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Is Ageing Related to Poverty? A Case Study in Turkish Older Population[1]

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Yaşlanmanın Yoksullukla İlişkisi Var Mı? Türk Yaşlı Nüfusu Üzerinde Bir Örnek Çalışma[2]

Abstract

This study seeks answers to whether ageing is related to poverty or not in terms of socio-demographic variability in terms of Türkiye, a developing country. The study is based on 1,512 reference people randomly selected from seven provinces of Türkiye in October 2021-January 2022, and generalised, hierarchical, and logit log-linear model analyses were examined. It is determined that the age factor has the most decisive impact on poverty compared to the other variables. The gender-based poverty analysis results show that equality between women and men is close. The income levels of educated individuals younger than 65 are insufficient to meet living costs.

Keywords : Poverty, Ageing, Income Distribution, Old-Age Poverty, Log-Linear Modeling.

JEL Classification Codes : H75, I3, P46.

Öz

Bu çalışma, gelişmekte olan bir ülke olan Türkiye açısından sosyodemografik değişkenlik açısından yaşlanmanın yoksullukla ilişkili olup olmadığı sorusuna yanıt aramayı amaçlamaktadır. Çalışma, Ekim 2021-Ocak 2022 tarihleri arasında Türkiye'nin yedi ilinden rastgele seçilen 1.512 referans kişiye dayanılarak genelleştirilmiş, hiyerarşik ve logit log-doğrusal model analizleri incelenmiştir. Yaş faktörünün yoksulluk üzerinde diğer değişkenlere göre en güçlü etkiye sahip olduğu tespit edilmiştir. Cinsiyete dayalı yoksulluk analizi sonuçlarına göre kadın-erkek eşitliğine yakındır. 65 yaş altı eğitimli bireylerin gelir düzeyleri geçim masraflarını karşılamada yetersizdir.

Anahtar Sözcükler : Yoksulluk, Yaşlılık, Gelir Dağılımı, Yaşlı Yoksulluğu, Log-Doğrusal Modelleme.

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1. Introduction

The slowdown in the world's population growth rate, the increase in life expectancy, and the continuous rise in the share of the older population aged 65 and older in the total population affect the internal mechanisms of countries across the globe in terms of economic, political, cultural, and environmental aspects. In this regard, public policies and private sector initiatives to be developed in the presence of the soaring older population can be exemplified as crucial steps for economic growth, development, and stability.

Before the development of welfare states, although population ageing was lower and less healthy, public pension systems were perceived as a means of excluding the older population from the labour market. In the welfare development process, the older population began to be integrated into socio-economic life, and state policies were implemented for the active ageing process (Walker & Maltby, 2012: 118). In this context, the direct and effective contribution of the private sector to the governments had great importance in developing policies regarding the challenges of the ageing population (Liebig, 1983: 127). Government policies initiated on the active ageing concept, especially since the beginning of the 1990s, can be considered important steps toward mitigating an ageing population's long-term economic, financial, and budgetary impacts (Tkalec, 2017: 1).

Although there were 727 million people in the 65+ age group worldwide as of 2020, women constitute the majority of the elderly population, especially in advanced ages, since they tend to outlive men on average. Within the next three decades, the number of older adults worldwide will increase by more than twofold, to more than 1.5 billion by 2050. The share of the elderly population aged 65+ on a global scale is expected to grow from 9.3% in 2020 to 16.0% in 2050 (DESA, 2022).

In Türkiye, retirement has had a complex structure throughout history. One of the reasons for this is that the retirement period and the ageing phase of life do not overlap. According to the former law, retirement required 20 years for women and 25 years for men, and the working population retired at 40-45 on average. This situation caused the middle-aged group, rather than older people, to occur more among the retirees in Türkiye (Tufan, 2007). Therefore, the current pension system has been arranged by age with the Social Insurance Reform effective from 09.01.2008.

According to TÜİK (2022b) data, the current population of Türkiye is 84.7 million, and retirees constitute 16.2% of the population. The retired and/or elderly population, in a rising demographic trend, can also be considered a current discussion topic that may negatively affect income distribution in Türkiye with the issue of EYT (People Not Yet of Retirement Age). EYT, by definition, covers the people whose insurance entry dates precede 09.08.1999. The issue of early retirement with EYT, which has been ongoing for 24 years, has been accepted by the Turkish Grand National Assembly, and approximately 2.25 million people have retired as of 01 March 2023 with the Decree Law No: 375.

