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Fife Years After Reform: Assessing the Adequacy of the Pension System in Georgia and EU Countries

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Abstract

Due to demographic changes and increasing life expectancy, more people retire than are added to the workforce. This is the main reason why, in recent decades, there has been a wave of pension system reforms with the primary objective of improving their financial sustainability. However, several actions implemented as part of these reforms negatively affect the adequacy of pension systems because they involve a decrease in the replacement rate. Hence, balancing the goals of sustainability and adequacy poses a primary challenge for pension policymakers in the upcoming years. This paper aims to determine pension systems' adequacy in Georgia and EU countries based on the Open Method of Coordination (OMC) indicators. OMC evaluates pension systems in terms of three main objectives: adequacy, sustainability, and modernization of pensions. Our methodology is based on multivariate statistical analysis and employs synthetic indicators for adequacy objectives for 2010, 2015, 2018, and 2023. The results of our study show an adverse change in pension system adequacy indicators from 2010 to 2023 in most European countries, including Georgia.

Keywords: Pension system; pension adequacy; pension reform in Georgia

Introduction

Around the world, most old-age support comes from pensions, and in most countries, public pension systems provide the majority of pensions'

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value. A significant challenge for governments is enabling people to consume more smoothly. Pensions need to be enough to avoid poverty and social exclusion or to provide sufficient income to maintain the previous standard of living.

A generous pay-as-you-go (PAYG) defined benefit (DB) system can guarantee a comfortable old-age life. Via the PAYG system in most countries, the generous pension payout is financed by tax revenue from the current labor force, and the state guarantees the benefit (pay-out). However, the aging population has threatened the state budget sustainability, as the ratio of the number of tax-payers to the number of retirees becomes smaller (Danzeret al. 2016, Mertl et al. 2019, and Wang 2021). As a result, young people need to save much more for their retirement age to obtain pension benefits at the level enjoyed by current retirees (Amaglobeli et al., 2019).

Therefore, many countries have been shifting to a defined contribution (DC) pension system, where individuals save their income, invest the income, and use the accumulated savings to finance their old age. A defined contribution system guarantees state budget sustainability as the responsibility to provide old-age financial adequacy is shifted from the state to the individuals themselves. Pension system reform is on its way in Georgia.

A Pension Agency established following the 2018 pension reform started collecting and administering the participants' funds of the mandatory funded pension scheme on January 1, 2019. The funded pension scheme in Georgia is based on the 2% + 2% + 2% principle of accumulation. The employer transfers on behalf of the employee 2% of the untaxed amount of the employee's salary to the employee's pension account. The employer contributes the exact amount to the employee’s pension account on their behalf. Based on the amount of the employee's salary (but not more than 2% of the untaxed wage), the contribution for the benefit of the employee is also made by the state.[1]

This paper aims to assess the adequacy of the Georgian pension system for the transitioning period and compare it to EU countries’ adequacy indicators. It is a continuation of our research aimed at observing indicators of the adequacy of pension systems and determining changes in dynamics. The first research data started in 2010. Results for 2010-2018 have already been published (Ghaniashvili, 2020), and the paper below analyzes updated data from 2010 through 2023.

No matter how we define the pension system, its goals, or its functions, there is no doubt that the system's primary purpose is to provide a retiree with an adequate income at retirement age. Traditional studies on the degree of achievement of the mentioned goal were usually limited to studying the level

[1] https://nbg.gov.ge/en/page/funded-pension-scheme

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of pension issued. This is a one-dimensional approach to assess the adequacy of the pension system. In the study below, we discuss a multidimensional approach based on the pension system's macro-functioning, namely the income distribution throughout the life cycle.

One of the critical macro-functional aspects of the pension system is the distribution of GDP between the working-age generation and the rest of the population, including retirees. This means that the income of a current retiree depends, on the one hand, on the level of income allocation over the life cycle and, on the other hand, on current GDP and its redistribution between generations. This must be considered when assessing the adequacy of the pension system. Evaluating the pension system's adequacy also requires indicators for measuring income, poverty, and income inequality.

According to the EU OMC Framework Policy document, there are three main groups for evaluating the effectiveness of pension systems: adequacy indicators, sustainability indicators, and modernization indicators (Table # 1).

