduce the number of categories for some factors. Age is recategorized into a group of aged 74 and less and the other of aged 75 and more; education is recategorized into a group with less than tertiary education completed and the other with tertiary education completed.

[8] The composition of living arrangement among older people in a society can be different from that of other societies for two reasons. First, each sub-population group, defined by education and age-gender, may have a propensity for a specific living arrangement in a particular society, different from that of the corresponding group in other societies. Second, the share of the sub-population groups in the society, which have a different propensity for a specific living arrangement, may differ from the shares in other societies. We ascribe the poverty difference for the first reason as an independent contribution of living arrangement.

[9] It may be simultaneously determined with living arrangement. For example, older people may move to a city to live with adult children, or they may choose an independent living arrangement and stay in their rural home. Thus, we conduct a separate analysis for urban/rural residence, holding education and age-gender fixed but excluding living arrangement from the analysis.

[10] Financial assets include deposit accounts, stocks, bonds, and other non-pension financial assets, while non-financial assets include non-housing real assets (business, vehicle, other durables, etc.) and real estate (primary home and other real estate). Debts include mortgages, business loans, consumer loans, educational

loans, etc. Wealth variables are not bottom coded or top coded; thus, the net wealth variables can contain negative and zero values. There are issues with respect to the measure of household wealth. Above all, self-reported information on wealth is likely to be biased because wealthy households may not respond to the survey or to particular survey items such as financial assets. Measures of wealth rely on a battery of questions that ask respondents to estimate the value of their wealth holdings, separately for different asset components. One should beware that national surveys may achieve varying degrees of success in measuring wealth at the top.

[11] A fully relative approach would define households as asset poor if their assets are less than some fraction of the national median asset. This may imply that those who have both income and asset above the respective poverty thresholds maintain a minimally accepted standard of living. In this study, however, we focus on examining the extent to which income poverty among older adults changes if their asset holdings are additionally considered. Thus, we adopt a broadly used approach which keeps the poverty thresholds based on income only but considers both income and assets as economic resources.

[12] The high elderly poverty rates result partly from the rapid economic growth in the region. Relative poverty rates are based on national median incomes, which rise with the economic growth. In the region, the income among the working-age population has rapidly increased due to the economic growth while the income among older people has lagged behind (Ku, Lee and Lee, 2021).

[13] The variation in poverty rates by population characteristics may reflect the effect of public transfer programs treating sub-population groups differently. In 2013/2014, for example, the pension for a single person, which consists of those aged 75 and over, was lower (and less adequate) than for a couple in Australia.

[14] The poverty rates shown in Table 3 are slightly different from those reported in Table 1. This is because there are more observations with missing information on variables such as education when estimating the rates in Table 3.

[15] As suggested by the relatively high poverty rate at 0.28 for older people living with adults presented in Table 10.2, multigenerational families may suffer from the large family size (Yue, Li and Wang, 2005). It may also be because older people living independently enjoy high income from pension programs in urban areas.

[16] After controlling for population characteristics, we find no significant difference in market income poverty between Germany on the one side and China, Japan and Korea on the other. However, we find a substantial difference in market income poverty between Germany and Taiwan.

[17] Note that the income-poverty rate among older Koreans is 56.2%, higher than the rate (47.2%) reported in the previous income-poverty analysis. A main reason is that the poverty rate in this asset-based analyses is calculated as a share of poor households among all the households with a head or a spouse aged 65 and over while the rate in the previous income-poverty analyses shows a share of older poor individuals among all older individuals. Please see the earlier discussion in the data and methods section for a more detailed explanation.

[18] In Taiwan, the Labour Insurance established in the 1950s was reformed to be allowed to provide annuities to its beneficiaries in 2008. In the same year, the National Pension Insurance started to cover those who are excluded from other contributory pension schemes such as housewives, students, the unemployed.