The "permanent poverty rate" was calculated as 13.8% in 2021, based on the Income and Living Conditions Panel Survey data by TÜİK. According to the poverty threshold set at 40% of median equivalised household disposable income, the at-risk-of-poverty rate was 8.5%, 50% 14.4%, 60% 21.3%, and 70% 28.7% in 2021. Upon comparison with the year 2020 for all rates, poverty rates decrease within the range of 0.3-0.6 (TÜİK, 2022a). According to the Turkish Workers' Union (Türk-İş), as of July 2022, the poverty line for a family of four was 22,278 TL (Turkish Liras), and the hunger threshold (as of June 2022) was 6,839 TL. The minimum wage for 2022 has been determined as 5,500 TL, lower than the poverty line and the hunger threshold. Uluocak (2017) emphasised that the retired population of different ages suffered from income poverty more than the working population.

Does population ageing distort income distribution, and is there a relationship between the older population and poverty? Possible responses to these questions constituted the starting point of the study. Poverty tends to vary by living standards and needs and has content that can be evaluated subjectively and objectively. In industrial societies, poverty means social exclusion; people experiencing poverty receive quite a small portion of economic, social, and cultural gains (Feldmann, 2001: 118).

It is impossible to reach a clear picture of the relationship between ageing and poverty based solely on the data of TÜİK. Is ageing a period of life during which poverty or the risk of poverty increases? Is there a relationship between ageing and poverty? The responses to these questions were sought in this study based on a sample and data illustrating the Turkish case.

2. Ageing, Income Inequalities, and Poverty

Empirical studies on ageing and income inequalities, and therefore poverty, have revealed findings regarding positive, negative, and limited interactions among the variables. The fact that the countries in which studies detect a positive relationship are developing or developed countries can increase or decrease the strength of the interaction among the variables. However, there are also studies (Lam & Levison, 1992; Cameron, 2000; Zhong, 2011; Van Vliet & Wang, 2015, Chan & Chou, 2018) that have found strong positive relationships between ageing and income inequalities as well as poverty in both developing and developed countries. Quite limited interaction among the variables was argued in some of the studies on ageing, income inequalities, and poverty in the literature (Jenkins, 1995; Jantti, 1997; Tsakloglou, 1997; Gustafsson & Johansson, 1999; Barreti et al., 2000); whereas there are also studies supporting the negative relationship, albeit a few (Chu & Jiang, 1997; Marchand & Smeeding, 2016).

Since the 1960s, poverty among older people has decreased significantly in the USA and various developed countries; however, a gradual increase in poverty has been observed among children and individuals of working age. This change has been attributed to the rise in demand for universities and colleges, the prolongation of the retirement age, the increase

in social transfer expenditures, and the fact that older people are usually involved in the qualified labour market (Marchand & Smeeding, 2016).

Karadeniz and Öztepe (2013) pointed out that the concept of poverty is affected by age and gender. Lee et al. (2013), in the study on the determinants of income inequality in Korea between 1980-2012, found that the estimated coefficients regarding the share of older in the working population among the determinants of inequality in income distribution were positive and statistically significant. Hwang et al. (2021), in a study emphasising that population ageing continues rapidly in Korea, measured the impacts of ageing on income inequality. As a study finding, it was concluded that ageing reduced household income in income distribution. Lin et al. (2015) found a positive relationship between ageing and income inequality due to the analysis of the relationship between differences in income distribution and life cycle for 22 regions of Taiwan from 1998-2006.

Wang et al. (2017) examined the impact of ageing on inequality in a study covering 67 different countries in 1990-2010. They observed that ageing had a positive impact on income inequality. Dong et al. (2018) found that ageing significantly increased income inequality in China in 1996-2011. Deyshappriya and Minuwanthi (2020) found a nonlinear relationship between ageing and income and multidimensional poverty probabilities in Sri Lanka.

Aydın and Güloğlu (2021) studied the poverty of the population aged 65 and over in the European Union (EU) countries and Türkiye between 2017-2018 by using Income and Living Conditions Surveys data. The analysis showed that 88% of the older population in EU countries and 70% in Türkiye were less than the poverty line compared to the median income limit of 60% before social transfers. Besides, the old-age income poverty rate decreased to 14.4% in EU countries and 16.6% in Türkiye with social transfers that included pensions.

