

Türkiye’de Yaşlı Yoksulluğunun Belirleyicileri: Ampirik Bir Analiz

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ÖZ

Bu çalışma Türkiye’de yaşlı yoksulluğunun belirleyicilerini analiz etmektedir. Bu kapsamda 2011-2022 dönemine ait yıllık veriler kullanılarak En Küçük Kareler (OLS) yöntemi ile tahmin edilen çoklu doğrusal regresyon modeli uygulanmıştır. Yapılan analizde bağımlı değişken olarak yaşlı yoksulluk oranı ele alınırken, bağımsız değişkenler ise yaşlı nüfusun eğitim düzeyi, gelir eşitsizliğini temsil eden Gini katsayısı, yaşlılara yönelik kamu sosyal harcamaları ve kişi başına reel GSYH büyüme oranıdır. Çalışmada elde edilen regresyon sonuçlarına göre eğitim düzeyi ile kişi başına reel GSYH büyümesinin yaşlı yoksulluğu üzerinde negatif ve istatistiksel olarak anlamlı bir etkiye sahip olduğu tespit edilmiştir. Eğitim düzeyi, yaşlı yoksulluğunu açıklamada en güçlü değişken olarak öne çıkmaktadır. Gelir eşitsizliği ve kamu sosyal harcamaları değişkenleri ise istatistiksel olarak anlamlı bulunmamıştır. Literatür incelendiğinde, Türkiye’de yaşlı yoksulluğunun belirleyicileri üzerine yapılan ekonometrik analizlerin sınırlı olduğu görülmektedir. Bu çalışma, beşerî sermaye, sosyal koruma ve makroekonomik performans göstergelerini aynı model içerisinde birlikte ele alarak, kullandığı veri seti, değişkenler ve uyguladığı ekonometrik yöntem bakımından Türkiye’de yaşlı yoksulluğunun belirleyicilerine ilişkin ampirik literatüre katkı sunmayı amaçlamaktadır.

Anahtar Kelimeler: Yaşlı Yoksulluğu, Eğitim Düzeyi, Beşerî Sermaye, Ekonomik Büyüme, Çoklu Doğrusal Regresyon

Determinants of Elderly Poverty in Turkey: An Empirical Analysis

ABSTRACT

This study analyses the determinants of elderly poverty in Turkey. Within this scope, a multiple linear regression model estimated using the Ordinary Least Squares (OLS) method was employed using annual data covering the period 2011-2022. In the analysis, the elderly poverty rate was considered as the dependent variable, while the independent variables were the educational attainment of the elderly population, the Gini coefficient representing income inequality, old-age public social expenditure, and the real GDP per capita growth rate. According to the regression results obtained in the study, educational attainment and real GDP per capita growth were found to have a negative and statistically significant effect on elderly poverty. Educational attainment stands out as the strongest variable in explaining elderly poverty. The variables of income inequality and old-age public social expenditure were not found to be statistically significant. A review of the literature indicates that econometric analyses on the determinants of elderly poverty in Turkey are limited. This study aims to contribute to the empirical literature on the determinants of elderly poverty in Turkey by jointly considering human capital, social protection, and macroeconomic performance indicators within the same model, in terms of the dataset used, the variables included, and the econometric method employed.

Keywords: Elderly Poverty, Educational Attainment, Human Capital, Economic Growth, Multiple Linear Regression

1. INTRODUCTION

In recent years, the proportion of the elderly population has increased because of declining birth rates worldwide, rising life expectancy at birth, and advancements in healthcare. This growth in the elderly population has brought the issue of elderly poverty to the forefront. Elderly poverty is now being discussed as a social and economic problem on a global scale. Older adults are generally dependent on pensions and social transfers because they are no longer part of the workforce after retirement. Elderly poverty has different dynamics compared to poverty among the rest of the population. Poverty among the elderly is associated not only with insufficient income but also with factors such as health problems, social exclusion, and inability to participate in social life, and is described as a multidimensional form of poverty (Mohd et al., 2018; Rissanen & Ylinen, 2014). Given that elderly poverty has distinct dynamics and a multidimensional structure, it is of utmost importance to address and analyse this issue separately. Furthermore, with the rapid aging of the population in Turkey, conducting research on elderly poverty is considered crucial for policymaking. Population ageing is not merely a demographic transformation, but also a significant structural change with important economic and social consequences. Considering the effects of an ageing population on the



