Georgia's Reform of the Pension System and Demographic Dividend

Asie Tsintsadze[1][a] Vladimer Glonti[2][b] Tamar Ghoghoberidze[3c]

[1,2,3]Batumi Shota Rustaveli State University

Department of Finance, Banking and Insurance

Batumi, Ninoshvili str.35, Georgia

[a] asie.tsintsadze@bsu.edu.ge, [b] vladimer.ghlonti@bsu.edu.ge

[c] tamar.gogoberidze@bsu.edu.ge

Abstract

The relationship between demographic change and economic development is a hot topic for researchers in both directions. The increasing population ageing index, as well as the mortality rate, are a result of a variety of different issues. Demographic mortality is an unfavourable process that hurts both the social and economic aspects of society. The loss of economically active citizens will have a substantial economic impact on the country. Demographers and economists are collaborating to develop cost-effective methods for quantifying losses and outcomes. In contemporary times, economists have emphasized the importance of demographic processes in ensuring economic development. However, the economic growth factor was not demographic growth in general, but rather the age structure of the population. The demographic structure of a country is inextricably linked to the state of its pension system. While the state pension system continues to play a dominant role in Georgia, the rising ageing index jeopardizes the state's ability to implement social policy in terms of pension resource mobilization.

The article examines the country's demographic situation and demonstrates how violations of the demographic dividend's regularity act as a hindrance to economic development. The dividend calculation algorithm is built around the population structure, inferring an asymmetric relationship between the factors impeding demographic transition and economic development. The study spans the years 2000 to 2020.

The study concluded that in the first stage, not only the generation of a demographic dividend but also the population's social protection, could not be accomplished adequately. The second stage's demographic dividend is positive, despite the low likelihood of saving. The research findings served as the foundation for Georgia's 2018 introduction of an accumulative pension system. The study discusses the reasons for the need for a funded pension system and the short-term results, which are accompanied by populist nihilism regarding future receivables.

1.Introduction The issue of demographic development remains pertinent in the modern world. According to a report by the United Nations Expert Group on Population Problems, large populations and rapid population growth impede economic development, perpetuating or increasing poverty by slowing economic growth and increasing consumption by the vulnerable. They believed that if all countries' birth rates were reduced by a third in the 1980s, poverty would be reduced by a third. To address poverty, the state must address demographic issues and wage a war on poverty.

This approach was developed in the 1960s and 1970s as a neo-Maltese thesis, in which they expanded on Thomas Malthus's 18th-century assertion that "uncontrolled population growth could result in starvation on Earth." According to Malthus's theory, government-funded family planning programs were developed and adopted as a panacea for poor countries' economic problems. However, empirical research conducted in the 1980s cast doubt on the concept of neomaltus. It has been established that the primary driver of economic growth is not physical capital in the form of tangible assets, but rather human capital and technological advancement. Demographic pressures, adherents of this approach believe, result in institutional, technical, and political changes. Demographic changes are a significant factor in determining economic development. When the population of the youngest and oldest generations reaches its maximum.

In this case, demographic dividends in the labour market are reduced, and a large percentage of the population's social security falls on a small number of able-bodied individuals, thereby increasing poverty. Similarly, the population's socioeconomic situation results in a declining birth rate, which over time burdens the elderly's social security system with a small number of able-bodied people, increasing the dependency ratio.

The process does not end here; an increase in the dependency ratio deteriorates the pension system, resulting in a decrease in the pension replacement ratio. Similarly, the population's socioeconomic situation results in a declining birth rate, which over time burdens the elderly's social security system with a small number of able-bodied people, increasing the dependency ratio.

2. Methodology As a result of Georgia's transformations in the 1990s, the extreme deterioration of the socio-economic situation was reflected in the demographic situation, specifically the birth rate. Between 2000 and 2004, the birth and mortality rates were nearly identical, indicating that the country did not have population reproduction during this period. Since 2005, the higher mortality rate than the birth rate indicates a difficult social and demographic situation. Among the factors that contributed to the situation depicted in the table, one of the most significant is the size of GDP per capita, which partially explains the country's current economic processes and the effects of economic and demographic policies.