3. Methodology and Data Analysis

This study hypothesises that there is a relationship between ageing and poverty in the case of Türkiye. To test the hypothesis, a qualitative categorical variable, poverty, was defined as a dependent variable with two categories ("not poor" and "poor"). Gender, marital status, education level, age, and the number of equivalent households constitute the independent variables. The National Society of Social and Applied Gerontology Ethics Committee approved the study with the decision dated 16.09.2021; Protocol code: 176.14-86; and Ethics-42/044.22.11.25.

3.1. Participants

The sample consisted of 1,512 (references) people - 1,049 people are younger than 65 and 463 people are 65 and older - (response rate 30.2%) residing in 5,000 households randomly selected from these provinces participated in the study. A total of 4,294 people reside in households. TÜİK describes a household as a community consisting of more than

one person living in the same residence, fulfilling the basic needs collectively, whether related or not. The empirical data presented were conducted in seven cities, each representing seven regions of Türkiye. The firsthand data were collected from reference persons via a survey prepared by the authors in October 2021-January 2022.

3.2. Analysis

Generalised log-linear, hierarchical, and logit log-linear models were employed as analysis methods utilising SPSS statistical software version 20. Unlike general log-linear models, hierarchical log-linear models include all associated low-level interaction effects while describing high-level interaction effects. As the most common applications, logit log-linear models are the ones in which one variable (or more than one variable) is considered dependent on others (Bühl, 2010: 751-757). The saturated frequency model, the most general type of log-linear modelling, is referred to as the frequency model since no assumptions have been made about the causal structure of the data and were included in the modelling of this study.

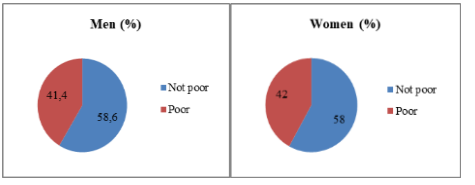
4. Results

4.1. Poor-Not Poor Classification

Poverty, along with the definition of reference member in the household by TÜİK, is categorised into two groups, namely, "not poor" and "poor", under the name of material deprivation with nine questions. In this context, material deprivation is described as the proportion of people experiencing severe financial distress (TÜİK, 2021).

1. Do you own a washing machine?
2. Do you own a (colour) television?
3. Do you own a phone?
4. Do you own an automobile?
5. Is it possible for you to pay for unexpected expenses?
6. Is it possible for you to take a one-week vacation away from home?
7. Can you pay rent, housing, loans, and interest debts?
8. Can you consume a meal containing meat, chicken, or fish three times a week?
9. Can you fulfil the heating needs of the house?

Graph: 1
Gender Classifications as either Poor or Not Poor



Graph 1 summarises the situation that emerged from the responses to these questions. Since the findings from the classical two-dimensional table analyses do not allow for a decision regarding the assumed relationship between ageing and poverty, the study's data were analysed using different log-linear models.

4.2. Relationship between Age and Annual Equivalent Household Disposable Income

4.2.1. Generalised Log-Linear Model Analysis

Table 1 lists gender, marital status, education level, age, equivalised household size, and poverty.