Table #1

OMC Indicators	
Adequacy Indicators	
ARP	at-risk-of-poverty rate of pensioners
MRI65+	median relative income ratio of elderly people aged 65+
ARR	aggregated replacement ratio
S80/S20	inequality of income distribution for people aged 65+
Sustainability Indicators	
PE/GDP	total current pension expenditures as % of GDP
EMP55-64	employment rate of people aged 55–64
DWL	duration of working life
Modernization Indicators	
dARP	gender difference in the at-risk-of-poverty rate of pensioners, ARP_{males} - $ARP_{females}$, optimal value - 0
dMRI	gender difference in the median relative income ratio, MRI_{males} - $MRI_{females}$, optimal value - 0
dARR	gender difference in the aggregated replacement ratio, ARR_{males} - $ARR_{females}$, optimal value - 0

We assess the adequacy of the pension systems of Georgia and EU countries according to the indicators (ARP, MRI, ARR, S80/S20) of the first group of the OMC framework policy.

Literature review

It is challenging to find a proper explanation for the effectiveness of the pension system at the macro level. Many authors study pension systems at a theoretical level. For example, Ayede (2010) studies the behavior of older

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people within the pay-as-you-go system. Breyer and Kolmar (2002) investigate labor market responses during the PAYG system. Wrede (1998) explores the Pareto effectiveness of the PAYG system. Hansen and Lonstrup (2009) analyze the optimal retirement age for both women and men.

As for pension adequacy, its extensive discussion has been proposed by Hurd and Rohwedder (2008). They believe that pension adequacy should be considered primarily in terms of individual well-being and that income expressed in absolute or relative terms (e.g., replacement ratio) does not constitute a proper measure. Borella and Fornero (2009) conducted a comparative analysis of the adequacy of the pension systems of 12 countries. Their study includes comprehensive replacement rates (CORE). It is based on a ratio of the standard of living after retirement to the standard of living a person had before retirement. However, they focus on only one dimension of pension adequacy, as CORE applies only to the optimal rate of uniform distribution of consumption.

Unlike in the generous PAYG system, the old-age financial adequacy in a defined contribution system depends much on individual performance in the labor market and the success in investing the savings. Those who earn little money and those who do not work will have no pension payout. Furthermore, as shown in De Santis (2021), shifting from a PAYG, defined benefit pension system to a defined contribution pension system is complicated because the young generation will have to pay more—financing the current older people and preparing the financing for themselves when they are old. Therefore, old-age financial adequacy and state budget sustainability are often seen as a trade-off (Babajanian, 2010; Baulch & Wood, 2008; Clark, 2012; Diamond, 2012). Countries have been trying to solve the issue of state budget sustainability and old-age financial adequacy by making programs with a combination of PAYG defined benefit system (state responsibility) and a defined contribution system (individual responsibility).

Many existing studies have examined the sustainability and adequacy of pension systems. In a broader sense, these can be divided into analyses within the Overlapping Generations (OLG) framework or other complex forecasting models, often single-country studies, and comparative analyses that aim to classify or rank countries using a set of sustainability and adequacy indicators or a synthetic indicator. Several OLG studies of pension systems and pension reforms are essential to mention (Buyse et al., 2017; Bouzahzah et al., 2002).

In recent years, synthetic indicators have become one of the most commonly used tools of analytical measurement in practice in many fields of social reality (Alonso-Fernandez et al., 2018) and pension economics. Several authors have developed their pension indicators, such as Chybalski (2016) and Alonso-Fernandez et al. (2018). Chybalski points out that the

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multidimensional nature of his indicators enables comparisons of many different empirical pension systems.

Since calculating the indicators does not require prior data standardization, this method is more resistant to the relativeness of the measurement and comparisons in cross-section studies. However, the relativeness enables the analysis since the efficiency-inefficiency border is not determined. Therefore, the proposed approach is efficient only when a few pension systems are compared, and then it is possible to rank them.

Research Methodology

The study uses a quantitative analysis of pension systems developed by the Polish scientist Filip Chybalski (2016), which is particularly suitable for the macro scale of the pension system and considers its openness at the global level. The method is based on empirical research and allows us to compare the pension systems of several countries or the pension systems of the same country in different periods. This paper will focus on the first group of OMC objectives - the four variables of adequacy indicators.