Economic and demographic policies that are implemented properly are evaluated by the so-called. What is a Demographic Dividend, as defined by Ronald Lee and Andrew Mason, is a mechanism for economic development that is proportionate to a country's demographic situation. According to statistics from developed countries, the birth rate is declining and the average life expectancy is increasing. Thus, a smaller number of "feed" populations opposes the labour force (economically active population). Which provides an opportunity to accumulate funds for future investment.

These processes stimulate economic activity and increase GDP per capita. The authors refer to the economic development that results from this strategy as the "first demographic dividend."

Reducing the birth rate in the subsequent period has a detrimental effect. The economically active population, which generated national income for years, is gradually slipping into disability, or retirement. Labour force participation is declining, and both GDP per capita and the first demographic dividend are deteriorating. The population of developed countries, where GDP per capita is high, accumulates cash resources to cover their retirement during their working years through life insurance and accumulation of pension funds that are provided to the economy via the financial market. Ie There is an opportunity to invest in what is referred to as the second "demographic dividend." (See Table 1).

Table 1: Demographic and economic indicators (2000-2020წ)

yy	Birth rate	ðMortality rate	0-24 (1000 men)	25-6 (T1000men)	65+ (1000 men)	Economically active	Employment (1000 men)	GDP per capita (GEL)	Population (1000 men)	Subsistence level
2000	11.8	11.8	1510.4	2083.5	524.7	2049,2	1839	5750.1	4118.6	98.7
2001	11.6	11.7	1473.1	2013.6	530.0	2113,3	1878	5763.6	4016.7	101.7
2002	11.3	11.9	1445.5	2017.1	528.7	2025,8	1839	6479.3	3991.3	106.3
2003	11.5	11.9	1421.3	2003.0	541.5	2049,5	1814	7209.3	3965.6	116,7
2004	11.6	12.7	1396.2	2005.7	554.0	2009,4	1783	2689.1	3955.9	85,2
2005	11.8	12.7	1386.3	1979.1	564.0	1982,7	1683.0	2,689.1	3929.4	87,1
2006	12.1	12.9	1349.1	1963.7	575.2	1911,9	1618.0	3,133.1	3888.0	106,5
2007	12,1	13.0	1328.3	1421.6	578.4	1908.7	1577.3	3,866.9	3328.3	102,7
2008	13,6	13.1	1752.2	1752.2	572.0	1944.7	1597.3	4,352.9	3629.3	115,8
2009	14,8	13.3	1286.2	1832.3	556.2	1971.8	1611.0	4,101.3	3674.7	111,7
2010	14,6	13.5	1265.8	1764.3	540.8	1970.9	1627.8	5478.0	3570.9	132,5
2011	13,7	13.3	1244.3	1999.5	529.8	1988.2	1643.5	6480.6	3773.6	139,0
2012	13,7	13.2	1218.6	1996.2	524.7	1654,7	1659.4	7017.5	3739.5	132,1
2013	13,4	13.1	1203.3	1989.6	525.5	1627,5	1643.4	7221.6	3718.4	137,4
2014	16,3	13.2	1192.2	1997.8	527.0	1629,0	1694.4	7837.4	3717.0	141,2
2015	15,9	13.2	1191.5	1999.1	531.3	1675,6	1733.8	8524.3	3721.9	143,9
2016	15,2	13.6	1187.1	2005.1	536.5	1653,8	1717.3	9129.0	3728.7	143,1
2017	14,3	12.8	1180.	2006.	539.3	1641,	1706.	10204	3726.	153,7