Table: 1
Frequency Distribution of The Participants

Gender	Marital Status	Education Level	Age	Equivalised Household Size	Poverty		Total
					1 "Not Poor"	2 "Poor"	
1 "Man"	1 "Married"	1 "Low"	1 "Younger than 65"	1 "1-2 persons"	84	16	100
				2 "3+ persons"	91	72	163
			2 "65 and older"	1 "1-2 persons"	21	68	89
				2 "3+ persons"	21	37	58
		2 "High"	1 "Younger than 65"	1 "1-2 persons"	77	12	89
				2 "3+ persons"	56	14	70
			2 "65 and older"	1 "1-2 persons"	3	11	14
				2 "3+ persons"	1	2	3
	2 "Not Married"	1 "Low"	1 "Younger than 65"	1 "1-2 persons"	7	1	8
				2 "3+ persons"	6	6	12
			2 "65 and older"	1 "1-2 persons"	5	16	21
				2 "3+ persons"	5	14	19
		2 "High"	1 "Age<65"	1 "1-2 persons"	9	0	9
				2 "3+ persons"	5	3	8
			2 "65 and older"	1 "1-2 persons"	3	2	5
				2 "3+ persons"	0	4	4
2 "Woman"	1 "Married"	1 "Low"	1 "Younger than 65"	1 "1-2 persons"	116	27	143
				2 "3+ persons"	106	95	201
			2 "65 and older"	1 "1-2 persons"	31	48	79
				2 "3+ persons"	32	46	78
		2 "High"	1 "Younger than 65"	1 "1-2 persons"	72	18	90
				2 "3+ persons"	52	25	77
			2 "65 and older"	1 "1-2 persons"	3	11	14
				2 "3+ persons"	0	5	5
	2 "Not Married"	1 "Low"	1 "Younger than 65"	1 "1-2 persons"	13	5	18
				2 "3+ persons"	14	16	30
			2 "65 and older"	1 "1-2 persons"	11	15	26
				2 "3+ persons"	10	28	38
		2 "High"	1 "Younger than 65"	1 "1-2 persons"	7	3	10
				2 "3+ persons"	15	6	21
			2 "65 and older"	1 "1-2 persons"	4	4	8
				2 "3+ persons"	1	1	2
Total					881	631	1,512

In Table 2's age-based poverty section, the probability of being "poor" for a person randomly selected from the sample is 0.417. The "poor" odds as a ratio of these probabilities to each other are 0.417/0.583 = 0.715. That is to say, the probability of being poor in the sample is 0.715 times the probability of not being poor, or, if we consider the opposite, the probability of not being poor in the sample is 1.398 times higher than the probability of being poor.

Table: 2
Age-Based Poverty, Gender-Based Poverty, and Age-Gender-Based Poverty

Age	**Poverty**		**Total**
	1 "Not Poor"	2 "Poor"	
1 "Younger than 65"	730 (%69.6)	319 (%30.4)	1,049 (%100.0)
2 "65 and older"	151 (%32.6)	312 (%67.4)	463 (%100.0)
Total	881 (%58.3)	631 (%41.7)	1,512 (%100.0)
Gender	**Poverty**		**Total**
	1 "Not Poor"	2 "Poor"	
1 "Man"	394 (%58.6)	278 (%41.4)	672 (%100.0)
2 "Woman"	487 (%58.0)	353 (%42.0)	840 (%100.0)
Total	881 (%58.3)	631 (%41.7)	1,512(%100)
Gender	**Age**	**Poverty**	**Total**
		1 "Not Poor"	2 "Poor"	
1 "Man"	1 "Younger than 65"	335 (%73.0)	124 (%27.0)	459 (%100.0)
	2 "65 and older"	59 (%27.7)	154 (%73.2)	213 %(100.0)
2 "Woman"	1 "Younger than 65"	395 (%66.9)	195 (%33.1)	590 (%100.0)
	2 "65 and older"	92 (%36.8)	158 (%63.2)	250 (%100.0)
Total		881 (%58.3)	631 (%41.7)	1,512 (%100)

Based on the data in Table 2, the conditional odds values of the age groups "younger than 65" and "65 and older" are compared in terms of the probability of being "poor" or "not poor" by age groups. The poverty odds are 319/730=0.437 and 312/151=2.066 for the age groups "younger than 65" and "65 and older", respectively. In other words, poverty is more common among the "65 and older" age group than the "younger than 65" age group. This finding supports the literature and the hypothesis that detected a positive relationship between ageing and poverty. The more the two conditional probabilities diverge, the stronger the relationship between the variables (Andreß et al., 1997); upon comparing the conditional probabilities of the age groups "younger than 65" and "65 and older", the ratio is 2.066/0.437 = 4.954. In other words, the probability of being poor for a person aged 65 and older is approximately 5 times higher than that of someone younger than 65, which is consistent with the study's hypothesis.

The social consequences of human biological characteristics have long been debated in gerontology (Rosenmayr & Rosenmayr, 1978). In this context, whether gender is associated with poverty is a recurring theme. Many researchers drew attention to the disadvantage of women being poor compared to men (Niederfranke, 1999; Backes, 2001).