(1) The first phase of the research involves collecting the statistical data for the adequacy indicators given in Table # 1 for Georgia and European countries for 2010, 2015, 2018, and 2023 - ARP, ARR, MRI, and S80 / S20 (see statistics in Appendix 1 and Appendix 2).

(2) The next step is to transform the data. Of the four variables used, ARP and S80 / S20 have a destimulator character (the lower the score, the better it is). In the case of ARR and MRI indicators, the best pension systems are characterized by a high score for these indicators. We transform the ARP and S80 / S20 variables with the following formula: $x_{ij} = max\, x_{ij} - x_{ij}$

The obtained x_{ij} value is the optimal value of the given (i) indicator for the (j) object.

(3) Then, we plot all the indicators between [0, 1] using the normalization formula.

(4) In the last step, we convert the indexed indicators into synthetic adequacy indicators using the following formula:

$$A_{ij} = \frac{1}{4}(xARP_{ij} + MRI_{ij} + ARR_{ij} + S80/S20_{ij})$$

The indicators defined by the OMC policy for European countries are available on the Eurostat website. As for Georgia, we used UNICEF data for 2010, 2015, and 2018 for the APR indicator. According to a UNICEF study, the pensioner poverty rate was 21.3% in 2010, while in 2017, the ARP rate among the retirement generation was 17.6%.

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We calculated the MRI indicator for Georgia based on the World Bank data per capita net income and pension income ratio. The ARR index increased from 14% in 2010 to 19.1% in 2019 but decreased during last year and was 0.15 in 2023.

We also calculated the values of the S80/S20 indicator for Georgia based on the World Bank statistical database. The indicator shows the difference between the income of the wealthiest 20% of the country's population and the income of the poorest 20%. The lower the rate, the better it is. In addition, in the case of Georgia, it took a lot of work to find data on income inequality by age category. So, we used the whole picture. Moreover, when comparing the data of the EU countries for the S80 / S20 indicator, the rates of the total population and the population aged 65+ slightly or do not differ. In the case of Georgia, the income inequality rate was 7.9 in 2010, 6.6 in 2018, and 7 in 2023.

Table #2: Research results: Pension Systems' Synthetic Indicators of Adequacy by Years and Countries

Country	**Pension system Synthetic indicators of adequacy by years**			
	2010	**2015**	**2018**	**2023**
EU27	0.61	0.63	0.63	0.6
Belgium	0.53	0.67	0.64	0.63
Czech Republic	0.83	0.78	0.70	0.70
Denmark	0.51	0.68	0.66	0.55
Germany	0.61	0.60	0.53	0.56
Estonia	0.61	0.39	0.32	0.32
Ireland	0.61	0.53	0.54	0.56
Greece	0.46	0.76	0.74	0.68
Spain	0.46	0.79	0.65	0.62
France	0.71	0.79	0.76	0.70
Italy	0.61	0.73	0.65	0.60
Cyprus	0.27	0.52	0.47	0.42
Latvia	0.48	0.34	0.20	0.27
Lithuania	0.68	0.46	0.30	0.32
Luxembourg	0.89	0.93	0.76	0.80
Hungary	0.97	0.87	0.77	0.63
Malta	0.51	0.62	0.6	0.44
Netherlands	0.76	0.78	0.7	0.70
Austria	0,58	0.74	0.7	0.60
Poland	0.69	0.78	0.71	0.70
Portugal	0.41	0.64	0.55	0.52
Romania	0.67	0.58	0.59	0.66
Slovenia	0.53	0.64	0.61	0.60
Slovakia	0.87	0.87	0.85	0.84
Finland	0.60	0.69	0.69	0.67
Sweden	0.73	0.66	0.66	0.58
The Great Britain	0.41	0.59	0.75	

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Norway	0.70	0.8	0.79	0.79
Georgia	0.02	0.14	0.19	0.15

Source: Table data is based on the results of a quantitative survey conducted by the authors. Data: eurostat; geostat.ge; nbg.gov.ge; world bank

Limitations: Since Georgia, unlike European countries, does not publish indicators yearly, the authors had to calculate the indicators themselves. That is why we cannot compare countries' pension systems with 100% accuracy in Georgia. However, the research results give us a clear idea of the development trends of the Georgian pension system based on the OMC framework adequacy indicators.