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sustainability of the social security system, increasing healthcare expenditures, and income distribution, the welfare level of the elderly population has become increasingly important today (Pelek & Polat, 2025). This process brings about new needs in many areas, including healthcare, social security, long-term care services, and economic well-being. Therefore, it is of great importance that policies for the elderly population are planned and developed based on scientific evidence (Başbüyük & Başbüyük, 2019). Tufan et al. (2019) emphasize that elderly poverty will become an increasingly important area of social policy in the future and that scientific research on this issue should be expanded, particularly considering population ageing.

A review of the literature reveals that elderly poverty has been analysed in relation to various variables, including income level, the pension system, pension benefits, social transfers, educational attainment, and labour force participation. Özkul and Kalaycı (2015) emphasize that population ageing has social, economic, demographic, and health-related implications, highlighting the multidimensional nature of ageing. In addition, Oğlak (2019) argues that elderly well-being should not be evaluated solely in terms of income, but rather through multidimensional indicators such as income security, education, employment, and health. Furthermore, within the framework of the Global AgeWatch Index, educational attainment and labour force participation are considered key indicators of elderly well-being. Similarly, Aslan (2025) emphasizes that elderly poverty is not merely a condition experienced in old age but rather the cumulative outcome of disadvantages related to education, labour market experiences, and social security accumulated throughout the life course. However, there are only a limited number of studies in Turkey that examine the determinants of elderly poverty using econometric methods. This situation highlights the importance of empirically examining the factors influencing elderly poverty in Turkey.

This study examines the determinants of elderly poverty in Turkey over the 2011–2022 period using a multiple linear regression model. The elderly poverty rate is analysed in relation to the educational attainment of the elderly population, income inequality, public social expenditure for the elderly, and real GDP per capita growth. Educational attainment represents accumulated human capital, while public social expenditure for the elderly reflects the public social protection provided to older individuals, and real GDP per capita growth represents macroeconomic performance. By considering these dimensions together, the study aims to contribute to the limited empirical literature on elderly poverty in Turkey and to support evidence-based policy discussions. The study is expected to contribute to the literature in three respects. First, it examines elderly poverty using annual time-series data for Turkey. Second, it brings together human capital, income distribution, social protection, and macroeconomic performance indicators within the same empirical model. Third, it provides policy implications based on the estimated relationships between these variables and elderly poverty.

This study begins with an introduction, followed by a literature review. The data set and methodology are then described, and the empirical findings are presented. The final section presents the conclusions and policy recommendations.

2. LITERATURE REVIEW

Poverty among the elderly is considered a significant social policy issue because older adults are more vulnerable to the risk of poverty due to factors such as insufficient income, social exclusion, and economic dependence. After retiring from the workforce, older adults face a greater risk of poverty due to a decline in regular sources of income (Keser, 2019). The determinants of poverty among the elderly include factors such as low-income levels, low educational attainment, and exclusion from the workforce. Low educational attainment, the presence of chronic illnesses, and a short work history contribute to income insufficiency during old age (Rissanen & Ylinen, 2014).

Karadeniz and Öztepe (2013) examined poverty among the elderly in Turkey using data sets from the 2009 and 2010 Household Budget Surveys. The study found that in 2009, 22% of the elderly in Turkey fell within the three poorest income groups, and this rate rose to 26.1% in 2010. This indicates that approximately 3 out of every 10 elderly people in Turkey are living in poverty. The study also listed the following as causes of elderly poverty: inequalities in the labour market, the inadequate coverage of the social security system, individuals working in the informal sector during their working years, and low pension benefits.

Arun (2016), in a study examining the relationship between poverty and inequality among the elderly in Turkey, notes that inequalities in education, health, and income increase the risk of poverty in old age, and that individuals with lower levels of education earn lower incomes in old age.

In their study examining poverty among the elderly in Malaysia during the 2009–2012 period, Mohd et al. (2018) found that poverty rates were particularly high among elderly individuals with low levels of education, those who were not employed, and those living in rural areas.

