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Assessing Old-Age Poverty in Korea:
Past Lessons and Future Challenges

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Assessing Old-Age Poverty in Korea: Past Lessons and Future Challenges*

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Abstract

This paper examines elderly poverty in South Korea by incorporating income, assets, and consumption to provide a comprehensive assessment of economic well-being. Despite a recent decline, South Korea continues to exhibit one of the highest elderly poverty rates among OECD countries. Traditional income-based poverty measures may fail to capture the full extent of economic vulnerability among the elderly, necessitating alternative approaches that account for asset ownership and consumption patterns. Our analysis reveals significant generational disparities in elderly poverty, with individuals born before 1950 experiencing considerably higher poverty rates due to limited access to pension benefits and the uneven distribution of economic growth gains. Additionally, we explore the link between elderly poverty and economic growth trajectories, employing a functional regression approach to assess how the timing of rapid economic development influences poverty outcomes. The findings suggest that countries, including South Korea, which transitioned from lower to higher economic status within a short period, tend to exhibit higher elderly poverty rates. Policy implications highlight the need for targeted interventions, such as temporary support programs, to alleviate extreme material deprivation among the oldest cohorts of the elderly population.

Key Words: Elderly poverty, generational disparity, economic growth

JEL Classification: I32, J14

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1 Introduction

This paper examines elderly poverty in South Korea by utilizing not only income but also assets and consumption, and analyzes the underlying causes of the high elderly poverty rate. The severe issue of elderly poverty in South Korea has emerged as a significant social problem. The most representative indicator used to measure elderly poverty is the elderly poverty rate, which reflects the scale of poverty within this demographic. Based on disposable income, South Korea's elderly poverty rate decreased slightly from 43.6% in 2016 to 37.7% in 2021; however, it remains alarmingly high. When compared internationally, South Korea's elderly poverty rate is among the highest. According to the OECD Income Distribution Database,[1] South Korea had the highest elderly poverty rate among OECD member countries in 2018, standing at 43.4%. This figure is more than three times the OECD average of 13.1%.

Typically, the elderly poverty rate tends to be somewhat higher than the poverty rate of the working-age population. However, South Korea exhibits an exceptionally stark contrast, with the elderly poverty rate significantly surpassing that of the working-age population. Nonetheless, relying solely on income-based measurements of elderly poverty does not provide an accurate assessment of the economic conditions of South Korea's older population.

The first reason for this inadequacy is the underdeveloped nature of South Korea's old-age income security system. The National Pension System, South Korea's primary mechanism for old-age income security, was introduced relatively late and has considerable coverage gaps. Consequently, the proportion of public pension income within the total income of the elderly is substantially lower compared to other countries. According to the OECD Income Distribution Database, transfer income accounted for only 25.9% of the income of South Korea's elderly population in 2018, compared to the OECD average of 57.1%. In contrast, the proportion of capital-based income among South Korea's elderly was 22.1%, significantly higher than the OECD average of 9.9%.[2] Conversely, the proportion of individuals aged 60 and above who reported preparing for retirement through the National Pension System was 52.4%, which is lower than the overall average of 59.1%.

The second reason income-based measurements are insufficient is that material well-

[1] http://stats.oecd.org/Index.aspx?DataSetCode=IDD

[2] This trend is further supported by data from the 2023 Social Survey conducted by Statistics Korea, which indicates that a significant portion of the elderly population relies on asset-based preparations for retirement. According to the survey, among individuals aged 60 and above, 18.4% reported relying on financial assets such as savings and deposits, while 8.1% depended on real estate management and 2.9% on reverse mortgages. These figures are notably higher than the averages across all age groups, which stood at 15.7% for savings and deposits, 4.9% for real estate management, and 1.3% for reverse mortgages.

being is not determined solely by income. While income remains the most commonly used metric for assessing poverty due to its role in facilitating the purchase and consumption of essential goods and services, consumption is influenced by both income and assets. For instance, Modigliani's life-cycle hypothesis suggests that individuals distribute their income and assets efficiently throughout their lives, relying on savings to maintain consumption levels during old age when income typically decreases.

For these reasons, we aim to comprehensively analyze the economic conditions of the elderly population by incorporating not only income and consumption but also assets. Income, consumption, and assets each capture different aspects of economic well-being. Income reflects "the potential to purchase goods and services," measuring the resources available for consumption. In contrast, consumption measures "the actual goods and services purchased," offering a direct assessment of material well-being. Assets, on the other hand, represent accumulated wealth that can support consumption, particularly during periods of reduced income, such as old age.

We find that even when assets and consumption are considered alongside income, the issue of elderly poverty appears severe. While poverty rates based on assets and consumption are lower than those based solely on income, they still indicate a significant economic vulnerability among the elderly. Particularly, the low-income, low-consumption group faces compounded disadvantages, possessing limited assets while also exhibiting minimal consumption levels. Their expenditures are heavily concentrated on essential needs such as food and housing, suggesting a reduced capacity to derive utility from other aspects of life. Moreover, access to healthcare services appears inadequate for this group, further exacerbating their economic and social hardships.

To provide a more nuanced analysis, this study examines elderly poverty by distinguishing between birth cohorts. The findings reveal substantial generational disparities in poverty levels, with a stark contrast between those born before and after 1950. Specifically, individuals born before 1950 experience significantly higher poverty rates, likely due to their limited exposure to the benefits of rapid economic growth and the national pension system. In contrast, the gradual decline in elderly poverty rates can be attributed to the increasing proportion of the relatively less impoverished post-1950 cohort within the elderly population. This generational shift underscores the importance of a cohort-based approach in understanding the persistent challenges of elderly poverty in South Korea.

This paper proceeds as follows. Section 2 reviews realted literature. Section 3 examines the current state of elderly poverty in South Korea. Section 4 analyzes elderly poverty in South Korea using a combined approach of income, assets, and consumption. Section 5 expands upon previous discussions to analyze elderly poverty, considering generational

differences within the current elderly population. Additionally, it explores the potential mechanism linking economic growth trajectories to the elderly poverty rate. Section 6 concludes the paper.

2 Related Literature

Basically, we take multidimensional approach to analyze elderly poverty in South Korea. This approach aligns with recent trends in poverty research, which increasingly recognize poverty as a complex, multifaceted issue (Sen (1976); Bourguignon and Chakravarty (2003); Deutsch and Silber (2005); Alkire and Santos (2013); Maasoumi and Racine (2016); Yun et al. (2017); Dorn et al. (2023)). Historically, poverty research focused primarily on absolute poverty, defined by income levels below a specific threshold. However, with economic development and the availability of high-quality data, poverty in advanced economies, including South Korea, is now understood as a relative concept. There is broad consensus that poverty is not solely a matter of income deficiency but also involves multiple dimensions, such as assets, housing conditions, leisure time, and health. While we do not encompass non-economic dimensions like health or leisure time, its primary objective is to identify economically vulnerable groups among the elderly. Consequently, the analysis is confined to economic factors, specifically income, consumption, and assets. Evaluating the economic status of the elderly based solely on income is insufficient, as it overlooks critical aspects such as asset ownership and housing conditions, which are essential for a comprehensive understanding of their financial well-being.

The majority of the literature employs asset income conversion methods to analyze poverty by incorporating both income and assets. A widely used method for incorporating net assets into income is the income-net asset value approach proposed by Weisbrod and Hansen (1968). This method prevents the double counting of asset effects by excluding property income from total income and instead incorporating the annuitized value of net assets. Brandolini et al. (2010) analyzes poverty using the Luxembourg Wealth Study Database (LWS) and demonstrated that elderly poverty rates decrease when income-net asset value is considered, compared to those based solely on disposable income. This suggests that including annuitized asset values provides a more comprehensive assessment of economic well-being among the elderly. Jung and Kim (2014) applies this methodology to analyze the elderly poverty in South Korea and finds that income-based poverty measures may overestimate elderly poverty.

The application of annuitization in elderly poverty analysis assumes that older individuals generate income by depleting their accumulated assets, often influenced by

government policies and institutional frameworks. However, this approach has notable limitations. First, it may lead to an overestimation of elderly income, potentially distorting poverty assessments. Second, it may not accurately reflect the economic reality of South Korea, where asset utilization and liquidation behaviors among the elderly differ from those in other countries.

Wolff and Zacharias (2009) modifies this method by distinguishing between residential and non-residential assets. Building on Weisbrod and Hansen (1968), Wolff and Zacharias (2009) incorporates imputed rent from owner-occupied housing into income while converting other assets into annuitized values. This approach is particularly relevant for South Korea, where a significant portion of household wealth is tied to real estate. The asset income conversion method employed in this paper is "comprehensive income" approach, which is closely aligned with Wolff and Zacharias (2009).

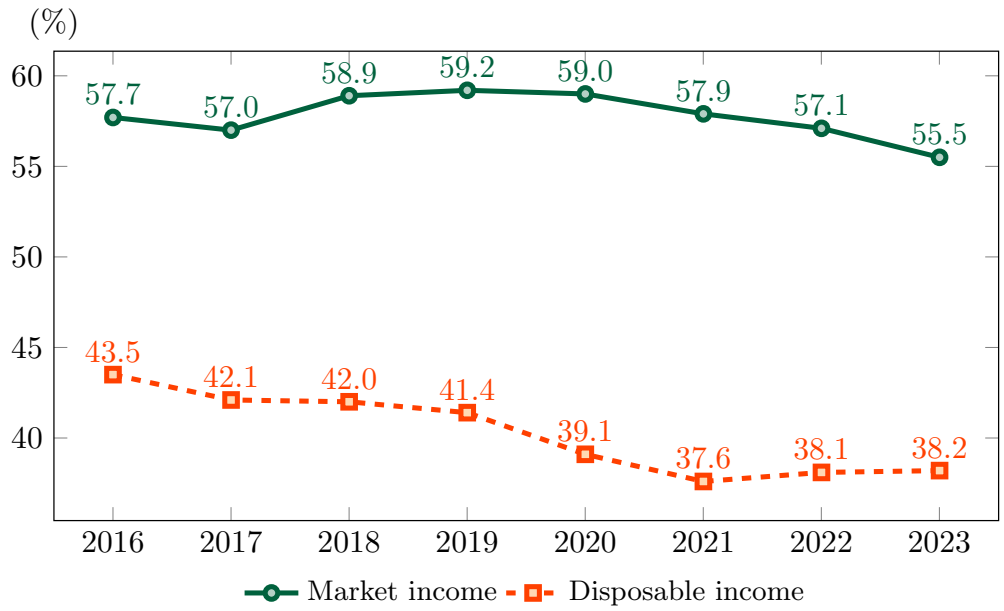
Consumption, also, can provide a more accurate evaluation of material deprivation compared to income, as it is less prone to measurement errors and underreporting (Meyer and Sullivan (2003)). A substantial body of research utilizes consumption as a key measure for analyzing poverty(Meyer and Sullivan (2003); Fisher et al. (2009); Meyer and Sullivan (2012); Armstrong et al. (2022); Fitzgerald and Moffitt (2022)). In addition, consumption-based poverty measures have been utilized in the public sector. For instance, the U.S. Bureau of Labor Statistics supplements income-based poverty indicators with consumption-based measures and conducts related research to improve poverty assessments (Armstrong et al. (2022)). Despite its advantages, studies on poverty using consumption data are relatively scarce in South Korea, with most research relying primarily on consumption expenditures (Kim et al. (2020); Kim et al. (2022)). This paper is the first to apply the consumption-based poverty measure proposed by Meyer and Sullivan (2003) to analyze elderly poverty in South Korea.

