

FINANCIAL ASPECTS OF THE FUNCTIONING OF PENSION SYSTEMS IN SELECTED COUNTRIES OF THE EUROPEAN UNION

Anna PADLOWSKA

Czestochowa University of Technology, Faculty of Management; anna.padlowska@pcz.pl,
ORCID: 0000-0002-2631-1371

Purpose: The article discusses financial aspects of the functioning of pension systems in selected countries of the European Union. Changing demographic conditions (aging populations) pose a serious challenge to the financial stability of pension systems in Europe. This article discusses the differences between the pension systems of two selected European countries - Poland and Germany - in terms of pension expenditure, the efficiency of these systems and changes in financing between 2021 and 2024. The aim of this article is to analyze the issue of financing in two representative countries: Poland and Germany, to identify differences in the pension systems in these countries, and to highlight the main challenges they face. The hypothesis is that the pension system in the European countries studied is not a sustainable pension system, assuming that the amount of pension contributions collected is sufficient to pay current pension benefits.

Design/methodology/approach: The objective of the article was achieved by verifying secondary sources and conducting a comparative analysis in formal and financial terms. The article draws on literature on social security and social insurance, both in the field of economics and law. The legal sources, materials, and statistical sources were used to present the issues. In addition, materials available on the Internet, including those published by Eurostat, MISSOC, and the OECD, were used in the study.

Findings: The data presented in the article concerning two representative countries of the European Union and the financial efficiency indicators of the Polish and German pension systems presented in the article confirm the hypothesis put forward in the article. Contemporary pension systems in highly developed countries are struggling with many problems, mainly resulting from demographic processes. Aging societies and declining birth rates are contributing to changes in the population structure. As a result, there is an increasing need to reform pension systems to adapt them to the current demographic situation. Every pension system reform is a long-term and multifaceted process, and there is no single universal solution that would fully resolve all problems. It is important to take into account the unique demographic, social, and economic conditions of a given country and to rely on broad social consensus. Despite the differences in institutional solutions in individual countries, both the reforms that have been implemented and those merely proposed by the European Union show a common direction of change. This consists of striving to ensure the financial stability of pension systems. More profound changes in the pension systems of European Union member states are inevitable - the pension systems need to be strengthened through broader fiscal reforms, social activation, and increased trust in the system.

Research limitations/implications: The topic discussed in the article is very important in the contemporary context due to the financial deficit of social insurance. During the research, certain limitations were observed in access to information, both domestic and international, which could facilitate a more in-depth analysis of the presented issue.

Practical implications: The practical consequence of balancing the pension system in Poland - as well as in other EU countries - would be the elimination of the enormous subsidies from the state budget to institutions paying out benefits.

Social implications: A country that would not have to subsidize the institutions paying pension benefits could allocate those funds to other important social goals, such as education, public infrastructure, the healthcare system, and so on.

Originality/value: By analyzing financing issues in two representative countries, Poland and Germany, identifying differences in their pension systems, and highlighting the main challenges they face, it is possible to better understand the different approaches to pension provision in Europe and their economic effects.

Keywords: pension systems, old-age system, financial efficiency of the system, European Union.

Category of the paper: Research paper.

1. Introduction – The pension systems in the European Union countries

As the aging of society accelerates, the issues related to the social security and the improvement of the pension system have become a key area of public attention (Xia et al., 2025). The pension system serves as social security for the elderly. When they are no longer able to support themselves through their own work due to their age, it is often their only source of income. The role of the public social security system should be to provide this security. Unfortunately, the current shape and parameters of the European pension system, including the Polish and German systems, do not guarantee future pensioners even the basic means necessary for survival, let alone the possibility of a dignified life in old age (Garbiec, 2022). In developing countries, pension systems often encounter difficulties related to limited coverage and a deteriorating fiscal situation. However, these problems can be effectively mitigated by strengthening the financial stability of the system (Zhang et al., 2022). From the perspective of the social security theory and welfare economics, changes in the pension system have a significant impact on the quality of life of older people. This theory suggests that a well-functioning, comprehensive social security system can effectively reduce the financial risks faced by seniors by offering them stable support throughout their lives. Such solutions form the foundation for improving their well-being and subjective sense of happiness (Li, Lin, 2023). The economics of social welfare indicates that changes in the pension system lead to a more efficient use of resources, improve the fairness and sustainability of the pension system, and create a stable economic foundation for older people (Baulkaran, 2022). It should be noted that assistance provided to older people not only directly improves their financial situation, but also indirectly supports their mental well-being and social activity – reducing their economic

dependence on their offspring and strengthening their sense of belonging to society. Furthermore, the introduction of reforms fosters positive expectations for the future, increases seniors' sense of security, and overall improves their subjective well-being (Fang et al., 2023). Recently, researchers have conducted extensive analyses of the relationship between pension reforms, financial stability, and the quality of life of seniors (Chen et al., 2023).

