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ASSESSING THE FINANCIAL SUSTAINABILITY OF THE PENSION SYSTEM OF GEORGIA AND EU27 COUNTRIES AND DEVELOPMENT PROSPECTS IN THE CONDITIONS OF ECONOMIC SHOCKS CAUSED BY COVID-19

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ABSTRACT

Against the background of ongoing demographic change around the world, pension policies have acquired special significance in recent decades. Along with prolonging the population life and reducing the birth rate, the need to reform pension systems has become on the agenda, its main goal is to reduce fiscal pressure in macroeconomic terms, and on a micro scale, ensuring a decent old age with adequate income for retirees. According to the International Monetary Fund the share of state pensions in the GDP of developed and emerging economies will increase by 1-2.5% by 2050. Which calls into question the financial sustainability of many countries' pension systems. In the following study, in parallel with the current events in the world (which implies the economic crisis caused by Covid-19), we will assess the financial sustainability of the Georgian pension system together with the pension systems of E27 countries and determine possible directions for the development of pension systems in the face of economic shock.

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Introduction. While the world is facing the economic crisis caused by the Covid-19 pandemic, global economic growth forecasts are declining, unemployment is rising, investment activity is also declining and budget revenues are reducing, fiscal pressures are rising and the issue of pension system reform is becoming urgent. At the same time, there is a great temptation on the part of governments to use pension funds to respond to economic shocks in the short term (as it has happened in some Eastern European countries since the 2007-08 crisis) or to take steps to increase pressure on pension schemes, for example, promoting early retirement, allowing retirees to withdraw part of their pension in advance, and so on.

Past experience has shown that the impact of economic crises on forms of retirement is determined by two factors: declining retirement income, which can force a potential retiree to stay in the job for a while, balances the deteriorating employment market, and the latter often pushes people to retire, when they can afford it (incentive to exit the labor market as an alternative to unemployment). The whole process depends on the structure of the pension system - how easy it is to retire before retirement age, what are the employment prospects, and how many different transfers are available that can help retirees cope with the crisis. What influences a person's decision to retire depends on the effectiveness of government policies in various areas - both within the pension scheme and in the employment market.

Literature Review. In order to understand the potential negative impact of Covid-19 on the economy, it is necessary to understand the economic channels through which shocks act in various areas. There are three main channels for transmitting shocks: (Carlsson-Szlezak *et al.* 2020 and

Carlsson-Szlezak *et al.* (2020b)): (1) A radical reduction in the consumption of goods and services; (2) Indirect impact through financial markets and their impact on the real economy; (3) Delivery. Since Covid-19 causes many delays, this translates into a negative impact on the supply chain, on demand for employment, which in the long term is followed by a steady rise in unemployment. The employment market is directly related to the sustainability of pension schemes.

In condition of the economic crisis, household incomes traditionally decrease and, consequently, their consumption and savings. Which reduces investment and causes capital shocks. Domestic demand for imported goods is also declining, reducing incomes for the rest of the world, and reducing countries' exports. This is followed by a supply-demand shock, both domestically and internationally. All this leads to a reduction in the output of the economy (Baldwin 2020). In addition, the modern economy is a complex connection of employees, companies, suppliers, consumers and financial intermediaries, because of this, the effects of the virus will be even deeper and more severe, and 50% of the working-age population will find it difficult to keep a job or find a new job. (Gourinchas 2020).

Some of the authors in the studies draw parallels with the crises caused by the great viruses transmitted by mankind in the past. However, some researchers argue about the relevance of assessing the impact of Covid-19 based on historical experience. Baker *et al.* (2020), Believes that Covid-19 has led us to a level of uncertainty that does not even come close to any historical experience.

According to some economists, the main source of declining consumption, rising unemployment, low inflation expectations and uncertainty is not Covid-19 but Lockdown decisions made by governments (Coibion et al. 2020). (Coibion et al. 2020). The model developed by Elenev (2020) considers the impact of Covid-19 on the reduction of employee productivity, which reduces the employment rate, and this has a direct impact on companies. This results in declining revenues and problems with debt service creating risks of corporate defaults. Baker (2020) discusses consumption habits and debt response forms under Covid-19. Given the historically low levels of high government debt and interest rates that exist in most developed countries, Bianchi (2020) notes that the need for coordinated monetary and fiscal policies are necessary to respond appropriately to the pandemic shocks. The issue of over-indebtedness and debt service is also emphasized in the case of Georgia, as our country will start debt service in 2021, which will further increase the pressure of the shocks caused by the crisis (Jgerenaia, 2020).