Ak and Közleme (2017) conducted a survey of 250 people in a study examining poverty among the elderly living in the central district of Gümüşhane Province. The study found that a significant portion of the elderly population lacks a regular income, that a portion of their income comes from social assistance, and that elderly individuals without social security face a risk of poverty. Additionally, the decline in income levels during old age compared to the active working period was identified as one of the primary causes of elderly poverty.

In a study by Lai et al. (2020) conducted on 7,552 older adults in Hong Kong, the relationship between older adults' well-being and income distribution, income level, and education level was analysed using logistic regression. The analysis revealed that educational level and income level have a significant impact on older adults' life satisfaction and well-being, and that older adults with low income and low educational levels have lower levels of well-being.

In their study, Aydın and Güloğlu (2021) examined poverty among the elderly in Turkey and European Union countries. The study utilized data from the Income and Living Conditions surveys for the years 2017–2018. The results of the study showed that poverty among the elderly was quite high before social transfers, but the poverty rate decreased after social transfers and pension payments. This indicates that social transfers are an important tool in reducing poverty among the elderly.

In a study on elderly workers living in poverty, Varol (2021) employed the in-depth interview technique, one of the qualitative research methods. The study found that elderly poverty is closely linked to the labor market, and that older individuals working in low-wage and precarious jobs face the risk of poverty both during their working lives and in old age.

Vu and Nguyen (2021) analysed the determinants of elderly poverty using multiple regression analysis based on household living standards surveys for the 2010–2016 period in Vietnam. The study found that among the determinants of elderly poverty, educational level, regional differences, ethnic composition, and social assistance programs play a significant role. In particular, the study emphasized that social assistance programs and transfers serve as an important policy tool in reducing elderly poverty.

Gölçek (2022) examined the determinants of elderly poverty in Turkey using microdata from the 2009 Turkish Statistical Institute (TÜİK) Household Budget Survey. Logistic regression analysis was applied in the study, and according to the results, educational level, household income, social transfers, and employment status were identified as significant factors influencing elderly poverty.

In their study, Güloğlu and Çepni (2022) reviewed various reports and statistics and noted that older adults face a risk of poverty due to factors such as educational level, employment status, and access to the social security system.

In their study, Parvaei et al. (2023) analysed elderly poverty in OECD countries using the Pearson correlation coefficient test and multiple linear regression. The study found that elderly poverty is influenced by public transfers, pensions, and social assistance. It was demonstrated that public transfers and pensions have a mitigating effect on elderly poverty.

Aslan (2025) used microdata from the Turkish Statistical Institute's Income and Living Conditions Survey to examine elderly poverty and found that it varies significantly according to socioeconomic factors related to educational attainment, labour market experience, and social security. The findings indicate that lower educational attainment and disadvantaged labour market experiences increase the risk of elderly poverty.

Gül and Buz (2025), in their study conducted with retirees aged 60 and over living in Mersin, found that having pension security does not eliminate economic poverty in old age. They further demonstrated that inadequate pension benefits increase social exclusion and that the current social security system may be insufficient to ensure the economic well-being of older adults.

A review of the literature indicates that elderly poverty is associated with many socioeconomic factors, such as educational attainment, income distribution, pension systems, public transfers, social expenditure, demographic conditions, labour market experiences, and macroeconomic performance. These factors operate through different mechanisms. Educational attainment may affect lifetime earnings and retirement income,

while macroeconomic growth may influence household resources, public revenues, and the general economic environment. Public social expenditure for the elderly reflects the level of social protection provided through pensions, cash benefits, and services directed towards older individuals.

Drawing on the relevant literature, this study examines elderly poverty in Turkey over the 2011–2022 period within the framework of a multiple linear regression model by incorporating educational attainment, income inequality, public social expenditure for the elderly, and real GDP per capita growth. By considering human capital, income distribution, social protection, and macroeconomic conditions together, this study aims to provide additional empirical evidence to the literature on the determinants of elderly poverty in Turkey.

The theoretical framework of the study is primarily based on human capital theory and the social exclusion approach (Becker, 1964; Rissanen & Ylinen, 2014). According to human capital theory, education enhances individuals' skills, productivity, lifetime earnings, and access to formal employment and social security mechanisms (Eyiusta & İlhan, 2015). These advantages may reduce the risk of poverty during old age. The social exclusion approach emphasizes that income inequality and inadequate access to economic and social resources can increase the vulnerability of older individuals. In addition, macroeconomic performance and public social expenditure for the elderly may influence elderly poverty through economic opportunities, pensions, income transfers, and access to care services. Therefore, educational attainment, income inequality, public social expenditure for the elderly, and real GDP per capita growth are included as the principal explanatory variables in the empirical model.