The pension systems in the European Union (EU) countries are characterized by considerable diversity, resulting from different historical conditions and the independent pension policies of individual countries. The structure of these systems usually comprises three pillars: public, occupational (company) and private. The public pillar plays a key role in all member states. There are three main models of public pension systems: the insurance model (Bismarck), the social security model (Beveridge), and the civic model, also known as the provision model or Scandinavian model. Regardless of the model adopted, all are based on a pay-as-you-go financing method, which means that pensions are paid from current contributions or taxes paid by the working generation (Bednarczyk, 2015).

Responsibility for the pension systems in the EU lies with the member states, which means that their structure and functioning vary considerably - they are adapted to national labor and social legislation. The European Union, on the other hand, has the power to issue recommendations on pension systems as part of the overall coordination of macroeconomic policy. The three-pillar (segment) model of the pension system (multipillar system) is most often used to analyze the pension systems in the European Union countries. Various classification criteria can be used for this division. However, the subjective criterion of division is considered to be the basic one. In this case, individual pillars are distinguished (Uścińska, 2012). Pensions in the EU are usually based on a three-pillar model (Table 1).

Table 1.

General characteristics of the types of pension systems in the European Union

Pillar	Characteristics
Ist Pillar State-funded pensions / statutory pension system	<ul style="list-style-type: none"> - Basic income protection, income replacement. - Publicly funded (pay-as-you-go system). - Social security contributions. - Provided by the government. - Payment after meeting eligibility requirements.
IInd Pillar Employee pension plans	<ul style="list-style-type: none"> - Supplement the pension paid by the state. - Collective agreements or contracts. - Contributions paid by the employer and employee. - Managed by pension funds or insurance companies.
IIIrd Pillar Other individual pensions	<ul style="list-style-type: none"> - Supplements the pension paid by the state and pensions from employee pension schemes. - Own savings and life insurance policies. - Contributions paid during employment. - Provided by funds, insurance companies, institutions.

Source: Own elaboration based on: Europejski Trybunał Obrachunkowy (2025). Sprawozdanie specjalne, nr 14, pt. „Upowszechnienie dodatkowych programów emerytalnych w UE – działania Unii na rzecz zwiększenia roli pracowniczych programów emerytalnych i utworzenia ogólnoeuropejskiego indywidualnego produktu emerytalnego okazały się nieskuteczne”, Urząd Publikacji Unii Europejskiej.

The first pillar, which is mandatory, also includes statutory capital programs in some countries. The second pillar consists of employee pension programs, the amount of which depends on the accumulated funds. The third pillar consists of individual, voluntary forms of retirement savings. It is worth noting that the division into pillars and the classification of specific programs may vary from one member state to another.

It is also worth emphasizing that the European Pillar of Social Rights includes a provision (Principle 15) guaranteeing the EU citizens the right to a pension proportional to their contributions, ensuring an income that allows them to live in dignity in old age. In this regard, the European Union may take measures to increase the transparency of information on projected pension benefits and the impact of pension reforms on public finances (European Court of Auditors, Special Report 14/2025). This article focuses on selected data concerning 1st Pillar.

Over the past dozen or so years, many countries have embarked on pension reforms. With regard to the statutory retirement age, two main trends have emerged: a gradual increase in the statutory retirement age and a reduction in gender differences. Between 2012 and 2023, as many as 21 countries raised the statutory retirement age (Table 2).

Table 2.

Statutory pension age, early and deferred retirement in 2012 and 2023

Country	2012		2023		Early retirement	Deferred retirement
	Men	Women	Men	Women		
Belgium	65 years	65 years	65 years	65 years	Yes	Yes
Bulgaria	63 years 4 months	60 years 4 months	64 years 6 months	62 years	Yes	Yes
Czechia	62 years 6 months	61 years 4 months	63 years 10 months	63 years 10 months	Yes	Yes
Denmark	65 years	65 years	67 years	67 years	Yes	Yes
Germany	65 years	65 years	65 years 11 months	65 years 11 months	Yes	Yes
Estonia	63 years	61 years 6 months	64 years 3 months	64 years 3 months	Yes	Yes
Ireland	66 years	66 years	66 years	66 years	No	No
Greece	65 years	65 years	67 years	67 years	Yes	Yes
Spain	65 years	65 years	66 years 4 months	66 years 4 months	Yes	Yes
France	60 years	60 years	62 years	62 years	Yes	Yes
Croatia	66 years	60 years 6 months	65 years	63 years 3 months	Yes	Yes
Italy	66 years	66 years	67 years	67 years	Yes	Yes
Cyprus	65 years	65 years	65 years	65 years	Yes	Yes
Latvia	62 years	62 years	64 years 6 months	64 years 6 months	Yes	Yes
Lithuania	62 years 6 months	60 years 4 months	64 years 6 months	64 years	Yes	Yes
Luxembourg	65 years	65 years	65 years	65 years	Yes	No
Hungary	62 years	62 years	65 years	65 years	Yes	Yes
Malta	61 years	60 years	64 years	64 years	Yes	Yes
Netherlands	65 years 1 month	65 years 1 months	66 years 10 months	66 years 10 months	No	No
Austria	65 years	60 years	65 years	60 years	Yes	Yes
Poland	65 years	60 years	65 years	60 years	Yes	Yes

Cont. table 2.