			5	6		4	6	.4	4	
2018	13,7	12.5	1182.0	1989.0	562.0	1605,2	1694.2	11968.0	3729.6	178.6
2019	13,0	12,5	1181,7	1981,1	557,2	1523.7	1295.9	13 239.4	3 723.5	194,8
2020	12,5	13,6	1184,2	1973,3	565,1	1533.6	1241.8	13234.1	3 716.9	192,5

Source: National Bank data, Geostat data, our calculations

The paper assesses both the demographic and economic situation in Georgia using the demographic dividend mechanism. As previously stated, Georgia's birth rate decreased from 2000 to 2006, which appeared to be a prerequisite for the creation of the first demographic dividend. However, the increase in mortality, which disproportionately affects the age group 25-64 (economically active population), violates the demographic dividends law.

The demographic data reveal the following issues: 1. The low employment rate of the economically active population; 2. Increased share of "food" population in comparison to employed population; and 3. An increase in the population aged 0-24 in the age structure of the dead between 2000 and 2005.

**Diagram I: Dynamics of deaths aged 0-24 in 2000-2020**
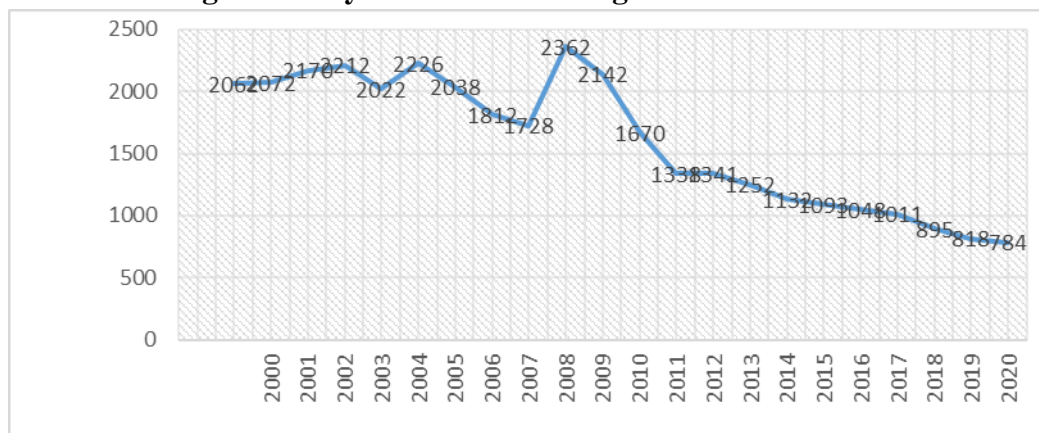
Source: National Statistics Office of Georgia, Death dynamics of the population aged 0-24 in 2000-2020

Diagram I. demonstrates that the death dynamics of the population's age group between 2000 and 2004, which should result in a more economically active population in the future, are increasing. This is another issue that increases the population's reliance on "feeding" per employee. To ascertain the possibility of generating a demographic dividend in Georgia, two stages of development were identified using the data in Table 1.

Phase I 2000-2006; Phase II 2007-2020; An analysis of the first stage demographic statistics reveals a steady decline in the birth rate between 12.1 and 11.3 per cent. If other indicators remain stable, the decline in the birth rate should create an opportunity for employed people to save. Between 1998 and 2006, a sizable proportion of the self-employed in the labour force, whose income is below the subsistence level, was exacerbated by the unemployment of a portion of the economically

active population. Given the reality, the demographic dividend algorithm has been modified and the "feed" population has been added to the portion of the economically active population that is classified as unemployed, resulting in a negative demographic dividend; however, seeing the reality is critical for highlighting the problems. The World Bank's dependency ratios served as the foundation for this approach, as they indicate that Georgia's data is comparable to that of the rest of the world. (See Diagram No. 2)