Methodology. To assess the financial sustainability of pension systems, we will use the target indicators set by the EU Framework Policy Open Method of Coordination (OMC)[1] According to the OMC Framework Policy Paper, there are three main groups of indicators for evaluating the effectiveness of pension systems: **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 - pension expenditure; EMP55-64 - employment rate of people aged 55–64; DWL - duration of working life) and **Modernization indicators** (dARP - gender difference in the at-risk-of-poverty rate of pensioners, ARP_{males} - $ARP_{females}$; dMRI - gender difference in the median relative income ratio, MRI_{males} - $MRI_{females}$; dARR - gender difference in the aggregated replacement ratio, ARR_{males} - $ARR_{females}$).

The study uses a method of quantitative analysis of pension systems developed by the Polish scientist Filip Chybalski (Filip Chybalski, 2016), which is particularly suited to the macro scale of the pension system and considers its openness globally. The method is based on empirical research and statistics and allows to compare the pension systems of several countries or the pension systems of the same country in different periods. In the present study, we will focus on the second group of OMC objectives - the three variables of sustainability indicators.

The first phase of the study includes the search for statistical data for 2010, 2015 and 2018 for three indicators in Georgia and 27 European countries - PE / GDP, EMP55-64 and DWL (see statistics in the appendices).

[1] OMC is an EU policy framework that, which doesn't represent regulatory norms at the legislative level, but however aims to implement best practices in one area or another (including the management of pension systems) and to promote coordinated policies for governments. (https://www.europarl.europa.eu/EPRS/EPRS-AaG-542142-Open-Method-of-Coordination-FINAL.pdf).

The next step is to transform the data. Three of the used variables, PE / GDP has a destabilizing character (the lower the rate the better), while in the case of EMP55-64 and DWL indicators the best pension systems are characterized by a high score of these indicators. Therefore, in the first stage, we transform the PE / GDP variables with the following formula: $x_{ij} = max\ x_{ij} - x_{ij}$.

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

We then plot all the indictors between the interval [0, 1] using the normalization formula.

Finally, we convert the indexed indicators into a synthetic indicator of sustainability using the following formula:

$$S_{ij} = \frac{1}{3}(PE/GDP_{ij} + EMP55 - 64_{ij} + DWL_{ij})$$

PE/GDP (Current pension expenses as a percentage of GDP) - Measures the share of GDP spent on retirement age and therefore indicates the macroeconomic value of the pension system.

EMP55-64 -(Employment rate in the 55-64 age group) - Measures the side effects of the pension system in the employment market. The pension system can affect the employment market in different directions, including the younger generation, although the impact is different for the younger and older generation. However, it is clear that the pension system influences people's decision when to leave the employment market.

DWL (Expected Number of Working Years) - Measures the expected number of working years for a person aged 15+ during their lifetime.

In the case of European countries, the indicators defined by the OMC policy are available on the Eurostat website. In the case of Georgia, statistics are obtained from a variety of sources, including the Statistics Office of Georgia, the Central Bank of Georgia, and the Ministry of Economy and Sustainable Development of Georgia (see Annexes).

The Impact of the Pandemic Crisis on the World Pension Systems.

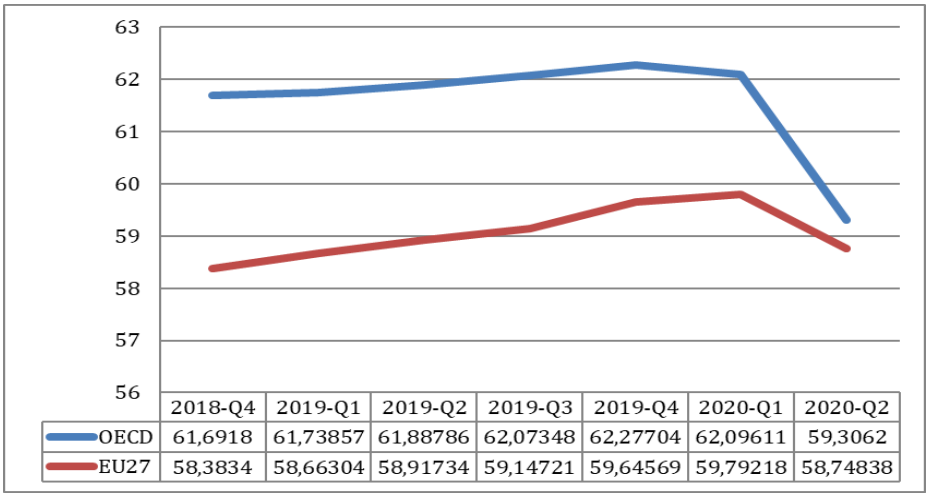
It is still unclear what impact the Covid-19 crisis will have on the world geopolitics, the economy, the environment or social relations. Pension systems are no exception, taking into consideration already critical future caused by some demographic changes, by 2020 the pension systems of many countries will also have to deal with the economic shocks caused by the pandemic.

