

The voluntary pension funds – a viable solution to supplement the pensioners' incomes

Mădălina-Gabriela ANGHEL

“Artifex” University of Bucharest, Romania
madalinagabriela_angel@yahoo.com

Dragoş Alexandru HAŞEGAN

Bucharest University of Economic Studies, Romania
dragos_has@yahoo.com

Abstract. *The voluntary pensions, known as Pillar III, are a part of the pension system in Romania and aim to ensure a separate private pension, which supplements the pension provided by the public system and, where available, the privately managed pension. In fact, the voluntary pension is a long-term savings product, the participant and/or employer for its employees may choose to contribute to the individual account with an amount between a minimum amount, established by each voluntary pension fund prospectus and a maximum of 15% of the gross monthly salary income or of the income assimilated to it. At any time, the participant has the possibility to stop paying the contributions, keeping all his rights, according to the rules of the voluntary pension scheme. When he wants, he will be able to resume paying the contributions to the same fund or he can opt for another one. The participant also has the right to change the level of contributions at any time, provided that this level is included in the specified range.*

Keywords: voluntary pension, participant, fund, contribution, personal assets.

JEL Classification: C40, J32.

Introduction

The Law no. 204/2006 represents the legal framework that regulates Pillar III on voluntary pensions, with subsequent amendments and completions. Compared to the privately managed pension system, which imposes certain age restrictions on the payment of personal assets, in the case of voluntary pensions they are eliminated. Specifically, the right to a voluntary pension is opened, at the participant's request, when the following conditions are cumulatively met: the participant reaches the age of 60 and the payment of at least 90 monthly contributions. These monthly contributions may or may not be consecutive. Participants or beneficiaries (in the case of deceased participants) will be paid the amount accumulated in the personal account in the form of a single or installment payment, in equal monthly installments, with a value of at least 500 lei, for a maximum period of 5 years (except for the last installment which will be a residual rate).

Literature review

Alserda, Dellaert, Swinkels and van der Lecq (2019) stated that group pension plans must demonstrate that participants' risk-taking attitudes are properly reflected in the plan's asset allocations. Anghel and Hașegan (2019) analyzed the main aspects regarding the profitability of pension funds in Romania. Anghelache and Anghel (2019) highlighted the importance of using statistical methods and models in economic studies. Anghelache (2008) is a reference work in the field of economic analysis. Barr and Diamond (2009) established a set of principles for the design of multi-objective pension systems and the analysis of the pension system as a whole, as well as the fact that different systems share risks differently and have different effects depending on generation and gender. Beetsma, Romp and Vos (2012) analyzed the feasibility and welfare consequences of a voluntary funded pension system and the sharing of risk between generations. Bouchet, Marchiori and Pierrard (2017) used an OLG model to propose a pension reform capable of supporting an entire retirement system, given the profound demographic changes. Cagetti (2003) addressed a number of issues related to accumulation and saving over a lifetime. Casey and Dostal (2013) sought to identify whether the participation of low-income people in voluntary pension schemes is justified. Chen, Beetsma, Ponds and Romp (2016) investigated the benefits of intergenerational risk sharing through privately funded pensions and public debt. Coile and Gruber (2007) used data from a survey to examine the impact of social security incentives on retirement behavior. Creedy and Guest (2008) provided a general equilibrium analysis applied to several alternative tax regimes for private pensions, their analysis focusing on the implications of this pension tax regime, but also of others, for intergenerational equity, the national level of living, labor supply, saving and social welfare. Draper, Westerhout and Nibbelink (2017) showed that the gain in welfare due to the division of risks between generations is higher than the cost of labor market distortions. An interesting topic is addressed by Foster (2015) on the elderly who do not have private pensions and the role of the state in providing pensions. Hairault, Langot and Sopraseduth (2010) presented empirical and theoretical evidence in favor of the view that the decision on the standard retirement age affects the employment of older workers in the period before retirement. Hașegan (2019) conducted a comprehensive

analysis of the Second Pillar of pensions in Romania. Iacob (2019a) analyzed the way and the extent to which the activity of economic entities is influenced by physical phenomena and processes. Iacob (2019b) applied statistical instrumentation in economic studies. Manchester (2010) referred to the impact of the type of pension plan on retirement age. Naczyk and Domonkos (2015) analyzed the main aspects that characterize existing private pensions in Eastern Europe. Novy-Marx and Rauh (2011) conducted a study in which they calculated the current value of pension debts of employees in the public system, using discount rates that reflect the risk of payment from the taxpayer's perspective. Thomas and Spataro (2016) analyzed the correlation between pension funds, the labor market and economic growth. Zandberg and Spierdijk (2010) sought to identify the extent to which pension funding and economic growth are correlated.

Data, results and discussions

In this article we analyzed the main indicators that characterize Pillar III of pensions (number of participants, depending on other criteria, market share, total asset value, net asset value), by using tables, graphs and statistical and econometrical methods., such as dynamic series and the index method.

According to the legal provisions in force, the participant in a voluntary pension fund is:

- the employee, the civil servant or the person authorized to carry out an independent activity;
- the person who carries out his activity in elective positions or who is appointed within the executive, legislative or judicial authority, during the mandate;
- member of a cooperative society, according to Law no. 1/2005 regarding the organization and functioning of the cooperation;
- another person who earns income from professional or agricultural activities.