Portugal	65 years	65 years	66 years 4 months	66 years 4 months	Yes	Yes
Romania	64 years 4 months	59 years 4 months	65 years	62 years	Yes	Yes
Slovenia	63 years	61 years	65 years	65 years	Yes	Yes
Slovakia	62 years	61 years	63 years	63 years	Yes	Yes
Finland	63-68 years	63-68 years	64 years 3 months	64 years 3 months	Yes	Yes
Sweden	flexible from 61 years	flexible from 61 years	flexible from 62 years	flexible from 62 years	No	Yes
Iceland	67 years	67 years	67 years	67 years	Yes	Yes
Norway	62-67 years	62-67 years	62-67 years	62-67 years	No	No
Switzerland	65 years	64 years	65 years	64 years	Yes	Yes

Note: definitions of the statutory pension age vary across EU Member States. The figures presented refer to the national statutory pension age (the age at which people are entitled to an old-age pension). When the pension age is defined as a range, the top and bottom limits are presented.

Source: MISSOC database (Mutual Information System on Social Protection), <https://www.missoc.org/missoc-database/>, 1.08.2025.

In most countries of the European Union and the European Free Trade Association (EFTA), the statutory retirement age for both men and women has increased between 2012 and 2023. For example, in Germany, it has increased from 65 (in 2012) to 65 years and 11 months (in 2023), in Italy from 66 to 67, in the Netherlands from 65 years and 1 month to 66 years and 10 months, and in Spain from 65 to 66 years and 4 months. In some countries, the retirement age for women and men has been equalized—e.g., in Romania and Croatia, which may indicate a move toward gender equality. The highest retirement age in 2023 was in Iceland, Italy, Greece, and Norway (flexible up to 67). The lowest retirement age in 2023 was in Poland (women 60 years old), France (62 years old), Croatia (women 63 years and 3 months old), and Bulgaria (women 62 years old). Sweden and Norway offer flexible retirement ages. Flexible systems allow citizens to adjust the timing of their retirement to their professional and health situation. In all countries, except Estonia, the Netherlands, and Norway, deferred retirement is possible. This means that most countries offer incentives to stay in the labor market longer, which is crucial in an aging society. The analysis of the data in Table 2 reveals certain trends in pension policy in the European Union. The data shows that countries are raising the retirement age in line with increasing life expectancy, aiming to equalize the retirement age for women and men, offering greater flexibility (both earlier and later retirement), and seeking to extend working life.

2. Comparative characteristics of pension systems in Poland and Germany

Before the introduction of social security reforms, many reasons were given to justify changes to the system. The most frequently cited was the need to restructure the pension system due to its impending financial inefficiency, which was largely caused by unfavorable demographic trends. Today, these concerns remain valid - and are even growing, as demographic changes such as aging populations and declining fertility rates (in 2024, Polish women gave birth to only 252,000 children, compared to 272,000 in 2023) (<https://polandweekly.com/>) and increasing life expectancy. Forecasts indicate that by the middle of the 21st century, Greece, Spain, and Portugal will lead the way in terms of the percentage of elderly people. Increased immigration is not a realistic solution for maintaining a stable population or the current age structure, which could significantly reduce the pressure for social welfare system reforms. Moreover, the negative migration balance, observed in Latvia, Croatia, and Romania, among others, further exacerbates this challenge (Hinrichs, 2021). These issues pose a significant challenge to contemporary pension systems (Kolek, 2025).

The selection of Poland and Germany to illustrate the differences between the pension systems of selected European countries in terms of pension expenditure, the efficiency of these systems, and changes in financing in the years 2021-2024 is not accidental. Each of the countries indicated represents a different type of pension system, which allows for a comparison of two different approaches to pension security. The selection of these two countries makes it possible to present a conservative system (Germany) and a liberal/Anglo-Saxon system (Poland). These comparisons provide a better understanding of the different approaches to pension security in Europe and their economic implications. The characteristics of the systems in these countries were based on data available in MISSOC, the EU's social protection information system. This system provides detailed and regularly updated information on national social protection systems (<https://employment-social-affairs.ec.europa.eu/...>). The European Commission established the MISSOC system in 1990 with the aim of enabling the continuous and comprehensive exchange of information on social protection in Europe (<https://eur-lex.europa.eu/...>).

2.1. Poland

Poland represents a Central and Eastern European country that has undergone a transition from a centrally planned economy to a market economy. The pension system in Poland combines elements of a pay-as-you-go system (Social Insurance Institution - ZUS) and a capital-based system (Open Pension Fund - OFE), although over the years the role of OFE has been significantly reduced. Poland is an example of a country seeking a balance between intergenerational solidarity and individual responsibility for saving for retirement.