Employment-unemployment rates are of great importance for pension systems. The economic decline caused by the pandemic has led to a shrinking employment market and a sharp increase in unemployment in all age categories. The older generation is no exception. Whose well-being is particularly affected by the virus - firstly, they are in a high-risk group from a medical point of view and secondly, the economic and financial crisis has also affected pension funds, which provide[1] current or future income for retirees.

Along with the general increase in unemployment, there are even greater rates of employment decline among the retirement age population. In addition, in most cases, they are less likely to rejoin the workforce after more or less overcoming the crisis - We must therefore assume that they leave the labor market and retire before doing so under normal economic conditions. This trend is increasing the pressure on pension systems. For example, in the first phase of the pandemic in the US alone, the unemployment rate for the 55+ age group rose from 3.3% in March to 13.6% in one month (April 2020). Quantitatively it is about 3.7 million people[2]. Chart 1 also shows how the employment rate is declining in the 55-64 age group in the EU27 and OECD countries.

In addition to joining the pension system with a large number of retirees, governments, in the scope of various anti-crisis benefits, have reduced taxes in many countries, which logically reduces pension scheme contributions. Developments like this affect both sustainability and the adequacy of pension system costs, which could intensify fiscal pressures from the crisis and threaten the financial sustainability of pension systems.

[1] Pension Schemes in the COVID-19 Crisis: Impacts and Policy Considerations Csaba Feher and Ignatius de Bidegain, July 20, 2020
[2] Retrieved from https://www.aarp.org/work/job-search/info-2020/unemployment-numbers-april.html



	2018-Q4	2019-Q1	2019-Q2	2019-Q3	2019-Q4	2020-Q1	2020-Q2
OECD	61,6918	61,73857	61,88786	62,07348	62,27704	62,09611	59,3062
EU27	58,3834	58,66304	58,91734	59,14721	59,64569	59,79218	58,74838

Chart 1. The employment rate in the EU27 and OECD countries
Age 55-64; Quarter IV of 2018 year; Quarter II of 2020 year.
Chart of the author. Statistical data: OECD[1]

Table 1. Government policy on responding to Covid-19 shocks to pension systems

Implemented policy	Countries
Limitation of materialization (eg sale of pension fund) to avoid short-term investment losses	Australia, Canada, Colombia, Chile, Germany, Hungary, Latvia, Mexico, New Zealand, The United Kingdom, The USA
Ensuring solvency of pension accounts (E.g. extending the recovery period for DB schemes)	OECD 29 countries + Croatia, Kazakhstan, Kenya, Mauritius
Subsidy policy (For example, wage subsidies to keep jobs)	Iceland, Netherlands, New Zealand, Northern Macedonia, Slovakia, Sweden, Switzerland, The United Kingdom
Provide and facilitate continuous operating activities (same as online form)	The most of OECD countries
Protection against fraud and cyber-attacks (warning of pension scheme participants and introduction / offer of defense mechanisms)	Australia, Austria, Luxembourg, Mauritius, New Zealand, Slovenia, Sweden, UK
Short-term measures designed to neutralize economic shocks that carry potential risks in the long run (for example, the possibility of early savings)	Australia, Belgium, Canada, Colombia, Denmark, Estonia, Finland, France, Iceland, Peru, Portugal, Slovakia, Spain, The United Kingdom, The USA

All of the above measures are positively assessed by OECD experts, except for the latter. Like representatives of other international organizations, OECD experts urge governments as much as possible and make recommendations to refrain from pursuing policies that threaten the sustainability of pension systems in the long run.