3 Elderly Poverty in South Korea

In South Korea, the elderly poverty rate has been gradually declining; however, it remains the highest among OECD member countries. Generally, the elderly poverty rate is calculated as the proportion of individuals aged 65 and over whose equivalized income falls below 50% of the national median equivalized income. Equivalized income typically refers to household income divided by the square root of the household size.[3]

[3]Multiple approaches exist for income equivalization. While dividing household income by the square root of household size is the most common method, other techniques adjust for household composition. For instance, Armstrong et al. (2022) categorizes U.S. households into three types, applying different equivaliza-

Figure 1: Elderly Poverty Rate in South Korea (2016-2023)



Source: Statistics Korea (2016-2023)
Notes: Market income consists of labor income, business income, property income, and private transfer income, minus private transfer expenditures. Disposable income includes market income plus public transfer income, minus public transfer expenditures.

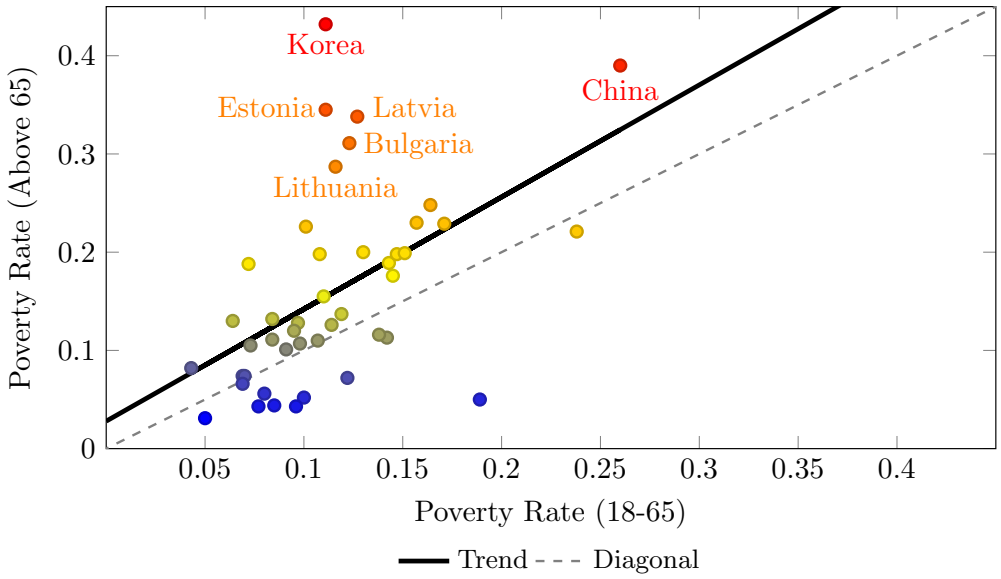
However, to analyze how elderly poverty rates change when considering income and assets, this study follows the method utilized by the OECD and Statistics Korea, defining the poverty line as 50% of the median income and equivalizing household income by dividing it by the square root of household size.

The poverty rate calculated using this method is a relative poverty rate, the most common measure for assessing poverty in developed countries with advanced economies. Figure 1 illustrates the elderly poverty rates in South Korea based on two types of income derived from the Household Finance and Welfare Survey, which is used for official income distribution statistics in the country. Since 2017, this survey has incorporated administrative data to supplement income and non-consumption expenditure data, addressing survey limitations.

The first type of income in Figure 1 is market income, encompassing all income earned without government intervention. It includes labor income, business income, property income, and private transfer income, minus private transfer expenditures. Income definition

tion methods accordingly. Specifically, households composed solely of adults were adjusted using the square root of the number of adults. Single-parent households were equivalized using the formula: (number of adults(= 1) + 0.5× first child +0.8×other children)$^{0.7}$. Households not fitting these categories were adjusted using the formula: (number of adults +0.5×number of children)$^{0.7}$. However, we follows approach which is considered as a standard one by Statistics Korea.

Figure 2: Working-Age and Elderly Poverty Rate in OECD Countries (2019)



Source: OECD Income Distribution Database
Notes: Each horizontal bar represents a country. The OECD average (highlighted in blue) represents the simple average of OECD countries as reported in OECD Pensions at a Glance. For countries where 2019 data was unavailable, the most recent data closest to 2019 was used.

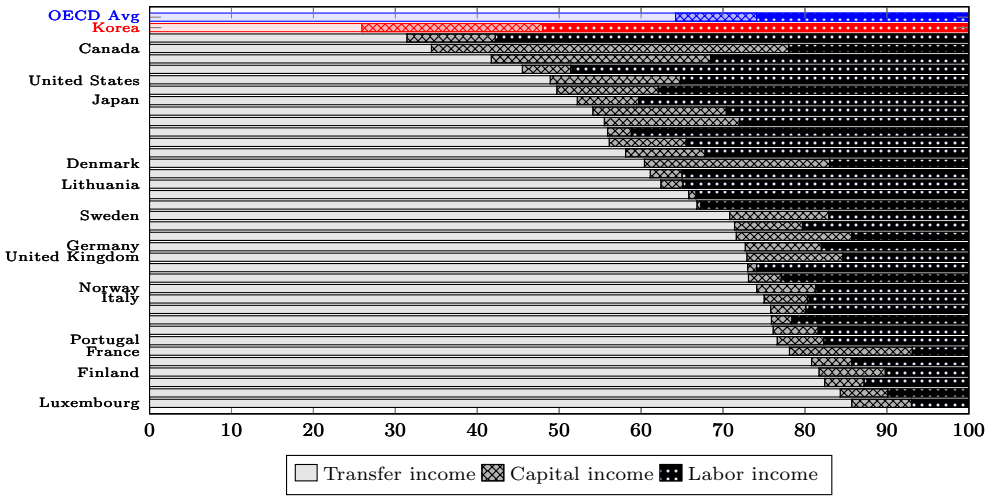
in this paper aligns with the methodology outlined in the "Poverty Statistics Yearbook" published annually by the Korea Institute for Health and Social Affairs.

The second type of income is disposable income, which includes market income plus net public transfers, accounting for government policy impacts. Disposable income is calculated by adding market income and public transfer income, then subtracting public transfer expenditures. Major public transfers include the National Pension and the Basic Pension, both crucial for securing income streams for the elderly. Taxes and social insurance contributions, such as health and employment insurance, are considered public transfer expenditures.

Based on Figure 1, the market income-based poverty rate remained stagnant at the high 50% range, from 58.7% in 2016 to 57.9% in 2021. In contrast, the disposable income-based poverty rate declined from 43.6% in 2016 to 37.7% in 2021. The primary distinction between market and disposable income lies in government policy interventions. Thus, the unchanged market income-based poverty rate alongside the declining disposable income-based rate suggests the effectiveness of governmental policy efforts. As will be discussed in Section 5, this trend likely reflects the increasing proportion of relatively less impoverished individuals born in the 1950s within the elderly population.

South Korea's exceptionally high elderly poverty rate becomes even more pronounced

Figure 3: Composition of Elderly Income in OECD Countries (2021)



Source: OECD Pensions at a Glance(2021)
Notes: Each point represents a country. The horizontal axis shows the working-age poverty rate (ages 18–65), while the vertical axis represents the elderly poverty rate (ages 65 and above).

when compared to other OECD countries. According to the OECD Income Database, South Korea's elderly poverty rate based on disposable income was 43.4% in 2018, approximately three times higher than the OECD average of 13.1%. Figure 2 compares poverty rates among working-age and elderly populations across 44 OECD member countries.[4] The x-axis represents the poverty rate for the working-age population, while the y-axis shows the elderly poverty rate. Generally, elderly poverty rates tend to be higher than those of the working-age population, as illustrated by the trend line and the 45° reference line.

This trend is understandable given that aging often results in retirement or reduced working hours, leading to decreased labor income. South Korea stands out in Figure 2 for two reasons: first, it has the highest elderly poverty rate among OECD countries, and second, the gap between working-age and elderly poverty rates is the largest. Countries significantly deviating from the trend line, such as the Baltic states (Estonia, Latvia, Lithuania) and Bulgaria, share a history of rapid economic growth following democratization in the 1990s. For instance, the Baltic states gained independence from the Soviet Union in 1991, and Bulgaria democratized in 1989.

The unusually large disparity between South Korea's working-age and elderly poverty rates suggests that income alone may not accurately reflect the economic conditions of the elderly population.

To more accurately assess the economic situation of the elderly population, it is essential to examine income and assets in detail. Figure 3 presents the composition of elderly income

[4]Poverty rates for all countries included in the analysis are provided in the Section B.

Table 1: International Comparison of Asset Composition in Elderly Households

	Australia('18)	Italy('16)	Norway('20)	Germany('17)	Finland('16)	United States('19)	United Kingdom('19)	Japan('14)	**Korea('21)**
Real estate	67.9	75.8	65.8	73.0	71.4	38.7	60.4	51.2	**82.4**
Other tangible	10.2	10.7	6.1	9.7	3.8	19.1	15.7	0.0	**2.7**
Financial	21.8	13.4	28.0	17.3	24.8	42.2	23.9	48.8	**14.9**

Notes: The international comparison is based solely on the countries available in the Luxembourg Wealth Study (LWS) database. The figures highlighted in red represent the values for South Korea.

in OECD member countries by categorizing income into three main sources: transfer income, earned income, and capital income, using data from OECD Pensions at a Glance.[5]

When comparing the income composition of South Korea's elderly population to the OECD average, two key differences emerge: (1) the proportion of transfer income is significantly lower in South Korea (25.9%) compared to the OECD average (64.2%), and (2) the shares of capital income and earned income are notably higher in South Korea (22.1% and 52%, respectively) compared to the OECD averages (9.9% and 25.8%, respectively).