The applicable statutory of pension system in Poland are Law on the Social Insurance System of October 13, 1998, Law on Social Insurance Fund Pensions of December 17, 1998 and Law on the Honorary benefit for turning 100 years of age of October 18, 2024 (directory of legal acts: <https://isap.sejm.gov.pl/>). There is a compulsory social insurance scheme financed by contributions covering employees and self-employed and providing earnings-related pensions depending on contributions and the duration of affiliation in Poland. It is a mixed system composed of a first pillar, financed on a pay-as-you-go basis, and a funded second pillar. Persons born before 1949 are subject to the first pillar system only and the pension is based on defined-benefits (DB). Persons born after 1949 are subject to the new hybrid system (defined-benefits (DB) and defined-contributions (DC)) and can choose whether to remain in the old system or to join the new system. A voluntary old-age scheme or third pillar exists as additional private funds for retirement purposes. They are IKE (Individual Retirement Accounts), IKZE (Individual Retirement Security Accounts), PPE (Employee Pension Programs) and PPK (Employee Capital Plans). There are a compulsory separate social insurance schemes for farmers and their family members. There are also special schemes for policemen, soldiers, prosecutors, judges. The above-mentioned systems do not include points schemes. There is no specific assistance scheme for older people. The general Guaranteed Minimum Resource scheme applies.

The retirement age in Poland is 60 for women and 65 for men. The retirement age does not depend on having a specified insurance record or having paid a specified number of years of contributions. Beyond age, the other condition to receive an old-age pension with guaranteed minimum pension is a qualifying period (of contributory and non-contributory periods) of 25 years for men and 20 years for women. An old-age pension without a guaranteed minimum:

- persons born before 1 January 1949: men 20 years, women 15 years of contributory and non-contributory periods. The conditions apply in combination with age,
- persons born after 31 December 1948: no minimum period is required.

There is no concept of a full career or full contributions record. An early pension in Poland is only for people born between 1949 and 1968 if they meet the following conditions as of 31 December 2008:

- having reached a lower retirement age than the standard one that varies depending on gender and type of occupation (e.g. it is 55 or 50 for miners),
- having at least 25 years of contributory and non-contributory periods for men and 20 for women,
- performing an arduous or hazardous job.

The Polish pension system is a mixture of a pay-as-you-go and a capital-based system, with a large state contribution. Although there are voluntary savings mechanisms (3rd pillar), in practice most citizens rely on the Social Insurance Institution (ZUS). According to all available demographic forecasts, the aging of the population in Poland is one of the fastest and most profound in the European Union (Fihel, Okólski, 2017). The system faces serious

demographic and economic challenges, and its long-term stability requires reforms and the promotion of individual savings.

2.2. Germany

Germany is an example of the traditional Bismarck model based on the principle of a generational contract – those currently working finance the benefits of current pensioners. The pension system in this country is considered stable and well-developed, but at the same time it faces demographic challenges that are forcing reforms. The German pension system shows how a large and mature pay-as-you-go system works in a Western European country.

The applicable statutory of pension system in Germany are Social Security Code (Sozialgesetzbuch), Book VI, introduced by the Pension Reform Act (Rentenreformgesetz) of 18 December 1989 in the version published on 19 February 2002 (BGBl. I p. 754, 1404, 3384), last amended by Article 11 of the law of 18 December 2024 (BGBl. I no. 423) (https://natlex.ilo.org/dyn/natlex2/r/natlex/fe/details?p3_isn=61881). There is a compulsory social insurance scheme financed by contributions and taxes under the ‘pay as you go’ (PAYG) system covering employees and certain groups of self-employed providing earnings-related pensions depending mainly on contributions and the duration of affiliation (1st pillar) in Germany. The amount is determined based on a points system; the calculation contains performance-based and contribution-based elements. Setting up a supplementary pension is not obligatory and may be done by the employer as part of the company pension scheme (2nd pillar) or as a supplementary private pension scheme (3rd pillar). The state helps with setting up a supplementary fully funded pension fund with allowances, tax benefits and contribution reductions to social security. Persons in need who live in Germany and have reached the statutory retirement age may apply for basic old-age benefit. The information given below refers only to the compulsory social insurance system (1st pillar).

A standard retirement age in Germany is 67 years for persons born in 1964 and onwards. The standard retirement age will be gradually increased to 67 years from 2012 to 2031, starting with those born in 1947. The first increase amounted to one month per year (from 65 to 66 years old) and since 2024 the following increase to two months per year (from 66 to 67 years old). For all those born before 1947, the standard retirement age of 65 years shall apply. For insured persons who were born in 1959, the age limit will rise to 66 years and two months in 2025. The general qualifying period is 5 years of contribution and substitute periods. There is no concept of a full working career or a full insurance term in Germany.