Research results and recommendations

Our research has revealed several trends (Table #2):

- Between 2010 and 2015, only eight countries out of 27 European countries (Czech Republic, Germany, Estonia, Ireland, Latvia, Lithuania, Hungary, and Sweden) changed the adequacy ratio of the pension system to the worse.
- From 2015 to 2018, the adequacy ratio of the pension system of most European countries we studied deteriorated. The only exceptions in this case are Ireland, Romania, and the United Kingdom, whose pension system adequacy ratio has improved over the three years since 2015. Indicators of Finland and Sweden remained unchanged.
- As for 2023 data, in most countries, the adequacy indicator of the pension system remained unchanged or worsened. Except for Germany, Ireland, Latvia, Lithuania, Luxembourg, and Romania, their pension system adequacy indicator improved from 2018 to 2023.

As for Georgia:

- The adequacy rate is increasing as the starting point is shallow—in 2010, it was 0.02 points; in 2015, it was 0.14; and in 2018, it was 0.19.
- However, it decreased after 2018 and was 0.15 in 2023.
- Not surprisingly, Georgia's pension system has the lowest level of adequacy among the countries surveyed. Regarding adequacy, Georgia's pension system is close to Cyprus, Estonia, Latvia, Lithuania, and Malta.

Quantitative analysis of the pension system can identify the countries and, consequently, the pension systems that improve their pension adequacy ratios from year to year and those countries where the situation has deteriorated from 2010 to 2023. The examples of successful and unsuccessful countries can provide experiences and recommendations for Georgia. We

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should also remember that the adequacy indicator does not give a complete picture of the multidimensional evaluation of the pension system, as adequacy is only one of the three groups of OMC framework policies.

It is also necessary to take into account the fact that only five years have passed since the implementation of the mandatory cumulative pension system based on contributions in Georgia, which only allows us to evaluate the reform's results partially at this stage.

According to Georgia's capital market development strategy for 2023-2028, in 2025, the total value of pension fund assets is planned to increase to 6.55 billion GEL, 3.25 times the value from 2021. 2028 it will reach 12.1 billion GEL, which means an increase of 6.02 times the value from 2021. So, in addition to the environmental conditions in the local or global economy, the increase in the adequacy ratio of citizens' pensions will significantly depend on the investment policy of the Georgian Pension Agency.

According to the regulations in Georgia, the share of foreign assets in the high-risk portfolio is allowed from 40 to 60%, in the medium-risk portfolio - from 20 to 40%, and in the low-risk portfolio - up to 20%. According to the updated strategy of the Pension Agency's Investment Board in 2023, these indicators were determined by 55%, 35%, and 20%, respectively. The investments of Pension Assets shall be carried out through three Investment Portfolios with different risks and expected returns. One of the main differences between the investment portfolios of the Georgian Pension Agency is the percentage of international assets purchased, and the risks stem from this, as the value of stocks on the stock exchanges often fluctuates. When investing pension contributions in shares, profits are expected over a more extended period, and hence, this package is preferred by those with a long time left before retirement. The low-risk investment portfolio is approximately 20% in international stocks and 80% in Georgian financial products. In the medium-risk portfolio, approximately 35% is placed in global stocks and 65% in Georgia. The high-risk investment portfolio has approximately 55% international stocks and 45% Georgian assets and bonds.

The success of the pension system reform will depend mainly on the investment activities of the Pension Agency. Unlike economically developed countries, Georgia will not have the means of compensating for the mistakes made in managing pension assets with taxpayers' money. One of the main reasons for the implementation of the mandatory DC scheme is that the taxpayers, in the conditions of the increase in the share of pensioners in the population and the average life expectancy, can no longer cope with the provision of pension contributions necessary to ensure a valuable retirement life for pensioners. If we look at world practice, we often encounter unsuccessful pension fund experiences, especially in developing countries. Georgia is not a highly developed country and has no "right" to prevent the

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pension system reform from being successful. Therefore, today, Georgia is facing a challenge — on the one hand, the implementation of a mandatory cumulative pension scheme due to the urgent fiscal policy need and, on the other hand, the success or failure of this scheme and the risks that accompany the reform in the long term.