Focusing specifically on public transfer income, on average, 57.1% of elderly income in OECD member countries comes from public transfers. However, in South Korea, public transfer income accounts for only 25.9% of elderly income—approximately half of the OECD average. In contrast, earned income represents 52% of total income for the elderly in South Korea, making up about half of their overall income. This figure is nearly twice the OECD average of 25.8%, ranking South Korea second only to Mexico in terms of elderly reliance on earned income. These findings suggest that South Korea's current old-age income security system fails to provide adequate and stable income for the elderly, potentially forcing them to continue working to cover their living expenses.

Additionally, capital income accounts for 22.1% of elderly income in South Korea, more than double the OECD average of 9.9%. This trend aligns with the discussion in the introduction, indicating that the elderly in South Korea may have relied on asset-based financial strategies to prepare for retirement due to the inadequacies of the existing pension system.

Table 1 presents the asset composition of elderly households in some selected countries,

[5]There are some discrepancies between the income figures reported in the OECD's Pensions at a Glance and the official statistics published by Statistics Korea. In the OECD data, transfer income is categorized into public transfers (which include pensions) and private occupational transfers. In this study, the sum of these two components is defined as transfer income. Additionally, the OECD's definition of earned income includes both earned income and business income as reported in Korea's Household Financial and Welfare Survey. According to the OECD criteria, capital income is defined as returns from savings, excluding individual pensions and annuities. Furthermore, the OECD reports that the share of private pensions in elderly income in South Korea is 0%, implying that all transfer income falls under public transfers. Also, private transfers are not included in the OECD Income Distribution Database.

based on data from the Luxembourg Wealth Study (LWS) within the Luxembourg Income Study (LIS) Database. Elderly households refer to households in which the head of the household is aged 65 or older. The Luxembourg Income Study collects microdata on income and assets from various countries and is widely used for international comparative analyses.

In Italy and Germany, similar to South Korea, the proportion of real estate assets is high, while the share of financial assets is relatively low. However, in most other countries, the proportion of highly liquid financial assets is higher than in South Korea. Given that the majority of assets held by the elderly in South Korea are concentrated in real estate, financial income alone does not provide an accurate representation of their total wealth. Therefore, a comprehensive evaluation of their economic situation should incorporate income, assets, and consumption.

4 Elderly Poverty Incorporating Assets and Consumption

4.1 Elderly Poverty Incorporating Assets

The methods of asset income conversion considered in this study include 'comprehensive income' and 'annuitization.' Comprehensive income includes not only disposable income but also implicit income from assets, such as imputed rent. Imputed rent refers to the amount that would be equivalent to the rent a homeowner would pay if they were renting their own home. Comparing homeowners with renters, homeowners can increase their consumption by the equivalent amount of imputed rent. Since imputed rent is not an actual payment, it can be considered as implicit income. Thus, comprehensive income is a concept that incorporates benefits that are enjoyed but not included in income. Specifically, we define comprehensive income as follows for analyzing elderly poverty:

Comprehensive Income = Disposable Income - Property Income
+ Imputed Rent (from residential and non-residential properties)
+ Income from financial assets - Interest Expenses

In the equation, property income is excluded from disposable income to avoid double-counting the income derived from assets. Imputed rent is calculated separately for residential and non-residential properties using different methods. Finally, income from financial assets is taken directly from the Household Finance and Welfare Survey, and

interest expenses are subtracted to account for debt-related costs. This approach reflects the concentration of elderly assets in real estate in South Korea and provides a method for evaluating the economic situation of the elderly.

The comprehensive income approach in this paper builds upon the method proposed by Wolff and Zacharias (2009), advancing it by incorporating a more detailed categorization of asset types when converting them into income for analysis. The comprehensive income used as the basis for analysis in this section is defined as 'disposable income + income derived from assets - property income - interest expenses', and it is then equivalized by dividing by the square root of the number of household members. The subtraction of property income from the income derived from assets is intended to avoid double-counting income generated from assets, similar to the asset-net worth analysis method. The inclusion of interest expenses, which is different from the asset-net worth analysis, is necessary in this study because we directly convert assets into income, meaning that the costs incurred from liabilities must be accounted for separately. Wolff and Zacharias (2009) annuitizes liabilities to estimate costs. However, within the framework of comprehensive income, interest expenses from debt are considered instead, as assets are not annuitized.

In the comprehensive income approach, calculating imputed rent is considered the most crucial step. There are several representative methods for calculating imputed rent: rental equivalent method, and user cost method.

Rental equivalent method calculates imputed rent by determining the income that could be generated if the owner-occupied dwelling were rented out, based on the property value. Wolff and Zacharias (2009) uses the total imputed rent for the U.S. as part of GDP components to estimate the imputed rent for each household. Jeong et al. (2017) and Choi and Lim (2020) calculate imputed rent by multiplying the deposit price of a house by the rent-to-deposit conversion rate as follows.

$$\begin{aligned}\text{Monthly imputed rental income} = {} & \text{Purchase price} \\ & \times \text{Lump sum deposit ratio relative to purchase price} \\ & \times \text{Conversion rate of monthly rent to lump sum deposit}\end{aligned}$$

User cost method defines imputed rent by calculating the cost of homeownership. It is based on the principle that, in a balanced real estate market, the cost of homeownership is equivalent to the income that could be generated if the property were rented out. The user cost includes the potential return from investing in risk-free assets instead of purchasing housing, various taxes, maintenance costs, mortgage interest, and expected capital gains

from resale (Hendershott and Slemrod (1982); Poterba (1984); Poterba and Sinai (2008)). In South Korea, Lee et al. (2015) modifies the user cost method to suit the local context for analysis as follows.

$$C_i = V_i[(1-\tau_1)\alpha i_h + (1-\tau_2)(1-\alpha)i_c + \tau_p + \delta + \theta - \pi_\ell]$$

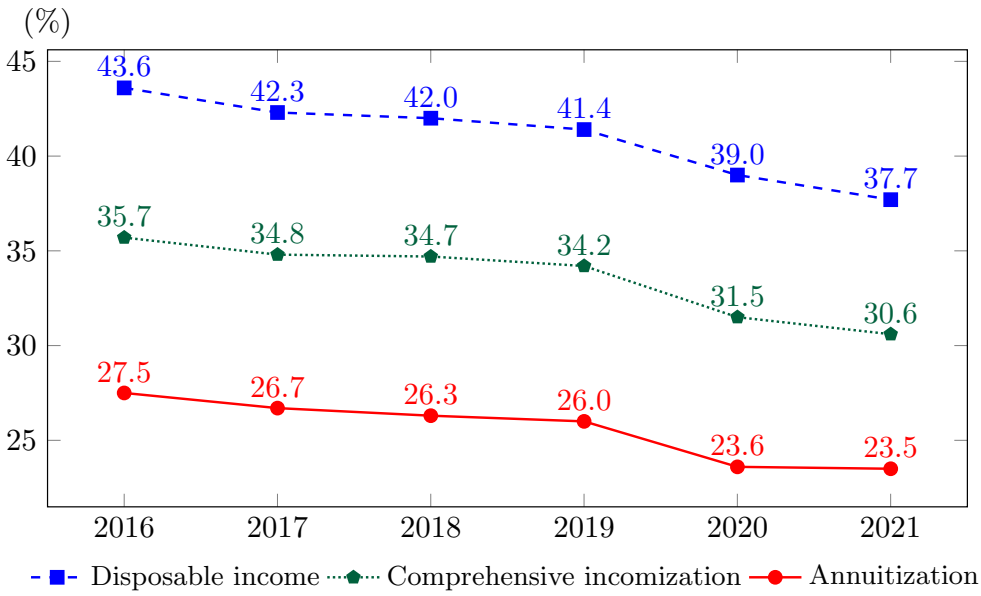
The variables are defined as follows: V_i represents the market value of the residential property, τ_1 denotes the marginal income tax rate, α signifies the ratio of the remaining loan balance to the housing price, i_h refers to the mortgage interest rate, τ_2 is the interest income tax rate, i_c indicates the return on financial assets, τ_p is the effective property tax rate on the property, δ denotes the depreciation rate, θ represents the risk premium, and π_ℓ indicates the expected annual housing price increase in the residential area.

For the calculation of imputed rent in this paper, the rental equivalent method proposed by Choi and Lim (2020) is applied to residential real estate, while the user cost method by Lee et al. (2015) is used for non-residential real estate. For the imputed rent of residential real estate, all three methods introduced earlier were considered. However, the rental equivalent method provided the best explanation for the heterogeneity of housing prices across households in the sample. The "jeonse" system, a distinctive feature of South Korea's housing rental market, can be seen as an intermediate form between homeownership and monthly rent. In this case, the jeonse deposit was used to calculate the imputed rent. For non-residential real estate, since there is no information available regarding property types, location, or the rental market, the user cost method was employed for the calculation.[6]

Another method of asset income conversion is annuitization. The key difference between annuitization and comprehensive income is the consumption of assets. A typical annuitization method involves converting net assets (total assets minus liabilities) into annuity payments, which are then included as income over the expected remaining lifespan. In other words, annuitization includes benefits derived from using owned assets, such as reverse mortgages. Therefore, comprehensive income can be viewed as a method of assessing the current economic situation of the elderly without consuming their assets, while annuitization is a method for evaluating the potential economic level attainable by

[6]Following Lee et al. (2015), the marginal income tax rate is assumed to be 20%, the ratio of the remaining loan balance to the housing price is 40%, the interest income tax rate is set at 15.4%, the effective property tax rate is 0.2%, the depreciation rate is 2.5%, and the risk premium is assumed to be 3%. The mortgage interest rate is based on the Bank of Korea's new loan interest rate for housing loans (3.84% as of 2022), while the return on financial assets is the 3-year corporate bond yield (4.16% as of 2022) The expected housing price increase is calculated using the 6-year average annual change in nationwide housing prices from the Korea Real Estate Board.

Figure 4: Elderly Poverty Rates through Asset Incomization (2016-2021)



Notes: Comprehensive income includes disposable income plus implicit income (e.g., imputed rent), while annuitization converts net assets into annuity payments over the expected lifespan.

utilizing assets.