The following early pension options are available in Germany:

- an early old-age pensions for long-term insured persons: can be drawn as of the age of 63 with permanent deductions from the pension of 0.3% per month for claiming early, if at least 35 years of pension contribution periods have been accrued;

- an early old-age pension without deductions for exceptionally long-term insured persons: conditions for this are at least 45 years of compulsory contributions from employment, self-employment and caregiving, plus time spent raising children below 10. Periods of voluntary contribution, where there have been at least 18 years of compulsory contributions can also be included. Periods of unemployment benefit receipt and other unemployment insurance benefits are included to avoid particular hardship due to brief interruptions in earnings history because of unemployment. Not included are periods during which unemployment insurance benefits were drawn if they are in the last two years before retirement, unless they were caused by bankruptcy or full suspension of business by the employer. The retirement age for early pensions will gradually be raised from 63 to 65 in accordance with the statutory retirement age. This increase has started in 2016, for persons born in 1953, with an increase of 2 months. The age limit will be raised by 2 further months in each subsequent year. The age limit of 65 will be reached for persons born in 1964;
- an early old-age pension for people with severe disabilities: while the statutory retirement age for old-age pensions for people with severe disabilities will be raised gradually from 63 to 65, this pension can also be drawn early with permanent deductions of 0.3% per month if the claimant has a severe disability and 35 years of pension contributions. The age at which people with severe disabilities can draw an old-age pension early will be increased gradually from 60 to 62 for people born in 1952 and onwards, in line with the increase in the statutory retirement age. To compensate for the longer duration of pension payments, the non-deduction-free pension will be reduced by 0.3% for each month (3.6% per year) that is taken prior to the standard retirement age (in case of old-age pension for persons with severe disability before the age of 65).

The pension system in Germany is well organized. It is a diversified system based on three pillars (public, occupational, and private). The German pension system is geared toward professional activity and private savings. Although it is a fairly stable system, it also requires reform, especially in the context of an aging society.

Both the Polish and German pension systems are based on three pillars. The rest of this article focuses on 1st pillar. The 1st pillar in Poland is a mandatory pay-as-you-go system managed by the Social Insurance Institution (Chłoń-Domińczak, Strzelecki, 2010). In Germany the 1st pillar is statutory pension insurance (Gesetzliche Rentenversicherung - GRV) (Deutsche Rentenversicherung, 2023).

3. The effectiveness of the pension system in two selected European Union countries

The primary objective of the pension system is a social one, namely to provide income for the elderly. The financial stability of the system enables this objective to be achieved. The effectiveness of the pension system, understood as its ability to provide adequate pension benefits, is the subject of frequent debate, which is why it is so important to examine issues related to the effectiveness of this system.

The concept of efficiency is one of the most frequently used concepts in economics. Efficiency is treated as one of the basic categories used to describe the state of functioning and determine the chances of survival and development of all systems (Gospodarowicz, 2010). M. Góra, among others, writes about the efficiency of the pension system. According to the author, the purpose of the pension system is to provide funds to finance the consumption of successive generations of pensioners, with the least possible burden on the working generations. M. Góra emphasizes that the condition of the smallest possible burden on the working generations is crucial, because the most important thing is not for the system to pay high pensions, but to provide income to all persons covered by the system for the entire period after the end of their professional activity (Góra, 2003; Chybalski, 2012). One of the economic measures used to determine an efficient pension system is performance indicators. Methods and techniques structured in the form of measurement systems are used to measure performance (Kennerley, Neely, 2002).

The efficiency indicators combine information about outcomes and inputs. They are constructed based on the following principles: the difference between inputs and outcomes, the ratio of inputs to outcomes, and the ratio of the difference between outcomes and inputs to inputs. Such an approach to efficiency can be transferred to the social insurance system by modifying its components according to the principle that inputs are the total financial resources accumulated within the system, while outcomes are the total value of all benefits paid to eligible individuals according to the criteria defined by the system's designer. R. Garbiec points out that the financial efficiency of the pension system should be based on actuarial calculations, i.e., it should be based on the principle that the expenditures incurred (contributions) should equal or exceed the effects incurred (benefits paid). To achieve this, it is necessary to balance the system's revenues and expenditures. Balancing income and expenditure in the system, i.e. the discounted value of all contributions paid into the system during all months of insurance (in a given year) plus any reserves (or the initial debt of the system) must equal the current discounted value of all benefits paid (Garbiec, 2013). The author presents the financial efficiency of the system by defining a general formula as follows:

$$\left\{ \begin{array}{l} \text{for } Sk \geq Sw + K \text{ } f(Se) \geq 1 \text{ effective system (insurance)} \\ \text{for } Sk < Sw + K \text{ } f(Se) < 1 \text{ inefficient system} \\ \text{(insurance + supply = hybrid)} \end{array} \right. \quad (1)$$

where:

$f(Se)$ – financial efficiency of the pension system,

Sk – pension insurance contributions,

Sw – benefits paid from the system,

K – administrative costs.