The problem is not only the possibility of early withdrawal of pension contributions. Most pension schemes around the world also allow early retirement, depending on a variety of circumstances, based on long service experience or individual choice. However, in many cases the early retirement pension is different from the usual benefit. Social security regulations typically require that due to early retirement, the monthly deduction rate for retirement payments should not exceed 0.3-0.6%, which in real terms means a reduction of 3.6-7.2% annually in pensions. This means that, with lower retirement income, early retirement can lead to an increase in the poverty rate among retirees; Especially in the case of retirees whose activities were low-skilled and low-income before retirement. Such professions are usually most affected during a long-term crisis, and the Corona virus crisis and its consequences will be no exception. Pension schemes placed in funds also have a negative

[1] OECD (2020), Employment rate by age group (indicator). doi: 10.1787/084f32c7-en (Accessed on 23 October 2020)

impact during the crisis - low return on investment reduces the volume of their assets, while low yield on public debt increases the present value of liabilities. This can lead to both obvious fiscal risks in the presence of government guarantees and implicit fiscal risks in reducing private pension benefits or increasing the financial pressure on employers to co-finance pension funds.

Conclusions. It should be noted that a single indicator is not sufficient to assess the overall effectiveness of the pension system under the OMC Framework Policy. A clear example of this is the financial stability indicator of Georgia, which is one of the highest among the research countries (see Table 2), but if we consider the adequacy and modernization indicators of the Georgian pension system and compare it with other countries, it turns out that the Georgian pension system efficiency is ultimately low. The adequacy indicator is especially low, against the background of which the pension system in Georgia more or less maintains a high rate of financial stability.

Considering all the above mentioned, the aim of our study is not to compare pension systems with each other to determine the best pension system. The aim of the study is to assess the indicators of financial sustainability of the countries' pension systems in the pre-crisis period and to draw conclusions regarding the action policy in the coming years.

The current crisis is affecting on pension schemes in several ways: an increasing number of people are leaving the job market and joining the pension system; The situation in the employment market, in the form of reduced jobs and wages, will turn into lower pension incomes, which will be paid by employees in pension funds from their salaries; Falling prices for financial assets have a negative impact on the financial balance of pension funds; It is expected that governments and companies, which are often the main underwriters of pension bonds, will reduce their activity in this direction. It is clear from these factors alone that governments and their policies have a major impact on pension schemes in any period, especially in times of crisis.

Table 2.

Country	**Pension system Synthetic rates of sustainability by years**		
	2010	2015	2018
EU27	0.29	0.32	0.39
Belgium	0.2	0.21	0.23
Czech Republic	0.4	0.46	0.59
Denmark	0.48	0.44	0.61
Germany	0.45	0.49	0.62
Estonia	0.51	0.57	0.73
Ireland	0.48	0.41	0.65
Greece	0.16	0.03	0.04
Spain	0.33	0.29	0.31
France	0.18	0.22	0.26
Italy	0.05	0.09	0.12
Cyprus	0.6	0.39	0.55
Latvia	0.38	0.51	0.66
Lithuania	0.4	0.53	0.43
Luxembourg	0.28	0.29	0.24
Hungary	0.13	0.34	0.43
Malta	0.18	0.37	0.42
Netherlands	0.46	0.47	0.62
Austria	0.7	0.26	0.36
Poland	0.16	0.24	0.26
Portugal	0.35	0.28	0.43
Romania	0.30	0.32	0.33
Slovenia	0.24	0.25	0.37
Slovakia	0.33	0.36	0.41
Finland	0.45	0.41	0.52
Sweden	0.66	0.63	0.81
The Great Britain	0.51	0.49	0.6
Norway	0.72	0.61	0.76
Georgia	0.73	0.68	0.68

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

Table 2 shows the results of our quantitative survey, which shows how the synthetic indicator of financial sustainability of a country's pension system changes from year to year. Particular attention should be paid to the decline in the financial sustainability of many pension systems from 2010 to 2015 (Denmark, Ireland, Greece, Spain, Cyprus, Austria, Portugal, Finland, Sweden, the United Kingdom, Iceland, Norway, Georgia). In most cases, the deterioration in the financial sustainability of pension systems since 2010 was the result of the financial crisis of 2007-08. That is why governments of the countries should pay great attention to the management of problems caused by the current crisis.

For macroeconomic analysis of the pension system, it is also important to determine what impact it has on the employment market. Another trend of the survey results is important in this regard - the five countries with the lowest DWL (average number of working years) are characterized by low financial stability of the pension system (Italy, Luxembourg, Hungary, Malta, Poland). And those countries where the DWL rate is high (Iceland, Norway, Sweden, the Netherlands) are characterized by a stable or growing rate of sustainability. Therefore, employment market parameters are of great importance for the sustainability indicators of the pension system and improvement of which should become a priority for governments of the countries. This primarily aims to promote employment growth among the elderly population and the emergence of mechanisms that will encourage future beneficiaries of the pension system to stay in the labor market as long as possible.