3. METHODOLOGY

This study uses annual data from the 2011–2022 period. The dependent variable in the study is the elderly poverty rate (EPOV). The explanatory variables are the educational attainment of the elderly population (EDU), the Gini coefficient representing income inequality (GINI), old-age public social expenditure as a percentage of GDP (OASE) and real GDP per capita growth (GDPG). Public social expenditure for the elderly was obtained from the OECD Social Expenditure Database (SOCX), real GDP per capita growth was obtained from the World Bank's World Development Indicators (WDI) database, while all other variables were compiled from the database of the Turkish Statistical Institute (TurkStat). The data on public social expenditure for the elderly and real GDP per capita growth were accessed on 3 July 2026, while the TurkStat database was accessed on 7 February 2026. The analysis was limited to the 2011–2022 period because complete and consistent data for all variables were not available before 2011 or after 2022. Data on the educational attainment of the elderly population were not available in the TurkStat database for the years after 2022.

Table 1. Variable Definitions

Variable	Abbreviation	Description	Source
Elderly Poverty Rate	EPOV	Poverty rate of population aged 65 and over (%)	Turkish Statistical Institute
Education Level	EDU	Share of elderly population with high school or higher education (%)	Turkish Statistical Institute
Income Inequality (Gini)	GINI	Gini coefficient	Turkish Statistical Institute
Old-age Public Social Expenditure	OASE	Public old-age social expenditure as a percentage of GDP	OECD
Real GDP per Capita Growth	GDPG	Annual growth rate of real GDP per capita (%)	World Bank

In this study, a multiple linear regression model was used to analyse the determinants of poverty among the elderly. The model parameters were estimated using the Ordinary Least Squares (OLS) method. The econometric model established for this purpose is as follows:

$$EPOV_t = \beta_0 + \beta_1 EDU_t + \beta_2 GINI_t + \beta_3 OASE_t + \beta_4 GDPG_t + \varepsilon_t \quad (1)$$

In Equation (1), EPOV represents the elderly poverty rate, EDU represents the educational attainment of the elderly population, GINI represents income inequality, OASE represents old-age public social expenditure as a percentage of GDP, and GDPG represents real GDP per capita growth. The term β_0 denotes the constant, β_1 , β_2 , β_3 and β_4 denote the coefficients of the explanatory variables, and ε_t represents the error term.

Educational attainment is expected to reduce elderly poverty by increasing lifetime earnings and retirement income. Old-age public social expenditure is expected to alleviate elderly poverty through pensions, cash transfers, and care services, while real GDP per capita growth is expected to improve overall economic conditions and reduce poverty. In contrast, higher income inequality, represented by the Gini coefficient, is expected to increase elderly poverty. Accordingly, the expected signs of the coefficients are as follows:

$$\beta_1 < 0, \beta_2 > 0, \beta_3 < 0, \beta_4 < 0$$

H1: Educational attainment is negatively associated with elderly poverty.

H2: Income inequality is positively associated with elderly poverty.

H3: Old-age public social expenditure is negatively associated with elderly poverty.

H4: Real GDP per capita growth is negatively associated with elderly poverty.

The Variance Inflation Factor (VIF) test was applied to determine whether there was any multicollinearity among the independent variables. The Durbin-Watson and Breusch-Godfrey tests were conducted to check for the presence of autocorrelation. The Breusch-Pagan and White tests were applied to test for heteroskedasticity. The Jarque-Bera normality test was performed to determine whether the error terms follow a normal distribution. Additionally, the Ramsey RESET test was applied to test for specification error. Based on the results of these tests, the model was comprehensively examined to determine whether it satisfies the classical regression assumptions.

4. RESULTS

This section presents the empirical findings of the study. First, descriptive statistics and the correlation matrix are presented to summarize the characteristics of the variables. Next, the results of the multicollinearity and unit root tests are reported, followed by the diagnostic test results. Finally, the OLS regression results and model summary statistics are presented and discussed.