Upon comparing the probability of poverty related to the gender factor in Table 2 with the conditional odds values, The probability of being poor for men is 0.706, calculated as 0.725 for women. The woman/man-odds ratio is 0.725/0.706=1.027. According to a finding obtained at this point, contrary to the general opinion in the literature, the risk of being poor in the study sample yields a result close to equality between men and women in this regard. In the last part of Table 2, the results of age, gender, and poverty variables based on reduced data are presented.

Table 2 compares the conditional odds values of the "younger than 65" and "65 and older" age groups regarding the probability of being poor or not. For men, the odds of poverty are 124/335=0.370 and 154/59=2.61 for the age groups "younger than 65" and "65

and older", respectively. These values are 195/395=0.493 and 158/92=1.71 for women participants "younger than 65" and "65 and older", respectively. Upon comparing the conditional probabilities of the young and older groups, by also taking the gender factor into account, the rates are presented respectively. The odds are 0.493/0.370=1.332 for the men and women in the "younger than 65" age group and 1.71/2.61=0.655 for the "65 and older" women and men age group, respectively.

According to the conditional odds ratio results obtained, it renders women in the age group "younger than 65" more prone to the risk of being poor than men in the same age group. It renders men in the "65 and older" age group more prone to the risk than women in the same age group. This finding takes the risks of women and men being nearly equal in poverty rates to a different dimension according to the gender-based part of Table 2, upon inclusion of the age groups factor, so that both women in the "younger than 65" age group and men in the "65 and older" age group are rendered disadvantaged.

4.2.2. Hierarchical Log-Linear Model Analysis

Hierarchical log-linear models include the effects of all related lower-order interactions and higher-order interaction effects (Bühl, 2010: 757). In Table 2, a relationship between age and poverty was determined using the odds and odds ratio calculations. The following result occurs after examining the same variables with the saturated log-linear analysis in Table 3.

Table: 3
Parameter Estimates of the Effects and Interactions of the Analysis

Effect	Parameter	λ	Standard Error	Z Value	Significant Level (Sig.)	95% Confidence interval Lower Bound	Upper Bound
Age*Poverty	1	.388	.030	12.977	.000	.330	.447
Age	1	.399	.030	13.348	.000	.341	.458
Poverty	1	.026	.030	.853	.394	-.033	.084

The log-linear analysis shows that the poverty variable alone does not have a significant impact, whereas the age variable has a significant impact. The λ-coefficients should be evaluated as follows;

λ(younger than 65, not poor) = 0,399

λ(younger than 65, poor) = –0,399

λ(poverty, not poor) = 0,026

λ(poverty, poor) = –0,026

The positive value of the coefficient λ (younger than 65, not poor) may be interpreted as the tendency to poverty is relatively low among those younger than 65 years of age and higher among those over 65 years of age. This finding indicates that a stronger correlation trend exists between poverty and ageing. Interaction effects of the hierarchical log-linear model of the study;

λ(younger than 65, not poor) * λ(poverty, not poor) = 0,388

λ(younger than 65, poor) * λ(poverty, poor) = –0,388

λ(65 and older, not poor) * λ(poverty, not poor) = –0,388

λ(65 and older, poor) * λ(poverty, poor) = 0,388

The interaction λ(65 and older, not poor)*λ(poverty, not poor) also has a negative value. Therefore, the study's findings were supplemented by a significant relationship between age and poverty (younger than 65 years old compared to the other group).

4.2.3. Logit Log-Linear Model Analysis

In the analysis presented in Table 4, the fact that the λ-coefficient of the poverty*age interaction (1.554) is positive means that the age group younger than 65 moves with the tendency not to be poor. This point of the study includes a finding that the risk of poverty decreases as an individual's age gets lower, a less common phenomenon among those younger than 65.

Table: 4
Parameter Estimates of the Effects and Interactions of the Analysis

Parameter		λ	Standard Error	Z Value	Sig.	95% Confidence interval Lower Bound	Upper Bound
Standards	[Age = 1] (= Younger than 65)	5.765[a]					
	[Age = 2] (=65 and older)	5.743[a]					
[Poverty = 1]		-.726	.099	-7.321	.000	-.920	-.531
[Poverty = 1] * [Age = 1]		1.554	.120	12.978	.000	1.319	1.788

Besides the age factor, the gender factor is included as an independent variable, and the analysis results dealing with its impacts on poverty are presented in part one of Table 5.