Taking such relationships into account, a net financial efficiency measure of the system ($WEFS_n$) can be defined. It indicates the extent to which contributions cover the benefits paid out from a given system or subsystem and is expressed by the following formula:

$$WEFS_n = \frac{\Sigma \text{ contributions}}{\Sigma \text{ benefits}} \quad (2)$$

Considering the above assumptions, it can be concluded that for a pension system to be effective and efficient, it should be balanced, i.e., the accumulated pension insurance contributions should at least cover the pension benefits paid (Garbiec, 2013). Tables 3 and 4 present the financial efficiency of the public pension system in the years 2021-2024 in two countries discussed.

Table 3.

Financial efficiency of the public pension system in Poland in 2021-2024

Year	Income from pension insurance contributions (in billions of euros) ¹	Expenditure on pension benefits (in billions of euros) ¹	Net financial efficiency
2021	53,66	65,23	0,8226
2022	62,01	71,14	0,8716
2023	70,71	75,16	0,9408
2024	81,42	ok. 86,80 (lack of official data)	0,9380

Note: ¹Average euro exchange rate as of July 18, 2025, according to data from the National Bank of Poland = 4,2509 PLN.

Source: Own elaboration based on: GUS data, <https://stat.gov.pl/>, 1.08.2025.

There is no clearly published public statement showing the total amount of pension contributions paid to the Social Insurance Fund in Poland. The Social Insurance Institution (ZUS) reports total revenues from social contributions (pension, disability, sickness, accident, etc.), while pensions account for approximately 80% of all benefits paid.

The gross financial efficiency measure indicates the extent to which contributions cover the benefits paid out from the system and the costs incurred in administering the system, while the net financial efficiency measure indicates the extent to which contributions cover the benefits paid out from the system (Garbiec, 2013). In view of the above, this type of indicator has been used in the tables presenting the financial efficiency of the public pension system in Poland and Germany.

Table 4.*Financial efficiency of the public pension system in Germany in 2021-2024*

Year	Income from pension insurance contributions (in billions of euros)	Expenditure on pension benefits (in billions of euros)	Net financial efficiency
2021	262,1	347,7	0,7538
2022	275,0	359,5	0,7649
2023	373,9	379,8	0,9845
2024	304,8	413,0	0,7380

Source: Own elaboration based on: <https://www.bundesamtsozialesicherung.de/de/themen/rentenversicherung/beitraege>, 1.08.2025 and <https://www.bpb.de/themen/soziale-lage/rentenpolitik/289559/rentenfinanzen-im-ueberblick/?utm>, 1.08.2025.

By analyzing the data presented in Table 3, it can be observed that the Polish pension system is not financially efficient. The shortfall in funds within the system is financed through taxes in the form of a so-called supplementary subsidy from the state budget, where it constitutes the largest component of the so-called fixed expenditures. These expenditures must be covered by current tax revenues. The social insurance system in Poland is funded by contributions from insured individuals and employers. The obligation to pay contributions applies to most working people, those running business activities, and individuals engaged under civil law contracts in Poland. The deficits of the Polish social insurance system, which can be observed by analyzing the data in Table 3, are financed by state supplementary subsidies. An aging society and a low birth rate put the Polish pension system under financial pressure, as fewer people are working and paying contributions, while the number of pension benefit recipients (pensioners) is increasing. Additionally, the system is burdened by high administrative costs and taxes, which reduces the efficiency of accumulating funds for future pensions.

The situation is similar in the case of the German pension system (Table 4), where the German government transfers billions of euros annually in the form of so-called budgetary subsidies (Bundeszuschüsse) to increase revenues in the pension system. This system, despite its relative stability, also faces certain challenges. The biggest problem is an aging population, which puts a strain on the system and threatens its financial stability in the future. There is also concern about the adequacy of future pensions due to uncertainty regarding the level of benefits and a general lack of trust in the system. Data presented in Table 4 show that the state budget significantly supports the financing of benefit payments (by about 25-30%). Germany, a classic example of a welfare state, is unable to sustain such heavy budgetary burdens in the long term. The need for changes is influenced both by unfavorable demographic forecasts — such as population aging and declining birth rates — and economic fluctuations, which during crises lead to rising unemployment, thereby reducing the number of contribution payers and increasing the number of beneficiaries. As a result, the pay-as-you-go system proves inefficient and begins to resemble a financial pyramid scheme. As long as the number of contributors grew and the group of beneficiaries remained relatively stable, the system functioned properly.

4. Conclusions

The hypothesis was that the pension system in selected European countries is not a sustainable system, which assumes that the amount of pension contributions collected is sufficient to cover the payment of current pension benefits. The data presented in the article concerning two representative EU countries, along with the financial efficiency indicators of the Polish and German pension systems, confirm the hypothesis put forward in the article.

Contemporary pension systems in highly developed countries face numerous challenges resulting from ongoing demographic processes. Aging populations, along with a declining birth rate, contribute to changes in the population structure. Therefore, there is an increasing need to reform pension security systems to adapt them to the current demographic situation. In most cases, governments first decide to modify the retirement age. An individual's decision to stop working is closely linked to the organization of universal pension systems — established retirement age or availability of early retirement (Cycoń, Jedynak, 2024).