Table 2. Descriptive Statistics

Variables	Mean	Median	Std. Dev.	Minimum	Maximum
EPOV	16.23	16.55	2.13	11.40	18.70
EDU	12.51	12.10	2.95	8.60	17.40
GINI	0.403	0.403	0.007	0.391	0.415
GDPG	4.49	3.94	3.36	-0.14	10.80
OASE	5.77	5.78	0.32	4.88	6.17

Table 2 presents the descriptive statistics of the variables used in the analysis. During the 2011–2022 period, the average elderly poverty rate was 16.23%, ranging from 11.40% to 18.70%. The average educational attainment of the elderly population was 12.51%, while the mean Gini coefficient was 0.403, indicating relatively limited variation in income inequality over the sample period. Real GDP per capita growth averaged 4.49%, although it exhibited considerable variation across years. Old-age public social expenditure averaged 5.77% of GDP, ranging from 4.88% to 6.17%. Overall, the descriptive statistics indicate sufficient variation in the variables to proceed with the econometric analysis.

Table 3. Pearson Correlation Matrix

Variables	EPOV	EDU	GINI	OASE	GDPG
EPOV	1.000				
EDU	-0.793	1.000			
GINI	-0.250	0.476	1.000		
OASE	0.462	-0.265	0.059	1.000	
GDPG	-0.268	-0.139	0.004	-0.763	1.000

Table 3 presents the pairwise correlation coefficients among the variables included in the analysis. A strong negative correlation is observed between elderly poverty and educational attainment ($r = -0.793$). This result indicates that elderly poverty tends to be observed at lower levels during periods with higher educational attainment. Weak negative correlations are observed between elderly poverty and income inequality ($r = -0.250$) as well as real GDP per capita growth ($r = -0.268$). In contrast, a moderate positive correlation is found between elderly poverty and old-age public social expenditure ($r = 0.462$). Among the explanatory variables, the highest correlation is observed between old-age public social expenditure and real GDP per capita growth ($r = -0.763$). In addition, pairwise correlation coefficients alone are not sufficient to determine the presence of multicollinearity. Therefore, the Variance Inflation Factor (VIF) analysis was conducted to examine the presence of multicollinearity among the explanatory variables before estimating the regression model.

Table 4. Variance Inflation Factor (VIF) Results

Variables	VIF
EDU	2.736
GINI	1.799
OASE	4.971
GDPG	4.520

Table 4 presents the Variance Inflation Factor (VIF) values for the independent variables included in the model. The VIF values range from 1.799 to 4.971, all of which are below the commonly accepted threshold value of 5. The findings indicate that there is no serious multicollinearity problem in the model. Therefore, the explanatory variables were retained in the estimated model.

Table 5. ADF Unit Root Test Results

Variables	Level t-statistic	Level p-value	First Difference t-statistic	First Difference p-value	Order of Integration
EPOV	0.507	0.985	-8.213	0.000	I(1)
EDU	4.495	1.000	-6.842	0.000	I(1)
GINI	0.157	0.970	-16.227	0.000	I(1)
OASE	-2.856	0.051	-4.332	0.000	I(1)
GDPG	-3.840	0.003	-	-	I(0)

Table 5 presents the results of the Augmented Dickey-Fuller (ADF) unit root test. The elderly poverty rate was found to be non-stationary at the level (t-statistic = 0.507, $p = 0.985$) but became stationary after taking the first difference (t-statistic = -8.213, $p < 0.01$). Similarly, the educational attainment variable was found to be non-stationary at the level (t-statistic = 4.495, $p = 1.000$) but became stationary after first differencing (t-statistic = -6.842, $p < 0.01$). The Gini coefficient was also found to be non-stationary at the level (t-statistic = 0.157, $p = 0.970$) but became stationary after taking the first difference (t-statistic = -16.227, $p < 0.01$). The old-age public social expenditure variable was not stationary at the level (t-statistic = -2.856, $p = 0.051$) but became stationary after first differencing (t-statistic = -4.332, $p < 0.01$), indicating that it is integrated of order one, I(1). In contrast, real GDP per capita growth was found to be stationary at the level (t-statistic = -3.840, p

= 0.003), indicating that it is integrated of order zero, $I(0)$. Overall, the unit root test results indicate that the variables included in the model exhibit mixed orders of integration. Since none of the variables is integrated of order two, $I(2)$, the regression model was estimated in levels to examine the relationships among the variables. Given the relatively small sample size, the results should be interpreted with caution.