At the initial stage of the reform, the Pension Agency invested pension funds only in low-risk portfolios for five years. Since August 2023, the Investment Board has already had the right to invest accumulated pension assets in medium—and high-risk assets, including assets from global markets.

In the long run, investing in global markets is essential, which means protecting the best interests of beneficiaries and beating inflation. Indeed, the period during which Georgia's pension assets were taken to the global market coincided with significant volatility in the financial markets. Still, we must consider the historical experience, according to which the stock market is growing in the long term. Therefore, the reservation, which provided for the redistribution of the riskiness of the pension savings portfolio according to age categories five years after the reform implementation in Georgia, is justified. Investment policy oriented on the global stock market will increase the Georgian pension system's adequacy ratio in the long term.

Taking into account all the trends we discussed above, we consider that:

i. Growth at such a rate requires investing in assets with a higher risk than the existing ones; in particular, since the capital market assets have a higher rate of return, it is essential for the policy of the pension agency to increase the limits for investing in the foreign market, as there are not enough opportunities and alternatives in the local capital market;
ii. The Georgian government should give the pension agency more flexibility in setting limits for low-risk, medium-risk, and high-risk assets to reflect the changes in both international and local markets;
iii. If the assets are primarily directed to the purchase of shares or other relatively high-risk instruments, it will be possible to increase the returns. Changing the volume of pension assets placed in local deposits is essential. Giving preference to one instrument, such as bank deposits, especially in the face of rising inflation, cannot ensure stable real yields and a "decent" pension at retirement age; without a risker investment policy, it would be challenging to increase Georgia's pension systems' adequacy ratio over the years.

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Annex #1

Country	Adequacy Indicators							
	ARP		**MRI**		**ARR**		**S80/S20**	
	2010	**2015**	**2010**	**2015**	**2010**	**2015**	**2010**	**2015**
EU27	12.8	12.5	0.89	0.94	0.53	0.58	3.99	5.22
Georgia	21.3	**19.3**	0.13	**0.23**	0.14	**0.19**	7.9	**6.5**
Belgium	16.1	12.4	0.75	0.79	0.46	0.47	3.70	3.20
Czech Republic	6.6	7.4	0.82	0.81	0.54	0.51	2.38	2.41
Denmark	16.6	8.8	0.71	0.77	0.44	0.45	3.60	3.22
Germany	13.4	17.0	0.89	0.87	0.49	0.46	3.81	3.96
Estonia	17.9	40.1	0.73	0.62	0.55	0.43	2.94	3.45
Ireland	10.5	15.7	0.85	0.88	0.47	0.37	4.00	4.09
Greece	19.0	10.8	0.84	1.04	0.42	0.62	4.13	4.08
Spain	16.5	10.2	0.88	1.01	0.47	0.66	4.76	4.31
France	7.5	7.1	0.98	1.04	0.65	0.69	3.39	4.46
Italy	12.5	11.0	0.92	0.99	0.53	0.66	4.18	4.51
Cyprus	39.1	16.5	0.65	0.80	0.37	0.43	4.72	4.74
Latvia	19.6	36.7	0.78	0.65	0.47	0.42	3.83	4.20
Lithuania	12.6	27.6	0.93	0.73	0.58	0.46	3.63	4.20
Luxembourg	5.4	5.8	1.05	1.08	0.68	0.80	3.25	3.48
Hungary	4.0	5.8	1.01	1.01	0.68	0.65	2.55	2.99
Malta	17.9	18.7	0.81	0.75	0.44	0.54	3.72	3.41
Netherlands	5.7	6.2	0.87	0.89	0.47	0.52	3.10	3.05
Austria	15.5	12.9	0.90	0.98	0.57	0.62	4.21	3.75
Poland	12.8	11.1	0.93	0.99	0.57	0.62	3.52	3.48
Portugal	18.5	14.4	0.82	0.92	0.53	0.62	5.02	4.96
Romania	12.9	15.8	0.97	1.00	0.64	0.63	4.17	6.19
Slovenia	18.3	15.9	0.87	0.90	0.45	0.46	3.61	3.55
Slovakia	6.7	6.2	0.83	0.91	0.61	0.62	2.32	2.33
Finland	17.0	13.5	0.78	0.81	0.50	0.52	3.07	3.13
Sweden	14.3	17.2	0.79	0.79	0.59	0.57	3.10	3.30
The Great Britain	22.9	18.3	0.81	0.88	0.48	0.50	4.34	4.19
Iceland	6.3	7.3	0.96	0.82	0.48	0.53	3.95	3.49
Norway	12.7	10.1	0.85	0.92	0.50	0.61	2.83	2.91