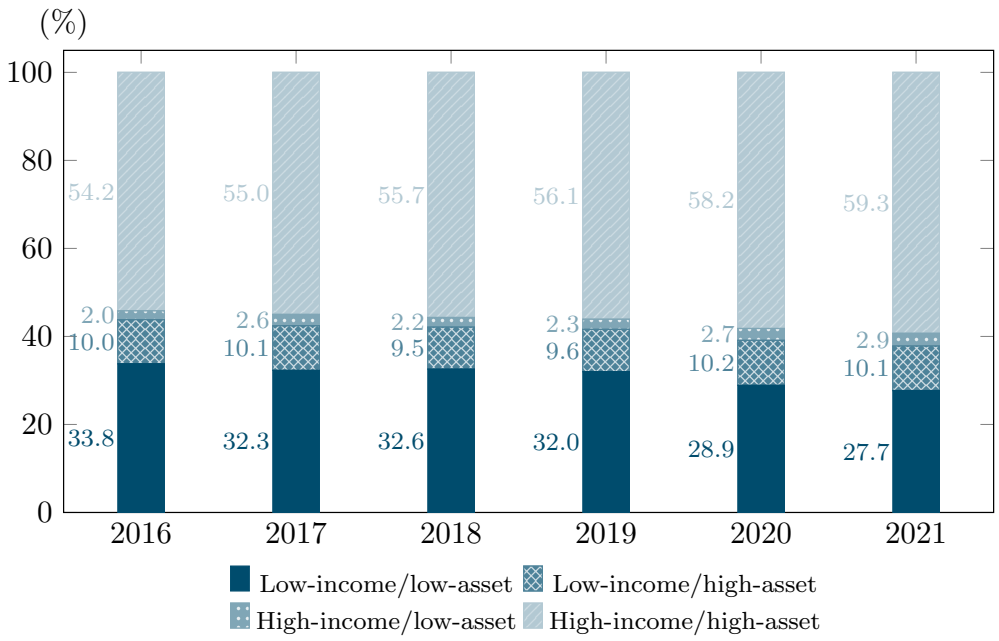
The annuitization of assets follows the method outlined by Weisbrod and Hansen (1968), where net assets are annuitized to integrate income and assets, which is then used to analyze elderly poverty.

$$Y_t^* = Y_t + A_t = Y_t + NW_{t-1}\frac{r}{1-(1+r)^{-n}}$$

The variable Y_t^* represents the economic state evaluation based on income and net asset value, and is defined as the sum of current income Y_t and the annuitized value of net assets NW_{t-1} Here, r represents the interest rate, and n denotes the annuity period. Following Kim et al. (2020), the annuity period n is assumed to be based on life expectancy, and the interest rate is assumed to be 2% Various interest rates ranging from 2% to 10% were considered in prior research, with the results being robust to these interest rate variations(Kuypers and Marx (2018)). Life expectancy data is obtained from the life table by Statistics Korea.

Figure 4 presents the elderly poverty rate after converting assets into income. The poverty rate calculated using asset income conversion is lower than the poverty rate based on disposable income. Compared to the disposable income-based elderly poverty rate, the poverty rate calculated using comprehensive income is 7–8 percentage points lower,

Figure 5: Portfolio of Income and Asset of the Elderly (2016-2021)

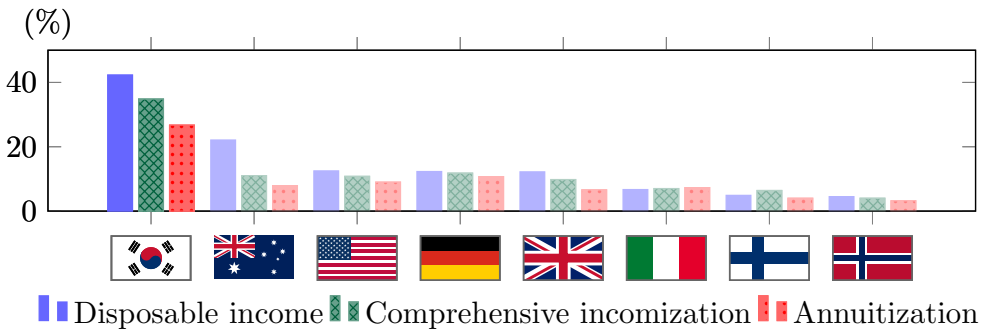


Notes: Low income refers to individuals classified as impoverished based on disposable income, whereas low asset pertains to those considered impoverished when assessing comprehensive income.

and the poverty rate calculated using annuitization is 14–16 percentage points lower. This suggests that when assets are additionally considered, a significant proportion of the elderly are not in poverty, and more elderly individuals could escape poverty if they utilize their assets.

We also classifies the elderly into four income-asset types and identifies low-income, low-asset elderly households as the economically vulnerable group. To classify the elderly, poverty is first defined based on both disposable income and comprehensive income. Among the elderly classified as poor based on disposable income, those who are also poor according to comprehensive income are categorized as low-income, low-asset elderly, while others are classified as low-income, high-asset elderly. Similarly, high-income, low-asset and high-income, high-asset types are defined. Figure 5 shows the trend in the income-asset composition ratio by elderly household type. The proportion of low-income, low-asset vulnerable groups decreased from 33.8% in 2016 to 27.7% in 2021, though they still make up about 30% of the elderly population. The low-income, high-asset group consistently accounts for around 10% each year. Given that the sum of the low-income, low-asset and low-income, high-asset groups forms the disposable income-based poverty group, approximately 10% of the poverty group defined by disposable income could be considered non-poor when assets are also considered.

Figure 6: International Comparison of Elderly Poverty Rates Based on Asset Incomization



Notes: Based on Wave X of the Luxembourg Income Study (LIS), the data for Korea, Germany, and the UK is as of 2017, while the data for all other countries is as of 2016.

As previously mentioned, South Korea's elderly poverty rate is the highest among OECD member countries. Even when the elderly poverty rate is calculated by converting assets into income, it remains high at around 30%. To compare South Korea's asset-based elderly poverty rate with those of other countries, we calculate the asset-income-based elderly poverty rate for some countries using the Luxembourg Income Study (LIS). The international comparison focused on seven countries (the United States, Australia, Germany, the United Kingdom, Italy, Finland, and Norway) for which asset data is available in the LIS database. Figure 6 illustrates the elderly poverty rate by asset income conversion across these countries. In Anglo-Saxon countries such as the United States, Australia, and the United Kingdom, the decrease in elderly poverty rates due to asset income conversion is relatively pronounced. However, in continental European countries with mature retirement income systems, asset income conversion had little effect on reducing elderly poverty rates. In South Korea, converting assets into income significantly reduces the elderly poverty rate, narrowing the gap with other countries. Nevertheless, even when assets are considered, South Korea's elderly poverty rate remains high. This indicates that, despite a comprehensive assessment of the economic situation of the elderly, elderly poverty in South Korea is more severe than in many other countries.

4.2 Elderly Poverty Incorporating Consumption

Consumption is often considered the most direct means to assess a household's economic condition or material well-being. While income measures the purchasing power for goods and services, consumption measures the actual goods and services acquired. Many studies utilizing consumption typically focus on consumption expenditure rather than consumption itself. However, in a strict sense, consumption and consumption expenditure are not

Table 2: Consumption Expenditure Items from the Household Finance and Welfare Survey

Item	Details
[1] Food	Grains, bread, rice cakes, meat, dairy products, vegetables, condiments, non-alcoholic beverages, dining out (restaurants, fast food, pubs, coffee shops), etc.
[2] Housing costs	Rent, water and sewage fees, electricity bills, housing maintenance costs (including house repair costs), heating costs, etc.
[3] Education expenses	Services such as formal education, daycare, private tutoring (including private education), other education.
[4] Medical expenses	Medicines (including nutritional supplements), medical supplies (e.g., masks), outpatient services, hospitalization services, dental services, etc.
[5] Transportation costs	Vehicle maintenance costs (fuel, repair costs, etc.) or public transportation fees (excluding car purchase costs).
[6] Communication costs	Communication equipment (telephones), communication services (landline fees, mobile phone fees, internet usage fees), etc.
[7] Other consumption expenditures	Entertainment and culture, clothing and footwear, household goods and services, lodging, tobacco, etc., expenditures not included in [1] through [6].
① Entertainment and culture	Expenditures on sports, performances, group travel, hobby supplies (including TV, audio, computers, cameras, etc.).
② Clothing and footwear	Expenditures on clothing, uniforms, shoes, etc., including repair and laundry services.
③ Household goods and services	Expenditures on household goods such as furniture, appliances, tableware, and services such as housekeeping.
④ Other consumption expenditures not included in ① through ③	Lodging, tobacco, alcohol, beauty services, accessories, term insurance premiums, etc.

Source: Statistics Korea

identical. Meyer and Sullivan (2003) conducts a prominent study using consumption to analyze poverty. In the paper, expenditure is defined as the amount paid by a household. In this view, consumption expenditure includes items such as food and housing costs. Conversely, in economics, consumption refers to the use of goods and services to satisfy individual needs. Meyer and Sullivan (2003) defines consumption as starting from expenditure but substituting the purchase of durable goods, such as housing and vehicles, with the value derived from the services of these goods, while excluding items like education that are considered investments. Therefore, the key difference between consumption and consumption expenditure lies in the inclusion of durable goods; typical micro-surveys exclude spending on durable goods, whereas consumption in economic terms includes

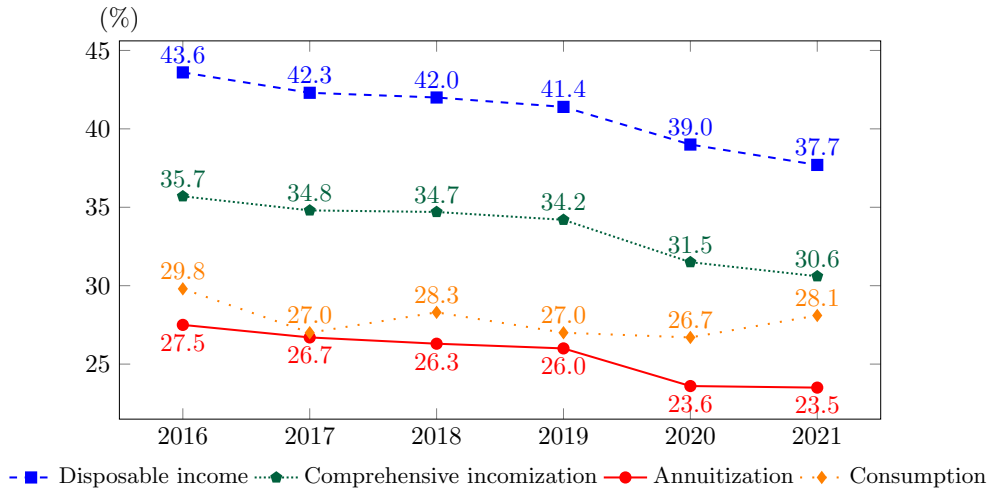
them. To clarify this distinction, we examine the consumption expenditure items from the "Household Finance and Welfare Survey". Table 2 outlines these consumption expenditure items, where consumption is determined by the expenditures made for household living in the previous year. Items like food and clothing are typical examples of goods, while housing, medical, transportation, and communication expenses correspond to services. However, the "Household Finance and Welfare Survey" does not investigate expenditures on durable goods like housing or vehicles, nor the value of services derived from them. Therefore, the distinction between consumption in economics and consumption expenditure in micro-surveys becomes evident.