Table 6. Diagnostic Test Results

Test	Statistic	p-value	Interpretation
Durbin-Watson	2.619	-	No evidence of autocorrelation
Breusch-Godfrey LM	2.021	0.155	No autocorrelation
Breusch-Pagan LM	2.011	0.734	No heteroskedasticity
White Test	12.000	0.364	No heteroskedasticity
Jarque-Bera	1.497	0.473	Residuals are normally distributed
Ramsey RESET	4.110	0.089	No specification error (5% significance level)

Table 6 presents the results of the diagnostic tests conducted to assess the validity of the estimated model. The Durbin–Watson statistic was calculated as 2.619, indicating no evidence of autocorrelation. This finding is supported by the Breusch–Godfrey LM test (statistic = 2.021, $p = 0.155$), which also suggests that the null hypothesis of no autocorrelation cannot be rejected. To examine the presence of heteroskedasticity, the Breusch–Pagan LM and White tests were performed. The results of the Breusch–Pagan LM test ($p = 0.734$) and the White test ($p = 0.364$) indicate no evidence of heteroskedasticity. Furthermore, the Jarque–Bera test ($p = 0.473$) indicates that the residuals are normally distributed. Finally, the Ramsey RESET test (F-statistic = 4.110, $p = 0.089$) does not indicate a specification error at the 5% significance level. Overall, these findings suggest that the estimated model satisfies the main OLS assumptions and that the regression results are statistically reliable.

Table 7. OLS Regression Results

Variables	Coefficient	Standard Error	t-statistic	p-value
Constant	1.825	20.144	0.091	0.930
EDU	-0.886	0.168	-5.284	0.001
GINI	118.846	60.683	1.958	0.091
GDPG	-0.534	0.189	-2.822	0.026
OASE	-3.465	2.061	-1.681	0.137

Table 7 presents the OLS regression results. Among the explanatory variables, educational attainment has a negative and statistically significant coefficient ($\beta = -0.886$, $p = 0.001$), indicating that higher educational attainment is associated with lower elderly poverty. Similarly, real GDP per capita growth has a negative and statistically significant coefficient ($\beta = -0.534$, $p = 0.026$), suggesting that higher economic growth is associated with lower elderly poverty. Although the estimated coefficient of the Gini coefficient is positive and that of old-age public social expenditure is negative, neither variable is statistically significant at the 5% significance level ($p > 0.05$). Therefore, no statistically significant relationship could be identified between the Gini coefficient, old-age public social expenditure, and elderly poverty during the sample period.

Table 8. Model Summary Statistics

Statistic	Value
R^2	0.862
Adjusted R^2	0.784
F-statistic	10.973
Prob(F-statistic)	0.004
Durbin-Watson	2.619

Table 8 presents the summary statistics of the estimated regression model. The coefficient of determination (R^2) is 0.862, indicating that approximately 86.2% of the variation in elderly poverty is explained by the explanatory variables included in the model. The adjusted R^2 value is 0.784, suggesting that the model retains a high explanatory power after adjusting for the number of explanatory variables. Furthermore, the overall model is statistically significant, as indicated by the F-statistic (10.973) and its associated probability value ($\text{Prob}(F\text{-statistic}) = 0.004$). The Durbin–Watson statistic (2.619) is close to 2, providing additional evidence that autocorrelation is not a concern in the estimated model.

Overall, the econometric findings indicate that the estimated model is statistically significant and satisfies the main OLS assumptions. According to the regression results, educational attainment and real GDP per capita growth are the only variables that exhibit a statistically significant association with elderly poverty. Higher educational attainment and stronger economic growth are associated with lower elderly poverty during the sample period. In contrast, although the Gini coefficient and old-age public social expenditure have positive and negative coefficients, respectively, no statistically significant relationship was found between these variables and elderly poverty. Overall, the findings are broadly consistent with the existing literature on the determinants of elderly poverty.