The European Union, as an international organization, does not have the authority to directly shape social policy in member states. Nevertheless, due to the scale of challenges in this area, it engages in a number of initiatives, particularly concerning pension systems. Despite differences in the institutional arrangements of individual countries, both implemented reforms and those proposed by the EU demonstrate a common direction of change. This involves striving to ensure the financial stability of pension systems by reducing benefit levels while maintaining their minimum adequacy (Czepulis-Rutkowska, 2016). Managing the finances of the pension system so that it is sustainable—and therefore efficient and effective—is primarily possible in two ways. One can either increase contributions or reduce the amount of benefits paid. Unfortunately, given adverse demographic changes and continuously rising living costs, the latter approach of reducing benefits carries more negative than positive consequences, as it would certainly mean a significant reduction in the current standard of living.

The pension system is linked to other areas of the economy, including the labor market and demographics. Deep changes in the pension systems of the EU countries are inevitable - the system needs to be strengthened through broader fiscal reforms, social activation, and increased trust in the system. In light of current demographic trends and projections for 2030-2050, as well as the growing financial inefficiency of pension systems in the EU countries, reforms from earlier years prove to be insufficient. Further reforms and directions of change should include areas such as activating older workers and women, balancing the system by adjusting the retirement age to life expectancy (the OECD suggests aligning retirement ages for women and men), and implementing tax and fiscal reforms. The observed trend of equalizing the retirement age for women and men, along with raising the retirement age, is the most commonly used tool for pension system reforms. However, it is important that this process be

gradual and take into account differences between various occupational groups. Equally important is encouraging people to remain active in the workforce for longer. The balance in the pension system can also be achieved by increasing the level of pension contributions allocated for benefit payments. However, this should be done slowly and gradually.

It is worth noting that every pension system reform is a long-term and multifaceted process, and there is no single universal solution that would fully resolve all problems. It is important to take into account the unique demographic, social, and economic conditions of each country and to base reforms on broad social consensus.

Due to the length of the article, it does not address the political aspects and social feasibility of implementing pension reforms. Potential future publications may focus on issues such as stakeholder resistance, the relationship between the chosen social policy path, and the latest trends in public opinion.

References

1. Baulkaran, V. (2022). Personal bankruptcy and consumer credit delinquency: The case of personal finance education. *International Review of Financial Analysis*, 81, Article 102098. <https://doi.org/10.1016/j.irfa.2022.102098>
2. Bednarczyk, T.H. (2015). Wyzwania demograficzne dla systemów emerytalnych w Unii Europejskiej. *Annales Universitatis Mariae Curie-Skłodowska Lublin – Polonia, Sectio H, Vol. XLIX*, 2, pp. 33-50. DOI:10.17951/h.2015.59.2.33
3. Chen, G., Liu, Y., Gao, Q., Zhang, J. (2023). Does regional services development enhance manufacturing firm productivity? A manufacturing servitization perspective. *International Review of Economics & Finance*, 86, pp. 451-466. <https://doi.org/10.1016/j.iref.2023.03.020>.
4. Chłoń-Domińczak, A., Strzelecki, P. (2010). The minimum pension as an instrument of poverty protection in the defined contribution pension system – an example of Poland. *MPRA Paper*, 25262. Germany: University Library of Munich.
5. Chybalski, F. (2012). Skuteczność i efektywność systemu emerytalnego. Koncepcja analizy i próba pomiaru. *Zeszyty Naukowe, Nr 1111, Rozprawy Naukowe, Z. 419*. Łódź: Politechnika Łódzka, p. 74.
6. Cycoń, M., Jedynak, T. (ed.) (2024). Nowe horyzonty zabezpieczenia społecznego. *Przegląd ubezpieczeń*, 2. Kraków: Fundacja Uniwersytetu Ekonomicznego w Krakowie, p. 82.
7. Czepulis-Rutkowska, Z. (2016). Trends in Pension Systems i Europe. *Social Policy, No. 1, ENG/2016*. Warsaw: Institute of Labour and Social Studies.