The characteristics of consumption can be highly useful in the analysis of elderly poverty (Meyer and Sullivan (2007)). The first reason is that, as previously mentioned, although the elderly may have low income, they can utilize the assets they possess to sustain consumption. Therefore, relying solely on income to assess the economic situation of the elderly may overestimate poverty rates. The second reason lies in the high homeownership rate among the elderly, particularly concerning the most representative durable asset: housing. According to Statistics Korea's 2022 "Housing Ownership Statistics," 39.1% of homeowners in Korea are aged 60 or older. Considering that this group represents 26.3% of the total population, the elderly have a relatively high homeownership rate.

Following Meyer and Sullivan (2003), we define consumption by excluding items such as personal pensions and education expenses from consumption expenditure, and combining it with the costs of owned housing and vehicles. This approach includes only the items directly contributing to utility in consumption, and also incorporates the value of services derived from durable assets such as housing and vehicles, which are not part of consumption expenditure. In the case of in-kind income, any consumption is added to the expenditure total. Among the items in the "Household Finance and Welfare Survey" consumption expenditure, education expenses are considered less relevant to the increase in direct utility. Therefore, education expenses were excluded from the consumption expenditure used in this analysis.

Other components of consumption are the costs of durable goods such as owned housing and vehicles, converted to rental equivalents. Meyer and Sullivan (2003) uses the rental equivalent method to measure the value of services derived from durable goods, including housing and vehicles, and included these values in the consumption total. Different methods were applied to calculate the rental equivalents of owned housing and vehicles. As in the previous section, the imputed rent was calculated using the imputed rent equivalent method proposed by Choi and Lim (2020). The rental equivalent of vehicles was calculated by considering depreciation. Specifically, the vehicle cost was determined

Figure 7: Elderly Poverty Rates Incorporating Assets and Consumption (2016-2021)



Notes: Comprehensive income includes disposable income plus implicit income (e.g., imputed rent), while annuitization converts net assets into annuity payments over the expected lifespan. Consumption is defined as expenditure excluding investment items (e.g., education), replacing durable goods purchases (e.g., housing, vehicles) with the value of their services.

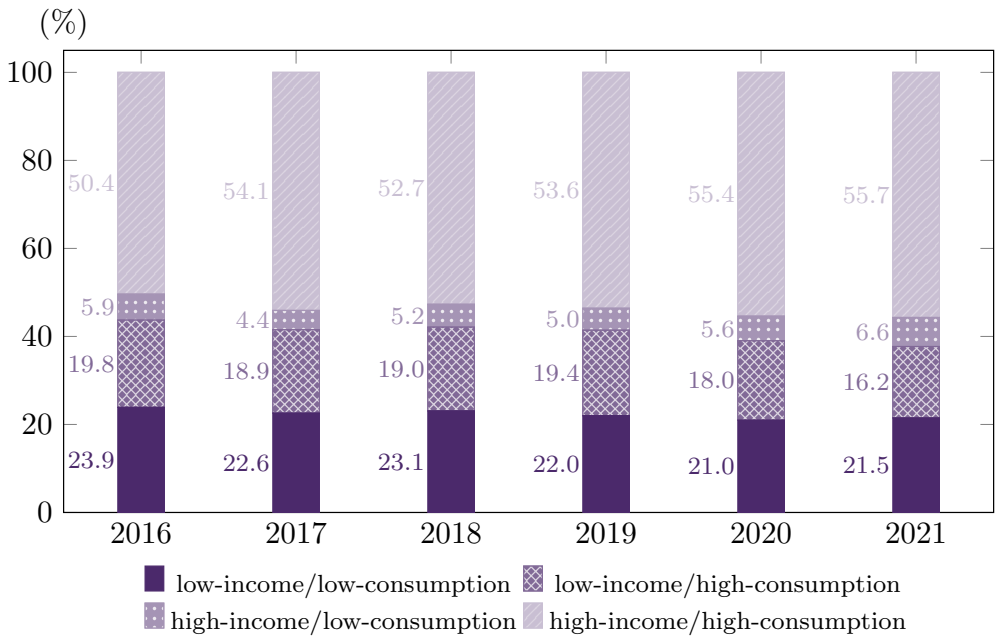
as follows:

$$\text{Vehicle cost} = \text{Current vehicle value} \times \text{Depreciation rate}$$

Depreciation-based vehicle cost estimation is a common method (Cutler et al. (1991); Meyer and Sullivan (2003)). In the "Household Finance and Welfare Survey," the current vehicle value is provided, which can be used as the current vehicle appraisal value. The depreciation rate was set at 20%, based on Cutler et al. (1991) and the Ministry of the Interior and Safety's "2021 Standard Valuation for Other Goods Adjustment" vehicle residual value rate.

Figure 7 shows the elderly poverty rate based on consumption. For comparison, the poverty rate based on disposable income and the elderly poverty rate based on the income generated from assets are also included. A notable characteristic of the consumption-based elderly poverty rate is that it is lower than the disposable income-based poverty rate. This finding aligns with the results of the elderly poverty analysis based on the income from assets, which shows that a significant portion of the elderly are not considered poor when assets are taken into account. Consumption, in addition to income, provides a new perspective to measure the economic situation of the elderly. In this context, while the poverty rate remains high, it is lower than when based solely on income. These results suggest that, to accurately assess the economic situation of the elderly, it is necessary to consider additional factors beyond income, such as assets and consumption.

Figure 8: Portfolio of Income and Consumption of the Elderly (2016-2021)



Notes: Low income refers to individuals classified as impoverished based on disposable income, whereas low consumption pertains to those considered impoverished when assessing consumption.

For further analysis, the elderly population was categorized based on both disposable income and consumption, leading to four income-consumption types by considering the inclusion of those in poverty. Among those categorized as poor based on disposable income, elderly individuals who are also poor based on consumption were classified as low-income, low-consumption elderly, while others were classified as low-income, high-consumption elderly. Similarly, high-income, low-consumption, and high-income, high-consumption types were defined. Figure 8 illustrates the trend of income-consumption composition ratios by type for the elderly. The economically vulnerable group, categorized as low-income, low-consumption, is positioned at the bottom of the figure. The proportion of this vulnerable group has decreased overall from 23.9% in 2016 to 21.5% in 2021. When assessed based on consumption, the proportion of the vulnerable group is around 20%, which is lower than the 30% defined using assets in Figure 5. The proportion of the low-income, high-consumption group has decreased from 19.8% in 2016 to 16.2% in 2021, but it still accounts for about 15%. This suggests that a significant portion of the elderly, classified as poor based on income, may not be in a state of material deprivation when considering other economic aspects such as consumption and assets.

5 Possible Explanation: Elderly Poverty by Generation

Even when additional factors such as assets or consumption are considered alongside income, elderly poverty in South Korea remains a significant issue. This section examines the problem of elderly poverty in South Korea more closely by categorizing the current elderly population into multiple generations.

Since the 2010s, there have been two notable trends regarding elderly poverty in South Korea. First, the elderly poverty rate has generally shown a declining trend. Second, within the elderly population, there are significant differences in poverty rates across age groups. In particular, there is a notable disparity between the poverty rates of those aged 65-74 and those aged 75 and older. The poverty rate for those aged 65-74 decreased from 33.9% in 2016 to 27.6% in 2021, while the poverty rate for those aged 75 and older remained above 50%. These two characteristics of elderly poverty trends can be fully explained through the generational analysis presented below.

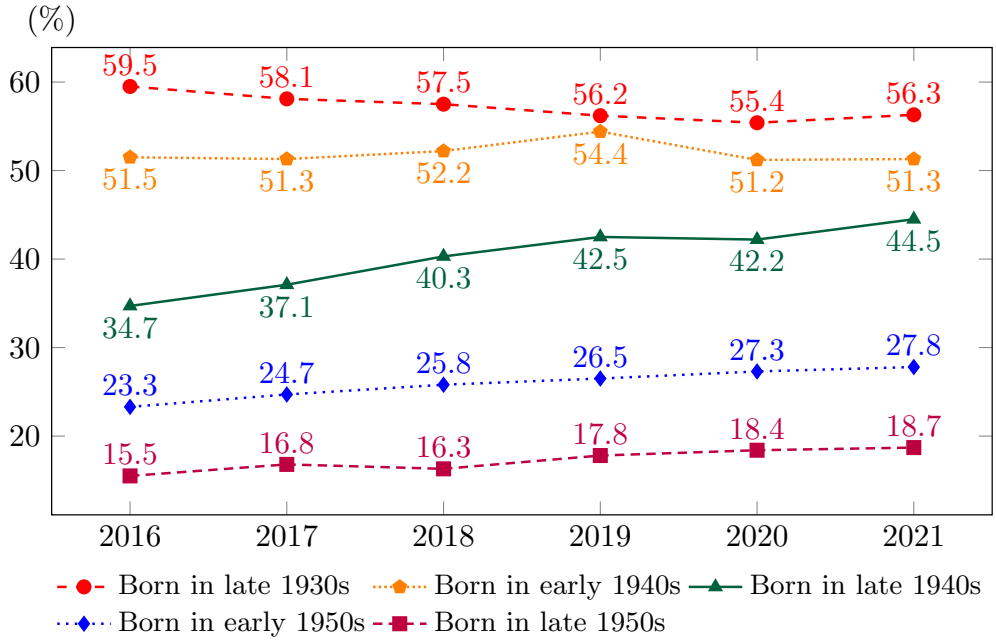
To examine elderly poverty in more detail, we categorize the elderly population into five generational groups based on birth year. These groups include individuals born in the late 1930s (1935-1939), early and late 1940s (1940-1944, 1945-1949), and early and late 1950s (1950-1954, 1955-1959). In 2016, the ages of each group were 77-81 years (late 1930s), 72-76 years (early 1940s), 67-71 years (late 1940s), 62-66 years (early 1950s), and 57-61 years (late 1950s). In 2021, the ages of each group align with those of the previous group in 2016. For example, those born in the late 1940s, aged 72-76 in 2016, will be 77-81 years in 2021, corresponding to the age group of those born in the early 1940s in 2016.

Figure 9 presents the poverty rates for each generation between 2016 and 2021. Panel (a) shows the trend of poverty rates by generation. Overall, with the exception of those born in the early 1940s and earlier, poverty rates have been increasing over time. As income from work or business constitutes the largest portion of an individual's income, it is natural that the poverty rate increases over time, as income from work and business tends to decline with age. Additionally, the poverty rates for those born in the early 1940s and earlier are significantly higher than those of other generations. Furthermore, the difference in poverty rates between generations is striking. In 2021, the poverty rate for those born in the 1940s or earlier was over 40%, whereas the poverty rate for those born in the 1950s was below 30%. The gap between the poverty rates of the late 1940s and early 1950s generations reached 16.7 percentage points. This generational disparity in poverty rates became particularly pronounced from the 1950s onward, suggesting that elderly poverty before and after the 1950s may represent different issues.