Source: Table data is based on the results of a quantitative survey conducted by the authors.
Data: eurostat; geostat.ge; nbg.gov.ge; world bank

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Annex #2

Country	Adequacy Indicators							
	ARP		**MRI**		**ARR[2]**		**S80/S20**	
	2018	**2023**	**2018**	**2023**	**2018**	**2023**	**2018**	**2023**
EU27	15.2	16.8	0.91	0.89	0.57	0.57	4.12	4.12
Georgia	**17.6**	**19.8[3]**	**0.20**	**0.24**	**0.19**	**0.15[4]**	**6.6**	**7[5]**
Belgium	14.1	15.8	0.78	0.75	0.47	0.48	3.06	3.19
Czech Republic	14.2	14.3	0.74	0.76	0.51	0.52	2.51	2.67
Denmark	9.3	11.1	0.78	0.78	0.45	0.47	3.20	4.49
Germany	18.7	18.4	0.84	0.84	0.46	0.49	4.29	3.92
Estonia	53.6	46.8	0.57	0.56	0.43	0.46	3.64	3.88
Ireland	19.9	16.7	0.84	0.92	0.37	0.39	3.73	4.01
Greece	8.7	17.6	1.01	0.94	0.62	0.78	3.86	4.15
Spain	13.1	18.3	0.95	1.02	0.66	0.77	4.5	4.98
France	7.3	12.4	1.04	0.94	0.69	0.59	4.1	3.74
Italy	12.0	16.9	1.01	0.98	0.66	0.75	4.86	5.22
Cyprus	21.5	23.6	0.8	0.77	0.43	0.42	4.55	4.72
Latvia	48.9	40.1	0.58	0.63	0.42	0.50	5.07	4.93
Lithuania	41.7	36.1	0.64	0.63	0.46	0.36	4.87	4.15
Luxembourg	9.2	10.5	1.11	1.12	0.87	0.97	4.98	4.63
Hungary	10	15.2	0.97	0.79	0.65	0.51	3.39	3.35
Malta	23.7	29	0.72	0.67	0.54	0.53	3.1	4.29
Netherlands	12	17.7	0.81	0.74	0.52	0.53	3.02	2.97
Austria	13.1	17.0	0.95	0.90	0.62	0.56	3.76	4.45
Poland	15	16.5	0.91	0.87	0.62	0.57	3.42	3.44
Portugal	15.7	17.1	0.90	0.94	0.62	0.61	5.23	5.49
Romania	19.5	15.4	0.90	0.93	0.63	0.48	4.46	3.48
Slovenia	18.1	19.2	0.85	0.80	0.46	0.44	3.44	3.40
Slovakia	7	9.6	0.90	1.01	0.62	0.62	2.31	2.53
Finland	13	13.6	0.82	0.80	0.52	0.52	3.02	3.18
Sweden	15.8	13.9	0.80	0.82	0.57	0.59	3.43	4.45
The Great Britain	22.8		0.88		0.50		4.7	
Norway	7.8	7.3	0.91	0.91	0.61	0.56	2.87	2.74

Source: Table data is based on the results of a quantitative survey conducted by the authors. Data: eurostat; geostat.ge; nbg.gov.ge; world bank

[2] In case of Luxembourg and Malta ARR data are for 2022

[3] In case of Georgia we use share of population under 60% of the median consumption: https://www.geostat.ge/ka/modules/categories/192/tskhovrebis-done

[4] we used Average monthly nominal earnings and average pension indicator for calculating ARR in case of Georgia

[5] https://knoema.com/atlas/Georgia/topics/Poverty/Income-Inequality/Income-share-held-by-lowest-20percent in case of Georgia we have data for 2021 in case of S80/S20 indicator