Table: 5
Logit Log-Linear Models
(Dependent Variable Poverty, Independent Variables Age and Gender) and
(Dependent Variable Poverty, Independent Variables Age, Gender, and Education)

Parameter	λ	Standard Error	Z Value	Sig.	95% Confidence Interval Lower Bound	Upper Bound
[Poverty = 1] * [Gender = 1]	-.419	.202	-2.076	.038	-.814	-.023
[Poverty = 1] * [Age = 1]	1.247	.158	7.907	.000	.938	1.556
[Poverty = 1] * [Gender = 1] * [Age = 1]	.707	.244	2.900	.004	.229	1.184
[Poverty = 1] * [Gender = 1]	-.033	.607	-.055	.956	-1.223	1.156
[Poverty= 1] * [Education Level = 1]	.476	.438	1.087	.277	-.383	1.334
[Poverty = 1] * [Age = 1]	1.997	.446	4.481	.000	1.124	2.871
[Poverty = 1] * [Gender = 1] * [Education Level = 1]	-.431	.643	-.671	.503	-1.692	.830
[Poverty = 1] * [Gender = 1] * [Age = 1]	.624	.660	.946	.344	-.669	1.918
[Poverty = 1] * [Education Level = 1] * [Age = 1]	-.954	.478	-1.993	.046	-1.891	-.016
[Poverty = 1] * [Gender = 1] * [Education Level = 1] * [Age= 1]	-.031	.713	-.044	.965	-1.429	1.366

In the logit log-linear model, in which gender and age are utilised as independent variables, the risk of poverty decreases as age decreases; in this respect, a finding parallel to that in Table 4 is obtained. On the other hand, the risk of poverty is higher in women (λ= –.419) according to gender distribution. As a result, a finding suggesting that the risk of

poverty decreases (λ=.707) as the age of individuals gets lower and the gender is male, when the gender and age factors are both effective, is obtained from Table 5. The logit log-linear analysis results based on the quadruple interaction, consisting of independent variables of age, gender, and education, are summarised in part two of Table 5, which is separated by a line.

The situation in which the education variable in Table 5 is included in the analysis may be considered a small surprise. Although there are only two significant interactions in this model, the strongest interaction (λ=1.997) belongs to poverty*age. A positive value indicates that poverty decreases with lower age. On the other hand, when education*age variables move together, there is a decrease in the level of significance (λ= –.954). How can this contradiction in the last finding of the study be explained? An answer to this question can be given by employing the correlation method. As the age increases, there are decreases in both education (r= –.425) and household income (r= –.194) levels. The higher the education, the higher the household income level (r= .383). However, household income increases as the number of households increases (r= .292).

5. Discussion

According to the results of the age-related poverty analysis of the generalised log-linear method, which is the first of the analysis methods applied to the sample of the study, the probability of being poor among the 65 and older age group is 5 times higher than in the under than 65 age group, which is consistent with the study hypothesis. According to the poverty analysis results based on age and gender, it renders women younger than 65 years of age more prone to the risk of being poor than men in the same age group, and it renders men in the 65 and older age group more prone to risk than women in the same age group. This finding indicates that women and men have equal risks of being poor. Upon inclusion of the age groups factor, women in the age group younger than 65, as well as men in the 65 and older age group, are rendered disadvantaged.

According to the hierarchical log-linear analysis findings, which is the second of the analysis methods employed in the study, the positive value of the coefficient λ (younger than 65, not poor) can be interpreted as the poverty tendency is relatively low among those younger than 65 years of age, and therefore, higher among those aged 65 and older. This finding indicates that a stronger correlation trend exists between ageing and poverty. The interaction λ (65 and older, not poor)*λ (poverty, not poor) also has a negative value. Therefore, the study's findings include a significant relationship between age and poverty compared to the other group (age group younger than 65).

Upon evaluating the effects and interactions of the parameters according to the results of logit log-linear analysis, there was a finding that the risk of poverty decreases as the age of an individual gets younger, which is a less common phenomenon among the older than 65 years of age. Upon selecting age and gender as independent variables, the risk of poverty decreases as age gets younger; on the other hand, the risk of poverty is higher in women and

lower in men, according to gender distribution. In the last finding of the study, it is observed that poverty decreased among people with low education levels and younger than 65 years of age.