Diagram II: The dependency ratio of the working population on "nutrition" (%)
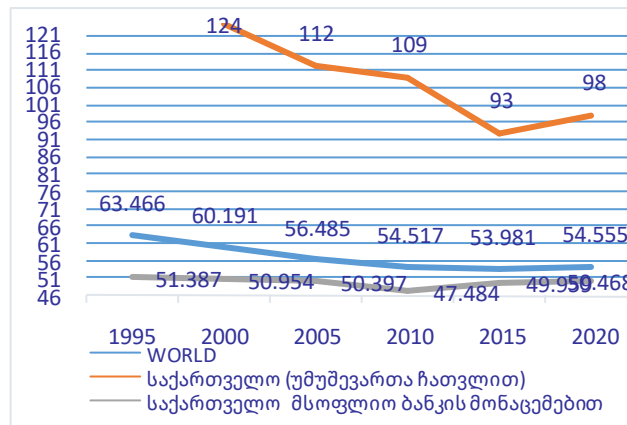
Source: The world bank, Data, Authors' calculations

The diagram illustrates how high the dependency ratio is when unemployment is included. A modification to the algorithm used in practice to calculate the demographic dividend has been made, bringing the result closer to reality.

For each stage, the average salary of employees (15+; 65), the average monthly expenditure, as well as the average income and expenditure of self-employed individuals were calculated; 2. For the age groups (0-14), the average cost was taken as the cost of "feeding" the age group; for the 65+ age group, the average cost was taken as the cost of "feeding" the stage and multiplied by the coefficient of the pension-average cost ratio (K), which is calculated. Thus, in light of the actual situation, the demographic dividend formula was as follows:

Demographic Dividend = [Employed x (Average Salary - Average Expense)] + [Self-Employed x (Average Income - Average Expense)] - [Population 0-14 * Average Expense] - [(Population 65 + * Average Expense) * K] - (Unemployed population * Average cost)

Stage I - 2000-2006.
Demographic Dividend = [663260 x (129.76 - 84.13) + [1053800 * (37.8 -84.13) - [834325 * 84.13] - (534374 * 84.13) * 0.78 - (450345 * 85.4) = - 162 275 595.45 GEL

The demographic dividend could not exist in the first stage because the employed population's income was insufficient to provide "food" for the disabled population even below the poverty line, **Demographic Dividend 2007-2020**

Table   II:

yy	Demographic dividend (GEL)	Employed population (man)	Average monthly income of hired employees(GEL)	Self-employed population (man)	(GE Income of the self-employed L)	Birth rate (%)	0-15 Age group (male)	65+ Age group (male)	Average monthly expenditure per capita (GEL)	Unemployed population (male)
2007	3029646	608400	277.9	1007801	90.2	12,1	726200	575200	100	293900
2008	1.6E+07	628500	368.1	948600	102	12,6	703500	578400	109.9	331400
2009	7.7E+07	621800	534.9	974400	128.5	13,6	687300	572000	131	347400
2010	1.1E+08	634500	556.8	975200	141.5	14,8	683200	556200	134.1	360800
2011	1.3E+08	668800	597.6	956600	156.8	14,6	685600	540800	146.2	343100
2012	1.4E+08	684000	636	952500	168.6	13,7	685400	529800	159.3	344800
2013	2E+08	716200	712.5	935700	190.2	13,4	682000	524700	170.7	345100
2014	1.1E+08	693700	773.1	940400	218.9	13,4	681500	525500	191	335200
2015	2.7E+08	743500	818	944400	243.5	16,3	685300	527000	204.1	290200
2016	5E+08	798300	900.4	928000	255.7	15,9	702800	531300	207.6	284200
2017	3.9E+08	801500	940	909500	268.5	15,2	719200	536500	215.5	278900
2018	4.1E+08	824200	999.1	886100	272.7	14,3	732900	539300	230.7	276400
2019	2E+08	879 600	1129.5	397900	336.1	13,0	756759	557198	353,1	276900
2020	2.8E+08	845 300	1191	395900	321.4	12,5	761948	565100	321,1	281900

Source: National Statistics Office of Georgia, calculation of authors

and the state pension was inadequate - 14 GEL or less than 20% of the average per capita expenditure. Not only was the first stage of the Georgian economy a period of demographic change, but it was also a period of economic transformation.