In addition, to make the crisis more or less painless, governments must avoid the temptation to use the pension fund to deal with the consequences of the crisis. And than the "retirement" boom can later be compensated by an increase in retirement age, which is already planned in many countries. If the crisis does not last long, the impact of this factor can be eliminated in 4-8 years.

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Annex 1 Sustainability Indicators (2010)

	PE/GDP	EMP55-64	DWL
EU27	12.6	44.7	34.6
Georgia	3.1	64.15	35
Belgium	11.8	37.3	32.5
Czech Republic	8.8	46.5	33.9
Denmark	12.6	55.5	39.0
Germany	12.5	57.8	36.8
Estonia	8.6	53.8	35.8
Ireland	8.1	50.2	35.3
Greece	14.8	42.4	32.3
Spain	10.6	43.5	34.5
France	14.4	39.8	34.0
Italy	15.4	36.5	29.7
Cyprus	7.1	56.3	36.9
Latvia	10.1	47.8	34.5
Lithuania	8.5	48.3	33.1
Luxembourg	9.2	39.6	31.6
Hungary	10.7	33.6	29.2
Malta	9.4	31.9	30.3
Netherlands	12.2	52.9	38.9
Austria	14.5	41.2	36.0
Poland	11.8	34.1	31.6
Portugal	13.7	49.5	36.9
Romania	9.4	40.7	32.3
Slovenia	11.0	35.0	34.2
Slovakia	8.2	40.5	32.4
Finland	12.1	56.2	36.8
Sweden	11.4	70.4	40.0
The Great Britain	11.2	57.2	38.0
Iceland	7.2	79.8	44.6
Norway	8.3	68.6	39.5

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

Annex 2 Sustainability Indicators (2015).

	PE/GDP	EMP55-64	DWL
EU27	12.8	52.1	35.5
Georgia	4.7	71	35
Belgium	12.5	44.0	32.6
Czech Republic	8.6	55.5	35.2
Denmark	13.5	63.0	38.7
Germany	11.8	66.2	37.9
Estonia	8.0	64.5	37.2
Ireland	5.8	55.4	36.0
Greece	17.7	34.3	32.3
Spain	12.7	46.9	35.0
France	15.1	48.7	34.9
Italy	16.4	48.2	30.7
Cyprus	10.1	48.5	36.2
Latvia	7.7	59.4	35.4
Lithuania	6.9	60.4	34.9
Luxembourg	9.3	38.4	33.5
Hungary	8.6	45.3	32.6
Malta	7.5	42.3	33.7
Netherlands	13.0	61.7	39.9
Austria	14.6	46.3	36.7
Poland	11.6	44.3	32.6
Portugal	14.9	49.9	36.9
Romania	8.1	41.1	32.8
Slovenia	10.9	36.6	34.3
Slovakia	8.5	47.0	33.4
Finland	13.2	60.0	37.7
Sweden	11.3	74.5	41.2
The Great Britain	11.3	62.2	38.7
Iceland	8.5	84.8	46.6
Norway	10.3	72.2	39.8

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

Annex 3. Sustainability Indicators (2018)

	PE/GDP	EMP55-64	DWL
EU27	12.5	57.9	36.2
Georgia	4.2	66.95	35
Belgium	12.6	50.3	33.3
Czech Republic	8.2	65.1	36.3
Denmark	12.3	69.2	39.5
Germany	11.9[1]	71.4	38.7
Estonia	7.7	68.9	39.1
Ireland	5.3	60.4	37
Greece	16.5	41.1	32.9
Spain	12.6	52.2	35.2
France	14.9	53.3	35.4
Italy	15.8	53.7	31.8
Cyprus	9.2	60.9	37.2
Latvia	7.4	65.4	36.7
Lithuania	7	68.5	36.7
Luxembourg	9.3	40.5	33.5
Hungary	7.8	54.4	34.1

[1] In case of Germany, Estonia, Greece, Netherlands, Malta, Romania, Slovakia, Finland, Great Britain and Nirwat datas are uset for 2017

Continuation of appendix 3.

Malta	7.2	50.2	36
Netherlands	12.5	67.7	40.5
Austria	14	54	37.5
Poland	11.1	48.9	33.5
Portugal	13.9	59.2	38
Romania	8	46.3	33.5
Slovenia	9.8	47	36.1
Slovakia	8.5	54.2	34.1
Finland	13.4	65.4	38.7
Sweden	10.9	78	41.8
The Great Britain	11	65.3	39.2
Norway	12.5	57.9	36.2

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