6. Conclusion

Based on the findings, upon taking demographic ageing into account, it should be expected that the future older generations would be the victims of significantly higher levels of inequality in terms of financial resources and the risk of poverty in old age, which is already relatively high and will continue to increase. In addition to the effects of the older population on demographic indicators of poverty in Türkiye, current developments in the social security system would also have possible consequences in the future. The adverse impacts of global pandemic conditions due to the COVID-19 virus since March 2020 (Li & Mutchler, 2020) and the Russia-Ukraine war in February 2022 and subsequently food security crisis on the older population and poverty biography (Hassen & Bilali, 2022) have triggered underemployment, unemployment, and economic contraction in the short-, medium- and long-run.

The awareness that people in the second half of their lives in Türkiye is an important factor in the economic market has not been established until today in underdeveloped and developing countries, unlike in developed countries. The concept of 'The Silver Economy', which first emerged with its usage in the EU countries, has a place in contemporary and future public and private sector policies. However, the financial conditions necessary for the foundations of the silver economy in Türkiye are currently limited. It is necessary to engage in more effective struggles in Türkiye, as a social state, in the fight against old-age poverty, which will likely continue to increase in connection with the demographic change.

There is a need for social policies that can protect the older population from social risks in Türkiye. Possible policies should be able to increase social welfare, diversify and revitalise the labour market, and reduce the understanding of the welfare state and class differences. Policies should also be able to raise old age and ageing to the level of developed countries based on intergenerational relations and justice. These policies also can be considered a good start for longevity dividends. Although there are many reasons, such as unemployment, low wages, uninsured work, divorce, illness, disability, need for care, and conditions at the beginning of life (starting conditions), ageing is not the cause of poverty. Some of the causes of old-age poverty can be listed as gender discrimination and other inequalities in the labour market, the lower limit of pensions, the exclusion of certain work groups by social insurance programs, the existence of uninsured workers, and insufficient old-age pensions. Potential social policies that can develop solutions by targeting the source of the causes of old-age poverty and that can get out of the grip of budgetary constraints would save the future older population from impoverishment. Only then will Turkish scientists, gerontologists, and politicians be proud to break the ties between ageing and poverty.

References

Andreß, H.J. et al. (1997), *Analyse von tabellen und kategorialen daten: Log-lineare modelle, latente klassenanalyse, logistische regression und GSK-ansatz*, Berlin, Springer.

Aydın, K. & T. Güloğlu (2021), "Old-Age Income Poverty in the European Union and Turkey", *Sosyoekonomi*, 29(48), 473-488.

Backes, G.M. (2001), "Lebenslagen und alter(n)sformen von frauen und männern in den neuen und alten bundesländern", *DZA-expertisen zum dritten altenbericht der bundesregierung*, Leske Budrich Verlag, 11-116.

Barreti, G.F. et al. (2000), "Demographic trends and consumption inequality in Australia between 1975 and 1993", *Review of Income and Wealth*, 46(4), 437-456.

Bühl, A. (2010), *PASW 18 - Eine einführung in die moderne datenanalyse*, 12th ed., München, Pearson Studium.

Cameron, L.A. (2000), "Poverty and inequality in Java: Examining the impact of the changing age, educational and industrial structure", *Journal of Development Economics*, 62(1), 149-180.

Chan, L. & K. Chou (2018), "Poverty in old age: Evidence from Hong Kong", *Aging & Society*, 38(1), 37-55.

Chu, C. & L. Jiang (1997), "Demographic transition, family structure, and income inequality", *The Review of Economics and Statistics*, 79, 665-669.

DESA Department of Economic and Social Affairs (2022), *World Population Prospects 2022 - Summary of Results*, ISBN: 978-92-1-148373-4.

Deyshappriya, N.R. & R.W.W.K. Minuwanthi (2020), "Determinants of poverty: Is age non-linearly related with poverty? Evidence from Sri Lanka", *International Journal of Asian Social Science*, (4), 181-192.

Dong, Z. et al. (2018), "Does population aging intensify income inequality? Evidence from China", *Journal of the Asia Pacific Economy*, 23(1), 66-77.

Feldmann, K. (2001), *Soziologie Kompakt*, 2nd ed., Wiesbaden: Westdeutscher, Verlag.