8. Deutsche Rentenversicherung (2023). *Rentenversicherung in Zahlen 2023*. <https://www.deutsche-rentenversicherung.de>, 18.07.2025.
9. Europejski Trybunał Obrachunkowy (2025). *Sprawozdanie specjalne, 14, pt. Upowszechnienie dodatkowych programów emerytalnych w UE – działania Unii na rzecz zwiększenia roli pracowniczych programów emerytalnych i utworzenia ogólnoeuropejskiego indywidualnego produktu emerytalnego okazały się nieskuteczne*. Urząd Publikacji Unii Europejskiej.
10. Fang, J., Liu, Y., An, Y., Zhou, K. (2023). The macroeconomic impact of demographic shifts: Aging populations and their socioeconomic consequences. *Law and Economy*, 2(11), pp. 37-43. <https://doi.org/10.56397/le.2023.11.05>
11. Fihel, A., Okólski, M. (2017). Starzenie się ludności w Polsce w warunkach intensywnej migracji międzynarodowej. In: P. Lewandowski, J. Rutkowski (ed.), *Starzenie się ludności, rynek pracy i finanse publiczne w Polsce* (p. 35). Przedstawicielstwo Komisji Europejskiej w Polsce.
12. Garbiec, R. (2013). *Efektywność finansowa publicznego systemu ubezpieczeń społecznych w Polsce po reformie w 1999 roku*. Wydawnictwo Politechniki Częstochowskiej, pp. 26-29.
13. Garbiec, R. (2022). Przyszłość polskiego systemu emerytalnego. *Zeszyty Naukowe Wyższej Szkoły Bankowej w Poznaniu*, vol. 98, no. 3, pp. 47-57, <https://doi.org/10.5604/01.3001.0016.2750>.
14. Góra, M. (2003). Inne spojrzenie na podstawowe zagadnienia ekonomii emerytalnej. *Ekonomista*, 4, pp. 479-500.
15. Gospodarowicz, M. (2010). *Parametryczna analiza efektywności technicznej gospodarstw wysokotowarowych w latach 1992-2005. Efektywność - rozważania nad istotą pomiarem*. Dudycz, T., Osbert-Pociecha, G. (eds.). Wrocław: Wydawnictwo Uniwersytetu Ekonomicznego we Wrocławiu.
16. Hinrichs, K. (2021). Recent pension reforms in Europe: More challenges, new directions. An overview. *Social Policy & Administration*, Vol. 55, Iss. 3, *Inequalities in pension and retirement. Life-courses and pension systems in comparative perspective*, pp. 409-422. <https://doi.org/10.1111/spol.12712>
17. https://employment-social-affairs.ec.europa.eu/policies-and-activities/moving-working-europe/eu-social-security-coordination/specialised-information/social-protection-systems-missoc_pl, 18.07.2025.
18. <https://eur-lex.europa.eu/PL/legal-content/summary/missoc-mutual-information-system-on-social-protection.html?fromSummary=17>, 18.07.2025.
19. <https://isap.sejm.gov.pl/>, 1.08.2025.
20. <https://polandweekly.com/>, 17.08.2025.
21. <https://stat.gov.pl/>, 1.08.2025.

22. <https://www.bpb.de/themen/soziale-lage/rentenpolitik/289559/rentenfinanzen-im-ueberblick/?utm>, 1.08.2025.
23. <https://www.bundesamtsozialesicherung.de/de/themen/rentenversicherung/beitraege>, 1.08.2025.
24. <https://www.riksdagen.se/sv/dokument-lagar/?doktyp=sfs&dokstat=g%c3%a4llande>, 18.07.2025.
25. Kennerley, M., Neely, A. (2002). *Performance measurement Framework*. Neely, A. (ed.). Business Performance Measurement. Theory and practice Cambridge University Press, pp. 145-155.
26. Kolek, A. (2025). Demographic change and the pension system: are we prepared for the future? [Zmiany demograficzne a system emerytalny: czy jesteśmy przygotowani na przyszłość?. Social Dissertations]. *Rozprawy Społeczne*, 19(1), pp. 157-167. <https://doi.org/10.29316/rs/204740>
27. Law on Social Insurance Fund Pensions of December 17, 1998.
28. Law on the Honorary benefit for turning 100 years of age of October 18, 2024.
29. Law on the Social Insurance System of October 13, 1998.
30. Li, S., Lin, S. (2023). Housing property tax, economic growth, and intergenerational welfare: The case of China. *International Review of Economics & Finance*, 83, pp. 233-251. <https://doi.org/10.1016/j.iref.2022.07.010>
31. MISSOC database (Mutual Information System on Social Protection), <https://www.missoc.org/missoc-database/>, 1.08.2025.
32. Social Security Code (Sozialgesetzbuch), Book VI, introduced by the Pension Reform Act (Rentenreformgesetz) of 18 December 1989 in the version published on 19 February 2002 (BGBl. I p. 754, 1404, 3384), last amended by Article 11 of the law of 18 December 2024 (BGBl. I no. 423). https://natlex.ilo.org/dyn/natlex2/r/natlex/fe/details?p3_isn=61881, 1.08.2025.
33. Uścińska, G. (2012). Uwarunkowania prawne współczesnych systemów emerytalnych. Polski system emerytalny. *Zeszyty Naukowe Zakładu Zabezpieczenia Społecznego IPS UW*, nr 1, pp. 17-27.
34. Xia, C., He, Y., Heng, Y., Kang, K., Shenchen, H., Hao, Y., Meng, Z. (2025). Pension system reform, financial security, and the well-being of the elderly population: An analysis based on CSS data. *International Review of Economics and Finance*, 101 Article 104241, <https://doi.org/10.1016/j.iref.2025.104241>
35. Zhang, D., Wang, Y., Jiao, Y. (2022). The impact of social pension schemes on the mental health of the Chinese elderly: A mediating effect perspective of two-way intergenerational support. *International Journal of Environmental Research and Public Health*, 19(14), 8721. <https://doi.org/10.3390/ijerph19148721>