5. CONCLUSION

This study examined the determinants of elderly poverty in Turkey using annual data for the period 2011–2022. Elderly poverty was considered as the dependent variable, while educational attainment, the Gini coefficient, old-age public social expenditure, and real GDP per capita growth were included as explanatory variables. The empirical analysis was conducted using the Ordinary Least Squares (OLS) method, and a series of diagnostic tests confirmed that the estimated model satisfies the main OLS assumptions.

The empirical findings obtained from the study indicate that educational attainment is the most important determinant of elderly poverty in Turkey. Higher educational attainment was found to be associated with lower elderly poverty, highlighting the long-term role of human capital in reducing the risk of poverty in old age. In addition, real GDP per capita growth was found to have a negative and statistically significant association with elderly poverty. This finding suggests that more favourable macroeconomic conditions are associated with improved economic well-being among older individuals. By contrast, although the estimated coefficient for the Gini coefficient was positive and that of old-age public social expenditure was negative, neither variable was statistically significant. Therefore, no statistically significant relationship was found between these variables and elderly poverty during the sample period.

The results of this study indicate that poverty in old age is closely associated with the human capital accumulated throughout the life course and overall macroeconomic conditions. Individuals with lower levels of education are more likely to earn lower incomes throughout their lives, save less, and receive lower pension benefits. This situation also increases the risk of poverty in old age (Rissanen & Ylinen, 2014). Improvements in economic growth may contribute to enhancing the economic well-being of older individuals by supporting employment, income growth, and public fiscal capacity. These findings are broadly consistent with previous empirical studies emphasising the role of education and macroeconomic conditions in elderly poverty.

Higher educational attainment may contribute to higher lifetime earnings and enable individuals to accumulate greater savings for retirement. The literature also suggests that individuals with higher educational attainment are more likely to receive higher pension benefits during retirement (Arun, 2016). In this context, the policy implications of the study primarily concern education. Policies aimed at expanding educational opportunities are likely to enhance individuals' economic resilience both during their working lives and in old age. Ensuring equality of opportunity in education and promoting lifelong learning may contribute indirectly to reducing elderly poverty. In addition to education policies, policies promoting healthy ageing should also be strengthened. Healthy ageing strategies implemented from middle age onwards may help individuals maintain their physical and mental well-being in later life (Uslu & Bayram, 2024). Such policies may improve quality of life, reduce health expenditures associated with ageing, and support participation in social life. Elderly poverty may also have broader socioeconomic consequences. Continued labour market participation at older ages should not always be interpreted as an indicator of active ageing or economic well-being. For some older individuals, remaining in employment may be driven by financial necessity resulting from inadequate pension income or insufficient lifetime savings. Therefore, the primary policy objective should be to ensure adequate

income security in old age rather than to encourage labour market participation arising from economic necessity.

Beyond education and healthy-ageing policies, reducing elderly poverty also requires stable macroeconomic conditions and effective social protection mechanisms. Stable economic conditions may support the economic well-being of older individuals by strengthening income growth and public fiscal capacity. Although the Gini coefficient and old-age public social expenditure were not statistically significant in the estimated model, the literature continues to emphasise the importance of income distribution and social protection in addressing elderly poverty. Improving the targeting and effectiveness of social assistance programmes, protecting pension benefits against inflation, and providing adequate income support for economically vulnerable older individuals therefore remain important policy priorities (Taşcı & Baran, 2024; Sarica, 2019). Since elderly poverty is a multidimensional phenomenon encompassing income, healthcare, long-term care, housing, and social participation, policy responses should integrate economic, health, and social measures.

While many previous studies rely on microdata, this study employs annual time-series data to examine the determinants of elderly poverty in Turkey. It contributes to the literature by jointly considering educational attainment, income inequality, old-age public social expenditure, and economic growth within a single empirical framework.

This study has certain limitations. First, the analysis is based on annual data covering the period 2011–2022, resulting in a relatively small number of observations. Under these conditions, including a larger number of explanatory variables could reduce the degrees of freedom and affect the precision of the coefficient estimates. Second, the OASE variable is an aggregate indicator that includes old-age pensions, cash transfers, and in-kind services and does not specifically measure transfers targeted at poor older individuals. Therefore, the findings should be interpreted considering these limitations. Future studies could provide more comprehensive evidence on the determinants of elderly poverty by using longer time series, larger datasets, and additional explanatory variables.

DECLARATIONS

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