Gustafsson, B. & M. Johansson (1999), "In search of smoking guns: what makes income inequality vary over time in different countries?", *American Sociological Review*, 64, 585-605.

Hassen, B.T. & E.H. Bilali (2022), "Impacts of the Russia-Ukraine war on global food security: Towards more sustainable and resilient food systems?", *Foods*, 11(2301), 1-17.

Hwang, S. et al. (2021), "Population aging and income inequality", *The Journal of the Economics of Aging*, 20, 1-6.

Jantti, M. (1997), "Inequality in five countries in the 1980s: The role of demographic shifts, markets and government policies", *Economica*, 64(255), 415-440.

Jenkins, S.P. (1995), "Accounting for inequality trends: Decomposition analyses for the UK, 1971-86", *Economica*, 62, 29-63.

Karadeniz, O. & N.D. Öztepe (2013), "Elderly poverty in Türkiye", *The Journal of Labor and Society*, 38(3), 77-102.

Lam, D. & D. Levison (1992), "Age, experience, and schooling: decomposing earnings inequality in the United States and Brazil", *Sociological Inquiry*, 62(2), 220-245.

Lee, H.Y. et al. (2013), "Empirical analysis on the determinants of income inequality in Korea", *International Journal of Advanced Science and Technology*, 53(1), 95-109.

Li, Y. & J.E. Mutchler (2020), "Older adults and the economic impact of the COVID-19 pandemic", *Journal of Aging & Social Policy*, 32(4-5), 477-487.

Liebig, P.S. (1983), "Mental health care of the elderly in a time of scarcity", *Administration in Mental Health*, 11, 124-132.

Lin, C.H.A. et al. (2015), "Population aging and regional income inequality in Taiwan: A spatial dimension", *Social Indicators Research*, 122(3), 757-777.

Marchand, J. & T. Smeeding (2016), "Poverty and aging", *Handbook of The Economics of Population Aging* (905-950), North-Holland.

Niederfranke, A. (1999), "Das alter ist weiblich: Frauen und männer altern unterschiedlich", *Funkkolleg*, 2nd ed., VS Verlag für Sozialwissenschaften, 7-52.

Rosenmayr, L. & H. Rosenmayr (1978), *Der alte mensch in der gesellschaft*, Reinbek bei Hamburg: Rowohlt.

Tkalec, I. (2017), "The Interplay between active aging and silver economy - a QCA analysis", *Cahiers RESUME*, 1-12.

Tsakloglou, P. (1997), "Changes in inequality in Greece in the 1970s and the 1980s", in: P. Gottschalk et al. (eds.), *The Changing Distribution of Economic Well-being: International Perspectives* (154-183), Cambridge, England: Cambridge University Press.

Tufan, İ. (2007), *First aging report of Turkey*, Antalya: GeroYay.

TÜİK (2021), *General explanation on income and living conditions of research methodology*, <https://data.tuik.gov.tr >, 02.07.2022.

TÜİK (2022a), *Income and living conditions survey, 2021*, <https://data.tuik.gov.tr/Bulten/Index?p=Income-and-Living-Conditions-Survey-2021-45581>, 30.05.2022.

TÜİK (2022b), *The results of the address-based population registration system, 2021*, <https://data.tuik.gov.tr/Bulten/Index?p=Adrese-Dayali-Nufus-Kayit-Sistemi-Sonuclari-2021-45500>, 14.05.2022.

Uluocak, Ş. (2017), "Income, wealth and poverty in Turkey", in: İ. Tufan & M. Durak (eds.), *Gerontology: Scope, Interdisciplinary Cooperation Economics Policy* (339-386), Ankara, Türkiye: Nobel Academic Publishing.

Van Vliet, O. & C. Wang (2015), "Social investment and poverty reduction: A comparative analysis across fifteen European countries", *Journal of Social Policy*, 44(3), 611-638.

Walker, A. & T. Maltby (2012), "Active aging: A strategic policy solution to demographic aging in the European Union", *International Journal of Social Welfare*, 21, 117-130.

Wang, C. et al. (2017), "Aging and Inequality: The Perspective of Labor Income Share", Asian Development Bank Institute *Working Paper* Series, 764.

Zhong, H. (2011), "The impact of population aging on income inequality in developing countries: Evidence from rural China", *China Economic Review*, 22(1), 98-107.