In the second stage (2007-2020), the employment structure reflected 15-year-olds, as well as a substantial percentage of work due to the elderly population's bad economic position. 15-year-old employment is referred to as "forced" employment because it is the age at which a teenager should begin their education. If a country's employment structure has a large proportion of people aged 15-24, it should be termed so-called. "To facilitate boomerang employment." Education inaccessibility raises the proportion of an unprofessional workforce, which can be a significant blow to the industrial period. The process can spiral downward: one country's able-bodied but unskilled labour force gets displaced by the labour force of another country. Eventually, revenues will diminish,

resulting in a decrease in demand, which will damage the profitability of previously invested capital and hurt future investment source savings. We do not oppose employment policies for the 15-24 age range; they are widely employed in European countries to collect student money, however, in Georgia, the effect of income is frequently antagonistic to education. This is due to a scarcity of hourly, variable jobs. As a result, the degree of education declines with a full-time job.

The demographic dividend for the second stage is increasing by individual years, as shown in Table (2). Birth rates have already decreased significantly throughout the world, as has the typical self-employed person's pay. While the birth rate has increased by 3% since 2006, the number of children aged 0-15 has remained virtually steady. As a result, lowering mortality in this age group remains a challenge in the country. The fact that the number of self-employed has remained constant implies that there are issues with education, trained staff, and employment. The produced algorithm elaborates on the savings potential but falls short of the savings generated by the demographic element. While we support the state's objective of increasing the birth rate, we believe that it is also vital to enhance the level of work and income of self-employed individuals. Economic demographics anticipate a second demographic dividend, which will produce savings for pension provision during the working years. This is a more justifiable dividend than the first, but it cannot be discussed in Georgia. Because boosting the state pension burdens the state, which remains a consumer, not a producer. The accumulative pension scheme creates the possibility of a future demographic dividend.

3. Empirical Analysis . Within the circle of difficulties that will deteriorate the social position of the over-65 population in the future, one of the states will be incompatible with sustenance and pension solvency. The study analyzes and forecasts state pension costs using statistical methods to establish a rationale for the necessity to implement a funded pension system. To determine the forecasting approach, the linear regression dependence of the data in Table No3 was established first, followed by the formulation of a hypothesis: y Indicators (retirement expense) are directly related to time.

Table III: State pension expenditure - 2001-2021

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
12544000	12650400	12597200	12531400	25228000	33877000	46029500	58954000	67080000	66872000
2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
82680000	85360750	103001250	104586000	113233440	129634920	131772060	134100180	152524200	172415100
2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
190500240	180416827,6	191570857,3	202646286,1	213092327,7	222036260,8	231579608,1	240962186,5	251442103,5	264390002,8

Source: calculation of authors

Graph of the time cycle and pension expenditure dependence №1
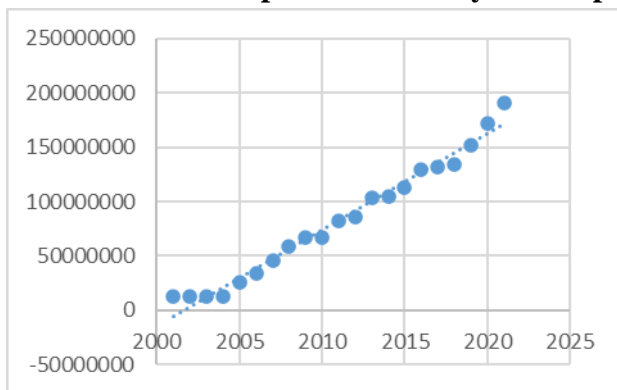
The graph depicts a linear relationship that enables us to anticipate the increase in pension expenses from 2022 to 2030 using forecasting methods. To produce high-accuracy findings, the "prediction" method is applied (see data table No3). Pension spending is expected to increase by 38% in 2030 compared to 2001. The full expectation is that public funds will be spent extensively to meet retirement expenses, resulting in a halt in the country's economic progress. The forecast's accuracy was estimated using linear, exponential, and logarithmic techniques.

