Chapter 19

A Socioeconomic Effect Analysis of the Financial Sustainable Development of the Elder Romanian Population Through Pension Modelling

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ABSTRACT

Pensions are an essential component of society, and owing to rising population aging, life expectancy, healthy living years, and a lower fertility rate, financial sustainability will be a worldwide issue in the future. The purpose of this chapter is to examine the influence of social and economic variables on pensions and financial sustainability, as well as to suggest some methods to enhance the well-being of the elderly Romanian population using technological modeling. The R square indicates that 99.47% of the development of variable pension (Y) is described by the evolution of social variables (X1-X7) and 99.98% is explained by the evolution of economic factors (X8-X14) using mathematical modeling. The correlations between variables and covariance indicate an effect on the pension fund's stability and financial sustainability. The professionals might use technological modeling to develop future sustainable solutions for the pension system and to enhance the well-being of the elderly Romanian pension population.

1. INTRODUCTION

The COVID-19 pandemic triggered a massive economic catastrophe, with significant consequences for population revenues, the labor market, pensions, and particularly vulnerable individuals, unless families had sufficient savings to fall back on (Bottan et al., 2021). The financial and debt crises of 2008 and 2009 exacerbated pension funds' financial sustainability and position (Kastelein& Romp, 2020). There

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is a fragile labor market as the population ages, life expectancy rises, and pressures mount, impacting welfare states that must support this group of older people (Hu et al., 2023). Many national and worldwide governmental systems have suggested that the expenditures with pension funds would grow faster than the revenue collected from contributors (Alonso-Garca&Rosado-Cebrian, 2021). The pension system provides assistance to retirees, and its job is to draw attention to this problem as the population ages more quickly (Li et al., 2021). Retirement age has also shifted throughout time (Trentini, 2021). Providing for the well-being of the elderly is becoming a major concern for both poor and average-income nations, as well as many rich countries seeking financial sustainability (Borsch-Supan et al., 2023). According to United Nations figures, the number of elderly people is expected to reach 2.1 billion in 2050, 1.4 billion by 2030, up from 1.04 billion in 2020, with more than 80 percent leaving underdeveloped nations (Smith &Wesselbaum, 2023). For many generations and eras, building an appropriate pension system was a top goal. The public retirement EU pension system is facing two major risks: the continuation of the pay-as-you-go system and the ability to maintain a sustainable quality of life for the elderly population (Urbano et al., 2021). According to the European Commission's proposals, more nations have employed various taxes and occupational pensions to secure the old-age pensions system (Genser & Holzmann, 2021). There is a social contract formed between generations in which active workers from the current time support the current elder generation, and in return, the current employees rely on future employees (who are presently in their childhood phase) (Banyár, 2021). Pension systems use one of three kinds of pensions: pay-as-you-go (PAYG) (paid from current revenues), fully funded (paid from member payments that accumulate over time), or partly funded pensions. The PAYG pension system cannot be utilized in conjunction with higher-returning investments or with private retirement plans (Andersen et al., 2021). Pensions are considered a sort of insurance and are used to support individual consumption. Beyond the workplace pensions, workers choose to make additional savings, but they need for financial training to manage their resources (Herrador-Alcaide et al., 2021); many people do not use a voluntary system due to inertia, myopia (Robertson-Rose, 2021), lack of time - inconsistent preferences (because it means cost and effort for the short term but benefits on the long term), self-control, financial literacy, and problems imagining the future (Eberhardt, 021). Thus, risk sharing is essential for an effective retirement mechanism (J. Staveley-O'Carroll& O. Staveley-O'Carroll, 2021). As a result, the elderly retired people are accountable for making wise investment choices that will ensure a pleasant future retirement and the development of schemes for future generations (Cheung et al., 2023). "How do social and economic factors influence pension?" is the study question.".

The purpose of this research is to examine, using mathematical modeling, how social and economic variables affect public-sector pensions and to provide solutions to mitigate their negative impact on financial sustainability. The study is unique in that it does not examine just one factor, as many articles do (e.g., pension and fertility, pension and GDP, pension and ageing, pension and social contribution), but it examines 14 factors that have a significant impact, factors that are regarded as important by many studies, research, reports, statistics, and regulations. In addition, the research proposes a mathematical model based on the regression function and the correlation method: correlation coefficient, correlation report, and covariance at the Romanian level. To better understand the strengths and drawbacks of the Romanian pension system, a comparison with the average of EU-27 nations, as well as the highest and lowest pension values from EU-27 countries (Germany and Bulgaria), is done. The 11 years selected for analysis are the study's limits, although this constraint is imposed by the availability of data at the EU level.

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