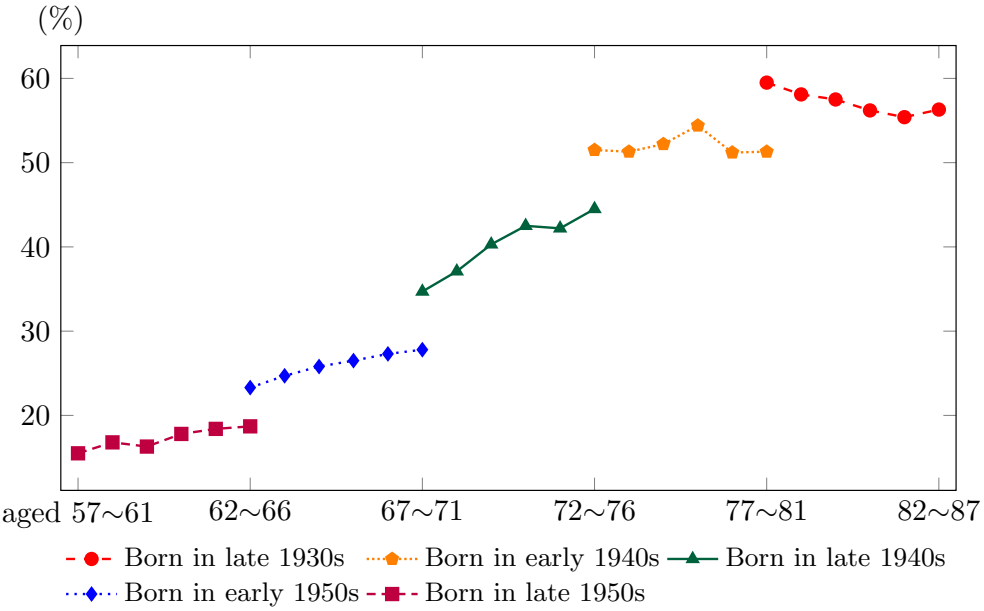
The differences in poverty rates across generations remain evident even when adjusted

Figure 9: Elderly Poverty by Generation (2016-2021)

(a) Elderly Poverty by Generation (Horizontal Axis: Year)



(b) Elderly Poverty by Generation (Horizontal Axis: Age)



Notes: The generational groups are as follows: individuals born in the late 1930s (1935-1939), early and late 1940s (1940-1944, 1945-1949), and early and late 1950s (1950-1954, 1955-1959).

for age within the same age group. Panel (b) adjusts the horizontal axis of panel (a) from years to age groups to highlight the differences in poverty rates across generations. For example, in 2021, the poverty rate for those born in the late 1940s (aged 72-76) was 44.5%,

while for those born in the early 1940s (aged 72-76 in 2016), the poverty rate in 2016 was 51.5%. This phenomenon is observed across all generations, indicating that later-born generations face less poverty than earlier-born generations. It should be noted that comparing the poverty rates of the same age group in 2016 and 2021 may not fully account for social and institutional changes over the five-year period, such as the expansion of government policies like the basic pension, which may have contributed to the overall decrease in elderly poverty. Nevertheless, even considering these differences, the generational disparity in poverty rates revealed in Figure 9 clearly demonstrates that the poverty situation among the elderly differs across generations.[7]

Through this generational analysis, the two main characteristics observed in the trend of elderly poverty rates in South Korea since the 2010s can be explained. One notable trend is the rapid increase in the proportion of individuals born in the 1950s among the elderly population. The share of the 1950s cohort in the elderly population increased from 18.3% in 2016 to 47.4% in 2021, a nearly 30 percentage point rise. In 2016, those born in the 1940s accounted for about half of the elderly population (52.8%), while the 1950s cohort represented one-third of this proportion (18.3%). However, by 2021, the 1950s cohort had increased its share to 47.4%, making up nearly half of the elderly population. As seen in the generational analysis, the 1950s cohort is less impoverished compared to the earlier generations born in the 1930s and 1940s. The growing share of this cohort in the elderly population naturally contributes to the reduction in the overall elderly poverty rate in South Korea. Furthermore, these individuals belong to the younger elderly group aged 65-74. Ultimately, the expansion of the 1950s cohort within the elderly population explains the differences in poverty rates by age group within the elderly population.

The change in elderly poverty rates can be analyzed using the Oaxaca-Blinder decomposition to examine the component of poverty rate changes attributable to the shift in population share. The elderly poverty rate can be seen as a weighted sum of the poverty rates by generational group;

$$P_t = \sum_{j=1}^{J} w_{jt} P_{jt}$$

where P_t represents the aggregate elderly poverty rate at time t, while P_{jt} denotes the poverty rate of generation j at time t. w_{jt} indicates the proportion of the elderly population

[7]The differences in poverty levels between generations are also evident in the proportions of vulnerable groups (low income-low assets, low income-low consumption). When examining the vulnerable group ratio, the generational disparities in poverty levels become more pronounced. Figures illustrating generational differences in the vulnerable group ratios are included in the Section A.

belonging to generation j at time t. Using this decomposition, the change in elderly poverty rates between two points in time(t and $t + k$) can be expressed as follows:

$$P_{t+k} - P_t = \sum_{j=1}^{J}(w_{jt+k} - w_{jt})P_{jt} + \sum_{j=1}^{J} w_{jt}(P_{jt+k} - P_{jt})$$

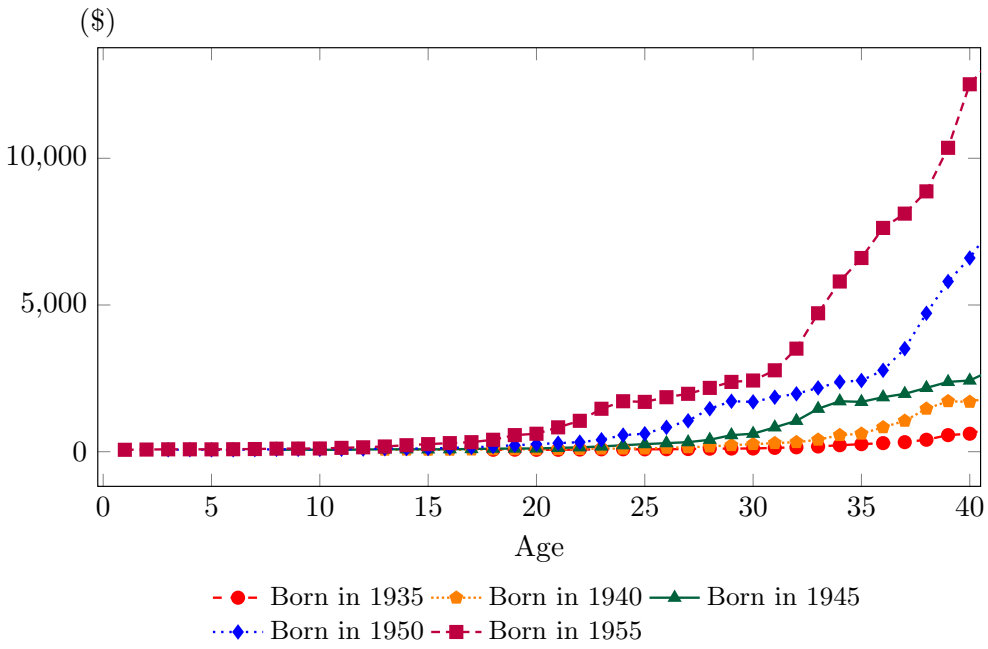
The change in elderly poverty rate is decomposed into the effect of changes in population share (i.e., the expansion of less impoverished cohorts) and the effect of changes in within-cohort poverty rates due to factors like declining income with age. The Oaxaca-Blinder decomposition reveals that, between 2016 and 2021, the change in the elderly poverty rate due to shifts in population share accounted for a reduction of 7.5 percentage points, while changes in within-cohort poverty rates contributed an increase of 1.6 percentage points. The change in population share, driven by the growing proportion of less impoverished generations, thus plays a dominant role in reducing the elderly poverty rate.

Even when considering assets and consumption in addition to income to comprehensively assess the economic conditions of the elderly, the disparity in poverty levels across generations remains evident. This generational difference in elderly poverty is likely attributed to the significant income gap between generations, which resulted from South Korea's rapid economic growth, as well as the varying degrees of maturity in the country's old-age income security system.

Following the devastation of the Korean War, South Korea underwent a period of rapid economic expansion, known as the "Miracle on the Han River," from the 1960s until the 1997 Asian Financial Crisis. The extent to which individuals experienced this economic growth varied across birth cohorts. Figure 10 illustrates the per capita Gross National Income (GNI) experienced over the lifetime of five birth cohorts: those born in 1935, 1940, 1945, 1950, and 1955. Despite the relatively small five-year age differences among these cohorts, their lifetime per capita GNI differs significantly. For instance, at age 30, the per capita GNI for individuals born in 1945 was $613, whereas for those born in 1950, it had nearly tripled to $1,699. Similarly, at age 40, individuals born in 1935 had a per capita GNI of $613. Twenty-five years later, by the time they reached 65 and entered old age, the per capita GNI had risen to $12,179. In contrast, individuals born in 1955 were 40 years old at that time, actively participating in the labor force, whereas those born in 1935 were 65 and generally no longer engaged in economic activities. Such disparities persist throughout the life course.

Given that poverty is often defined as income below 50% of the median income, earlier birth cohorts are more likely to be classified as impoverished. This phenomenon is also

Figure 10: Lifelong Per Capita GNI for Birth-year Cohorts



Notes: The data covers only the period from 1953 onwards, as that is when the per capita GNI collection began.

closely related to the methodology used to measure poverty. In least developed countries, absolute poverty is typically measured by determining whether an individual's income falls below a minimum subsistence level. In contrast, developed countries, including South Korea, commonly use a relative poverty measure, defining poverty as income below 50% of the median income. Due to South Korea's rapid economic growth, earlier cohorts, such as those born in 1935, experienced old age in a country that transitioned from measuring poverty using absolute standards to using relative poverty metrics.

In addition to income disparities, those born before 1950 also likely faced greater difficulties in accumulating wealth. The 1960s and 1970s were characterized by sharp increases in land prices and growing income inequality (Lee and Hwang (1998)). This suggests that pre-1950 birth cohorts not only had lower incomes than those born after 1950 but also encountered significant obstacles in wealth accumulation, making financial preparation for retirement more challenging. Educational attainment is another key factor contributing to generational differences in elderly poverty levels.

According to Statistics Korea, within the elderly population, later-born cohorts tend to have lower proportions of individuals with only an elementary school education or less and higher proportions with at least a high school diploma. Notably, among those born in the late 1940s—who are currently in their 70s—43.5% have at most an elementary school

education. In contrast, among the late 1950s birth cohort, often categorized as part of the "baby boomer" generation, this proportion is significantly lower at 16.8%, nearly half that of the cohort born a decade earlier. Additionally, 20.8% of the late 1950s cohort attained higher education at the university level.