Forecasting schedule№ 2
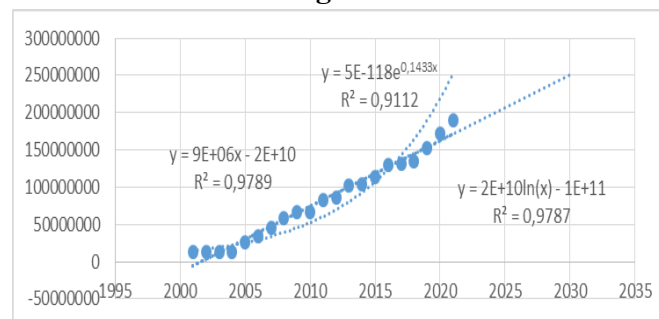
№ Figure 2 illustrates the forecasting formulas for all three methods and the corresponding R2 values: R2 = 0.9789 for linear forecasting; R2 = 0.9787 for logarithmic forecasting; and R2 = 0.9112 for exponential forecasting.

Because the data are linearly correlated, the linear regression forecasting method best verifies the forecasting indicators. Ie The predicted link was established.

Because the data are linearly correlated, the linear regression forecasting method best verifies the forecasting indicators. Ie The predicted link was established.

The study's findings indicate that an increase in pension expenditures by 2030 will be one of the hurdles to pension increases. Based on these assumptions, the nation established an accumulative pension program in 2018. Citizens (under the age of 40) who are required to engage in the program will receive a reasonable pension upon retirement. At this stage, the pension fund has mobilized almost 1.5 billion GEL and is earning an average effective annual interest rate of 11.15 per cent.

Economic growth cannot be accomplished by the generation of a demographic dividend in the country. The accumulative pension system, in which the state owns 2% and organizations own 2%, will contribute to the improvement of living standards, as 70.3 per cent of pension fund assets is placed in certificates of deposit and time deposits. The lengthy period between the retirement plan's inception and the issuance of the first pension has resulted in widespread public cynicism regarding

future retirement payouts. It is impossible to reduce the program's value to the level of each member and to examine the dangers that could come from its absence. The analysis revealed an annual increase in state pension spending, which some argue could result in the demise of state pensions.

The authors suggest that membership in an accumulative pension fund provides an inexpensive means of obtaining credit resources in the form of feedback. This, in turn, stimulates the growth of production. When financial transactions follow a spiral pattern, efficiency is obtained in all directions of the economy, allowing for accurate planning and forecasting.

Conclusion. The study uncovered several impediments to Georgia's economic development:

1. Delayed demographic transition as a result of the country's failed social policies: a deficient health care system (increasing deaths of people of working age and food insecurity), a dysfunctional educational system with a low level of staff meeting labour market requirements (increasing the number of self-employed);

2. The difficulty of saving and investing (poor employee pay, underdevelopment of the financial market);

3. Global and Georgian ageing indices increasing (overpopulation of economically active population);

4. Low replacement rate of state pensions (2007-2020: 19-18%);

5. Inadequate growth of financial markets (lack of accumulative pension funds);

6. Reduced solvent demand as a result of increased state pension spending (forecast).

Recommendations

To address the aforementioned issues, economic and demographic policies should be reviewed and established on an annual basis based on the average life expectancy of the economically active population; Regularly assess the sufficiency of funds for medical initiatives;

Mandatory life insurance

To inform the public about the state's expenditures, including pension provision, to increase the number of participants in the accumulated pension fund;

Provide information to the population about the effects of pension fund deployment and the use of risk prevention systems to prevent nihilism in the accumulative pension fund.

A special emphasis should be placed on the declaration of economic achievements made possible by pension fund resources, as this will enhance positive dependency.

References

1.Tsuladze, A. Sulaberidze, Fundamentals of Demography, Ilia State University Press, 2015

2. Shorena Tsiklauri. Population aging in Georgia as a demographic trap of the country's economy. Zh. Economist, № 3, - (E ISSN 2346-8432; Print ISSN 1987-6890) Tbilisi, 2017. pp.117-128

3. Avtandil Sulaberidze. Peculiarities of the formation of the second demographic dividend against the background of the EU and post-communist countries in Georgia. Iv. Javakhishvili Tbilisi State University P. Proceedings of the International Scientific Conference of the Gugushvili Institute of Economics. "Structural and Innovative Problems of Economic Development". Tbilisi, 2017. p. 86-90.

4.Elguja Mekvabishvili, Modern Economic Theories (lecture course), Tbilisi 2016

5. Ralph Hackert, Population Dynamics Overview Based on the Results of the 2014 Population Census in Georgia

6. Роналд Ли и Эндрю Мэйсон,Что такое демографический дивиденд? Журнал Финансы & развитие сентябрь 2006

7. Томас Роберт Мальтус, Essay on the Principle of Population, 1798 году

8. Е.Щербакова "Ожидаемая продолжительность жизни увеличится с 65 до 75 лет" Мировой демографический барометр, № 233 – 234, 2006.

9. Steven W. Sinding*, Philos Trans R Soc Lond B Biol Sci.] Population, poverty and economic developmen 2009 Oct 27; 364(1532): 3023–3030

10. Economic Development and the Escape from High Mortality JAVIER A. BIRCHENAL * University of California, Santa Barbara, CA, USA, Elsevier ,Vol. 35, No. 4, pp. 543–568, 2007.

11. World Mortality 2017-Data Booklet-United Nations, http://www.un.org/en/development/desa/population/publications/pdf/mortality/World- Mortality-2017-Data-Booklet.pdf

12. Countries in the world by population (2020) http://www.worldometers.info/world- population/population-by-country/Source: Worldometers (www.Worldometers.info)

13. United Nations Expert Group Meeting on Social and Economic Impications of Changing, Population Age Structures, 2005

14. Pension Reform of Georgia Modification of the Existing Social Pension System and Introduction of Private Accumulative Pension System - Ministry of Economy and Sustainable Development of Georgia, March 2016.

15. National Statistics Office of Georgia - Distribution of the population aged 15 and over by economic activity by age, 2002-2019 *

16. National Statistics Office of Georgia - Average monthly nominal salary of employees by type of activity , 1998-2019.

17. Rainer Kotschy 1, Patricio Suarez Urtaza 1, Uwe Sunde , The demographic dividend is more than an education dividend, 2020 Oct 20;117(42):25982-25984. doi: 10.1073/pnas.2012286117. Epub 2020 Oct 5.(Research Support, Non-U.S. Go

18. Demographic dividend may turn into liability sans enough jobs, skilled workforce: Report, Apr 05, 2022. The report on India's Demographic Dividend released by industry body CII, Discussion on Population Control Bill in Rajya Sabh.

19. William Joe,Atish Kumar Dash andPradeep Agrawal,Demographic Dividend and Economic Growth in India and China, Published online by Cambridge University Press: 08 February 2018

20. Rohokale, M. S., Dhabliya, D., Sathish, T., Vijayan, V., & Senthilkumar, N. (2021). A novel two-step co-precipitation approach of CuS/NiMn2O4 heterostructured nanocatalyst for enhanced visible light driven photocatalytic activity via efficient photo-induced charge separation properties. Physica B: Condensed Matter, 610 doi:10.1016/j.physb.2021.412902

21. Sai Pandraju, T. K., Samal, S., Saravanakumar, R., Yaseen, S. M., Nandal, R., & Dhabliya, D. (2022). Advanced metering infrastructure for low voltage distribution system in smart grid based monitoring applications. Sustainable Computing: Informatics and Systems, 35 doi:10.1016/j.suscom.2022.100691