The varying degrees of maturity in the old-age income security system across generations have also had a significant impact on differences in elderly poverty rates. The National Pension Scheme, South Korea's primary old-age income security program, was introduced in 1988 and expanded to cover the entire population in 1998. Consequently, earlier birth cohorts had shorter contribution periods, leading to lower pension benefits. According to recent statistics from the National Pension Service, the number of beneficiaries with at least 20 years of contributions has been increasing, along with the number of recipients receiving monthly benefits exceeding 2 million KRW. This trend is largely due to the inclusion of post-1950 birth cohorts in the pension system, who have had longer contribution periods and, consequently, receive higher pension payouts compared to those born before 1950.

To validate whether rapid economic growth is a major factor contributing to severe elderly poverty in South Korea, we further investigate the relationship between economic growth trajectories and the elderly poverty rate. Classical economic theory posits that economic growth is a fundamental driver of poverty reduction. Empirical evidence supports this view, with numerous studies emphasizing the strong correlation between rising per capita GDP and declining poverty rates. Roemer and Gugerty (1997) argues that "growth in per capita GDP can be and usually is a powerful force in reducing poverty." Cashin et al. (2001) further asserts that fostering per capita GDP growth is an effective strategy for reducing poverty within a given country. These findings underscore the centrality of economic expansion in poverty alleviation efforts.

While extensive research has examined the link between economic growth and overall poverty, relatively less attention has been given to how economic growth influences elderly poverty specifically. Unlike poverty in the general population, elderly poverty is shaped by distinct factors, including life-cycle income accumulation, pension systems, and changing socioeconomic conditions over time. Given the long-term nature of wealth accumulation and retirement security, the effects of economic growth on elderly poverty may differ from its impact on working-age poverty.

By adopting a novel econometric approach, we examine whether the timing of rapid economic growth significantly affects the elderly poverty rate. Specifically, we employ a functional regression approach(Chang et al. (2023)), which enables us to link a country's elderly poverty rate to the trajectory of economic growth experienced over previous

decades. We set up the model as follows:

$$y_{it} = \alpha + \int_{t-40}^{t} \beta(r) x_i(r) dr + \varepsilon_{it},$$

where y_{it} represents a gap in poverty rate between elderly and working-age population in country i at time t and $x_i(\cdot)$ indicates (demeaned[8]) trajectory of country i's economic growth(e.g. log GDP per capita) over the past 40 years (from $t-40$ to $t-1$). $\beta(\cdot)$ measures time-varying effect of economic growth on elderly poverty rate. To be specific, $\beta(r)$ signifies the marginal response of y_{it} on $x_i(r)$ at each $r \in [t-40, t)$. [9] The model is estimated following the methodology of Chang et al. (2023), which is based on Functional Principal Component Analysis (FPCA).

We collect log GDP per captia for 44 countries from United Nations dataset(between 1970 and 2022)[10], and fit the functional regression model to estimate $\beta(r)$. Figure 11 presentes the estimated $\widehat{\beta}(\cdot)$. In the intervals where the estimated coefficient is negative, a country's elderly poverty rate tends to be higher relative to the working-age poverty rate when its economic level is below the average of all countries. Conversely, in the intervals where the estimated coefficient is positive, the elderly poverty rate is higher relative to the working-age poverty rate when the country's economic level exceeds the average. If we hypothetically consider an economic growth trajectory that maximizes elderly poverty, it would involve having an economic level below the average in the periods where the coefficient is negative and above the average in the periods where the coefficient is positive.

This result suggests that countries with economic levels below the OECD average 40 to 20 years ago, but which have since experienced rapid economic growth and surpassed the OECD average in the past two decades, tend to exhibit higher elderly poverty rates. In other words, elderly poverty is a particularly severe issue in countries that were once poor but have achieved significant economic advancement.[11]

[8]We perform demeaning by subtracting the average of all trajectories from each individual trajectory.

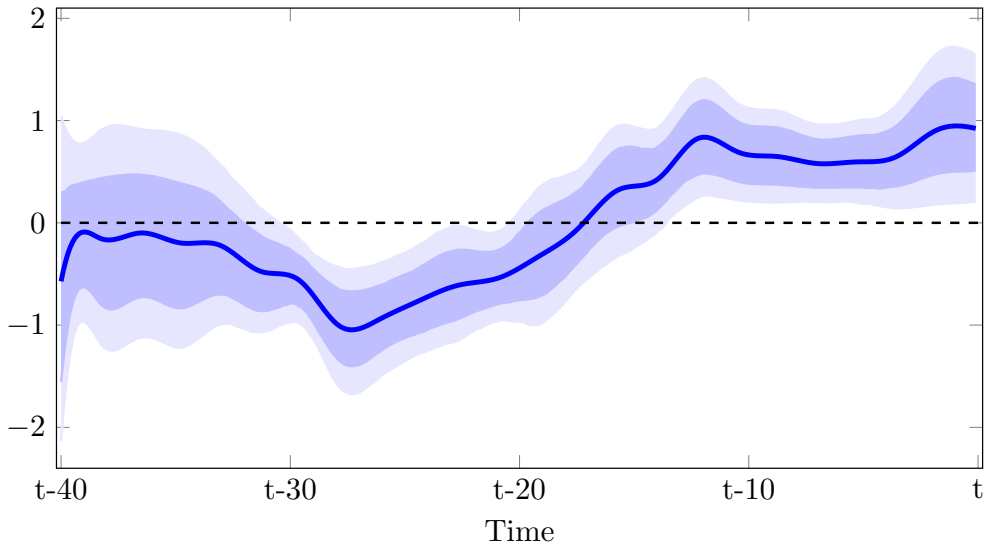
[9]Intuitively, our model can be approximated as follows:

$$y_{it} = \alpha + \int_{t-40}^{t} \beta(r) x_i(r) dr + \varepsilon_{it} \approx \alpha + \sum_{r=t-40}^{t-1} \beta_r x_{ir} + \varepsilon_{it}$$

[10]Specifically, an analysis is conducted on the relationship between the differences in poverty rates among the elderly and the young and middle-aged population and the economic growth trajectories of the 44 OECD member countries previously used in the comparative analysis. The poverty rate statistics for these OECD countries are provided in the Section B.

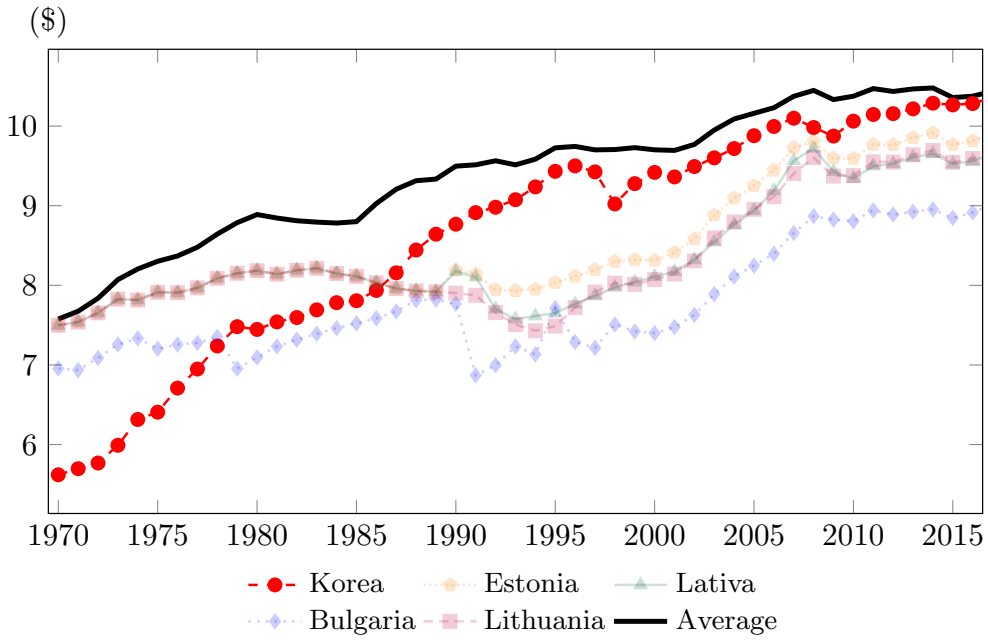
[11]The relationship between this growth trajectory and the elderly poverty rate becomes more evident when the analysis is restricted to countries where the elderly poverty rate is higher than the working-age poverty rate. When the regression is conducted solely on countries where the elderly poverty rate exceeds

Figure 11: Time-Varying Effect of Economic Growth on Elderly Poverty Rate



Notes: The estimated function $\widehat{\beta}(r)$ represents the change in elderly poverty rate in response to economic growth at time r. The darker and lighter shaded areas correspond to the 68% and 90% confidence intervals, respectively, derived using the wild bootstrap applied to the fitted errors in the approximating regression.

Figure 12: Comparison of Economic Growth Trajectories



Notes: This figure presents log GDP per capita for selected countries from 1970-2016. Average indicates simple average of OECD countires.

the working-age poverty rate by approximately 10 percentage points, the estimated coefficient functions become more significant, and the slope of the estimated function appears more pronounced. The results of

South Korea, along with the previously mentioned Baltic states, exemplifies this pattern. These countries currently experience high elderly poverty rates. A common characteristic among them is that, while their economic levels were relatively low compared to other OECD countries in the past, they have undergone rapid economic growth in recent decades, reaching high economic levels. Figure 12 presents log GDP per captia for these countries. Furthermore, in such countries, elderly poverty is more pronounced among earlier-born cohorts. While the overall elderly poverty rate is expected to decline over time as younger, relatively less impoverished cohorts enter old age, policy interventions are urgently needed to address the severe material deprivation currently faced by the older generation.

6 Conclusion

This paper examines elderly poverty in South Korea by considering economic aspects beyond income, with a particular focus on consumption. To provide a more detailed analysis of elderly poverty, we classify the elderly population by birth cohort and discuss potential policy directions based on our findings.

South Korea's elderly poverty rate is the highest among OECD countries, and even when considering assets and consumption in addition to income, elderly poverty remains a serious issue. While the poverty rate that incorporates assets and consumption is lower than the income-based poverty rate, it remains significantly high. The fact that elderly poverty remains severe even when assessing economic conditions more comprehensively highlights the gravity of the issue in South Korea. In particular, the low-income, low-consumption vulnerable group not only suffers from insufficient income and consumption but also possesses minimal assets. From the perspective of consumption expenditures, these vulnerable individuals not only have low overall consumption levels but also allocate a significant portion of their spending to essential items such as food and housing, leaving little room for other aspects of well-being. This suggests that they may also lack adequate access to medical services.

To further investigate this serious issue, we analyze elderly poverty by birth cohort. The results reveal significant differences in poverty levels across cohorts, with a distinct contrast between those born before and after 1950. Examining poverty rates and the proportion of vulnerable individuals shows clear generational disparities, with those born before 1950 experiencing notably higher poverty rates than later generations. The high elderly poverty

this analysis are provided in the Section A.

rate in South Korea appears to be largely driven by the significant proportion of pre-1950 birth cohorts within the elderly population. These individuals did not fully benefit from the country's rapid economic growth or the national pension system, making them more vulnerable to poverty than later cohorts. As younger, relatively less impoverished cohorts gradually enter the elderly population, the overall elderly poverty rate appears to be declining.

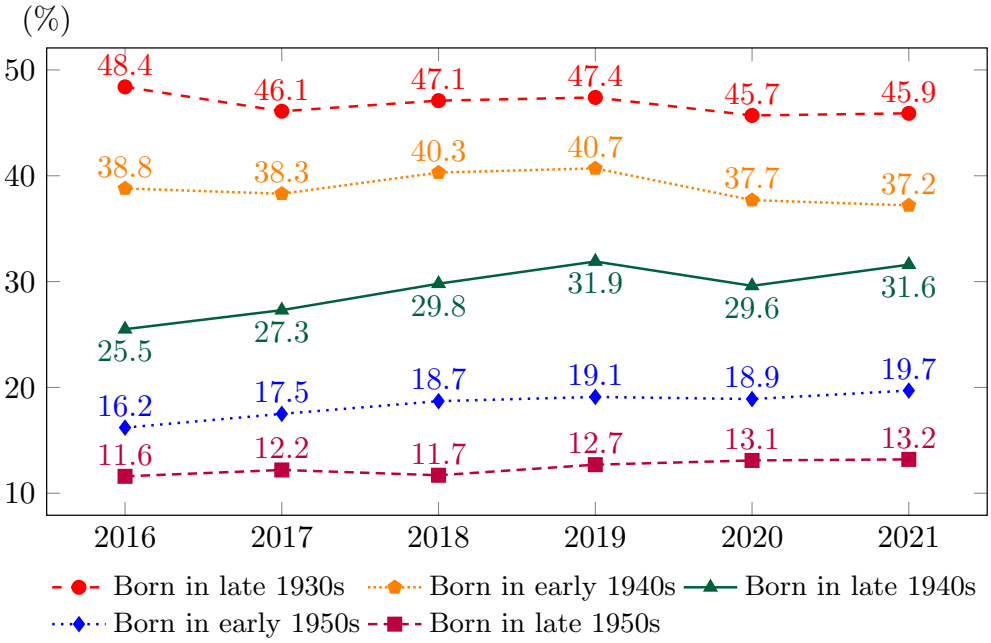
This severe elderly poverty issue is not unique to South Korea but is also observed in other countries that have experienced rapid economic growth in the past. While elderly poverty in these countries is expected to gradually diminish over time, certain older birth cohorts continue to suffer from extreme material deprivation. Temporary support policies targeting these vulnerable elderly groups could help improve their quality of life.

Appendix

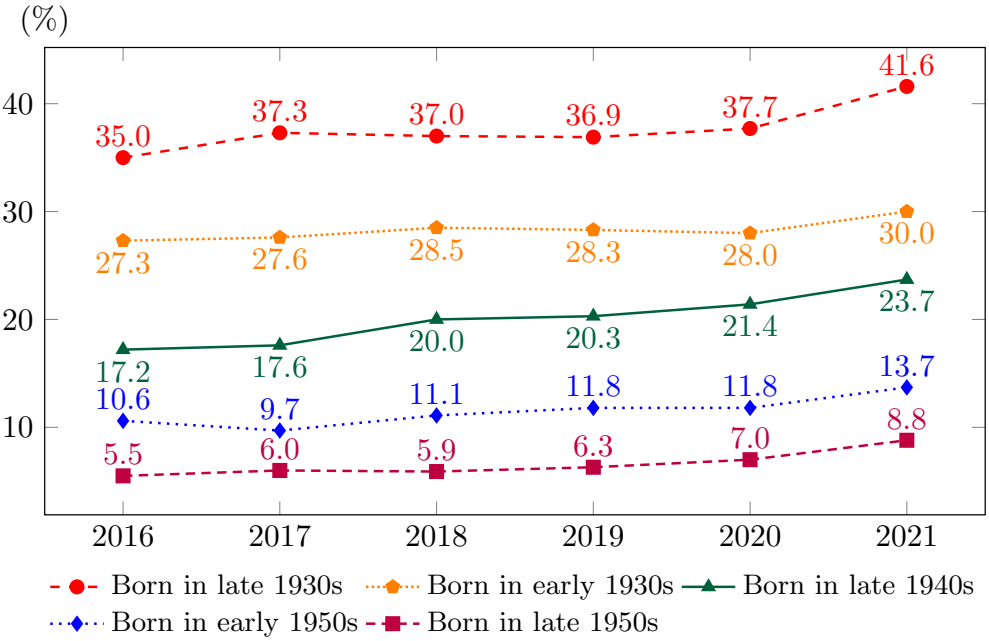
A Additional Figures

Figure 13: Proportion of Vulnerable Elderly by Generation (2016-2021)

(a) Low Income, Low Assets

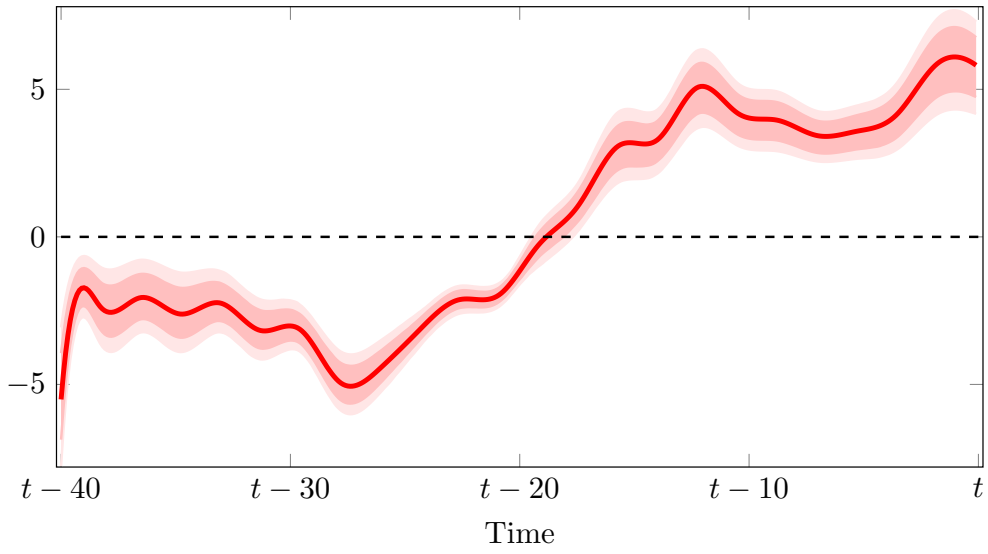


(b) Low Income, Low Consumption



Notes: Low income refers to individuals classified as impoverished based on disposable income, whereas low asset(consumption) pertains to those considered impoverished when assessing comprehensive income(consumption).

Figure 14: Time-Varying Effect of Economic Growth on Elderly Poverty Rate



Notes: The estimated function $\widehat{\beta}(r)$ represents the change in elderly poverty rate in response to economic growth at time r. This function is estimated using data from countries where the elderly poverty rate surpasses the working-age poverty rate by approximately 10 percentage points. The darker and lighter shaded areas correspond to the 68% and 90% confidence intervals, respectively, derived using the wild bootstrap applied to the fitted errors in the approximating regression.

B International Comparison of Poverty Rates

Table 3: Working-Age and Elderly Poverty Rate in OECD Countries (2019)

Country	Working-Age(18-65)	Old(Above 65)	Difference	Year
Australia	10.1%	22.6%	12.5%p	2020
Austria	9.1%	10.1%	1.0%p	2019
Belgium	7.3%	10.5%	3.2%p	2019
Brazil	18.9%	5.0%	-13.9%p	2016
Bulgaria	12.3%	31.1%	18.8%p	2019
Canada	11.4%	12.6%	1.2%p	2019
Chile	14.5%	17.6%	3.1%p	2017
China (People's Republic of)	26.0%	39.0%	13.0%p	2011
Costa Rica	16.4%	24.8%	8.4%p	2019
Czech Republic	4.3%	8.2%	3.9%p	2019
Denmark	7.7%	4.3%	-3.4%p	2019
Estonia	11.1%	34.5%	23.4%p	2019
Finland	6.9%	7.4%	0.5%p	2019
France	8.5%	4.4%	-4.1%p	2019
Germany	10.7%	11.0%	0.3%p	2019
Greece	12.2%	7.2%	-5.0%p	2019
Hungary	8.4%	13.2%	4.8%p	2019
Iceland	5.0%	3.1%	-1.9%p	2017
India	17.1%	22.9%	5.8%p	2011
Ireland	7.0%	7.4%	0.4%p	2018
Israel	14.3%	18.9%	4.6%p	2019
Italy	14.2%	11.3%	-2.9%p	2018
Japan	13.0%	20.0%	7.0%p	2018
Korea	11.1%	43.2%	32.1%p	2019
Latvia	12.7%	33.8%	21.1%p	2019
Lithuania	11.6%	28.7%	17.1%p	2019
Luxembourg	10.0%	5.2%	-4.8%p	2019
Mexico	14.7%	19.8%	5.1%p	2020
Netherlands	8.0%	5.6%	-2.4%p	2019
New Zealand	10.8%	19.8%	9.0%p	2019
Norway	9.6%	4.3%	-5.3%p	2019
Poland	9.7%	12.8%	3.1%p	2018
Portugal	9.8%	10.7%	0.9%p	2019
Romania	15.1%	19.9%	4.8%p	2019
Russia	9.5%	12.0%	2.5%p	2017
Slovak Republic	6.9%	6.6%	-0.3%p	2019
Slovenia	6.4%	13.0%	6.6%p	2019
South Africa	23.8%	22.1%	-1.7%p	2017
Spain	13.8%	11.6%	-2.2%p	2019
Sweden	8.4%	11.1%	2.7%p	2019
Switzerland	7.2%	18.8%	11.6%p	2019
Türkiye	11.9%	13.7%	1.8%p	2019
United Kingdom	11.0%	15.5%	4.5%p	2019
United States	15.7%	23.0%	7.3%p	2019

Source: OECD Income Distribution Database
Notes: 'Difference' refers to the gap between the elderly poverty rate and the working-age poverty rate. For countries where 2019 data was unavailable, the most recent data closest to 2019 was used.

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