Regarding the number of participants in voluntary pension funds in Romania, at the end of 2019 there were 501,123 people registered, increasing by 6.13% compared to the previous year.

Table 1. *Number of participants in voluntary pension funds in Romania, in the period 2007-2019*

Year	No. of participants	Change y-o-y (%)**
2007	50,887	-
2008	150,745	196.23
2009	187,172	24.16
2010	221,605	18.40
2011	260,379	17.50
2012	292,146	12.20
2013	313,348	7.26
2014	346,452	10.56
2015	382,318	10.35
2016	410,241	7.30
2017	446,131	8.75
2018	472,167	5.84
2019	501,123	6.13

Source: Financial Supervisory Authority, accessed April 21, 2020, own systematization.

*End of December values.

**Own calculations.

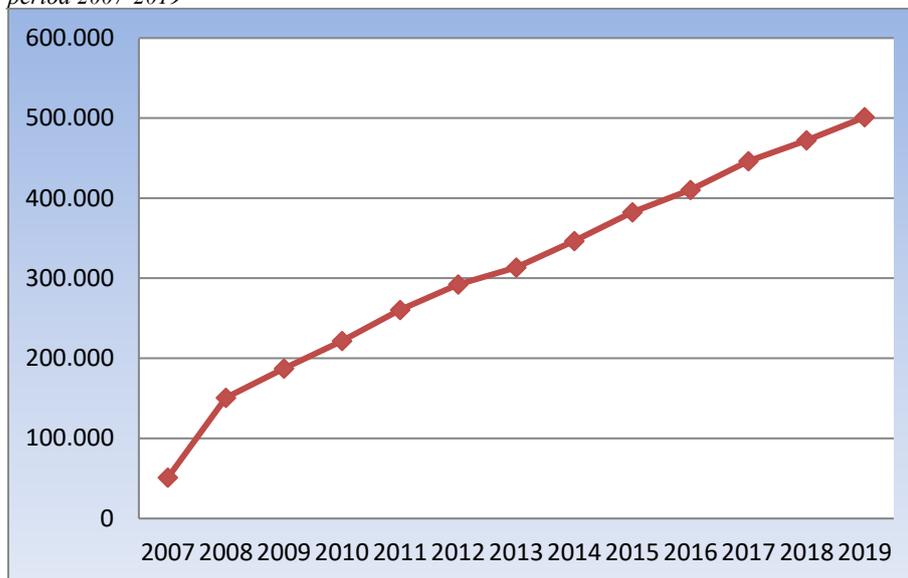
The number of participants in Pillar III has registered a continuous increase since the beginning of the operation of the system until now. The most significant increase compared to the previous year was recorded in 2008, i.e. an increase of 196% compared to 2007, but it should be noted that in 2007 the number of participants is only for seven months, taking into account that the beginning of the collection of contributions to the voluntary pension scheme was launched in June 2007.

Starting with 2009, the increases were, at the beginning, higher, after which, since 2012, the pace of the change has been slower, decreasing from one year to another. The exception is 2013, when the reduction was much steeper, of approx. 5 percentage points compared to the previous year. Since 2014, growth has continued, but at a slower pace. The declining trend of the growth rate is based on the lack of interest of certain categories potential participants, as well as their modest financial resources. However, in 2019, there were over half a million participants in voluntary pension funds, which represents about 10% of the total number of employees in the economy.

Analyzing the data from 2019 compared to 2007, there is an increase in the number of participants by 450,236 people, representing a rate of change of 884.78%. This significant increase is determined by the active promotion of Pillar III pensions, a context in which more and more people are convinced of the advantages that this system offers to increase incomes after retirement.

The graphical representation of the evolution of the number of participants in voluntary pension funds in Romania is highlighted in Figure 1.

Figure 1. *The evolution of the number of participants in the voluntary pension funds in Romania, in the period 2007-2019*



Source: Own representation based on data published by the Financial Supervisory Authority.

For a relevant analysis of the voluntary pension system, it is important not only the total number of participants, but also especially the profile of the participant, thus this aspect will be studied from the point of view of gender and age group.

Regarding the distribution by gender of the participants in the voluntary pension funds in Romania, throughout the period under analysis, it is found that the share of females is predominant. Exceptions are the years 2008 and 2009, specific to the period of the economic and financial crisis, when a number of jobs were lost, especially by women, thus the share of men marking a slight superiority.

Table 2. Gender distribution of participants in voluntary pension funds in Romania, in the period 2007-2019

Year*	Women		Men	
	No. of participants	Share** (%)	No. of participants	Share** (%)
2007	26,520	52.12	24,367	47.88
2008	74,574	49.47	76,171	50.53
2009	93,503	49.96	93,669	50.04
2010	112,084	50.58	109,521	49.42
2011	131,891	50.65	128,488	49.35
2012	148,788	50.93	143,358	49.07
2013	159,730	50.98	153,618	49.02
2014	175,095	50.54	171,357	49.46
2015	192,817	50.43	189,501	49.57
2016	207,225	50.51	203,016	49.49
2017	226,498	50.77	219,633	49.23
2018	241,023	51.05	231,144	48.95
2019	256,711	51.23	244,412	48.77

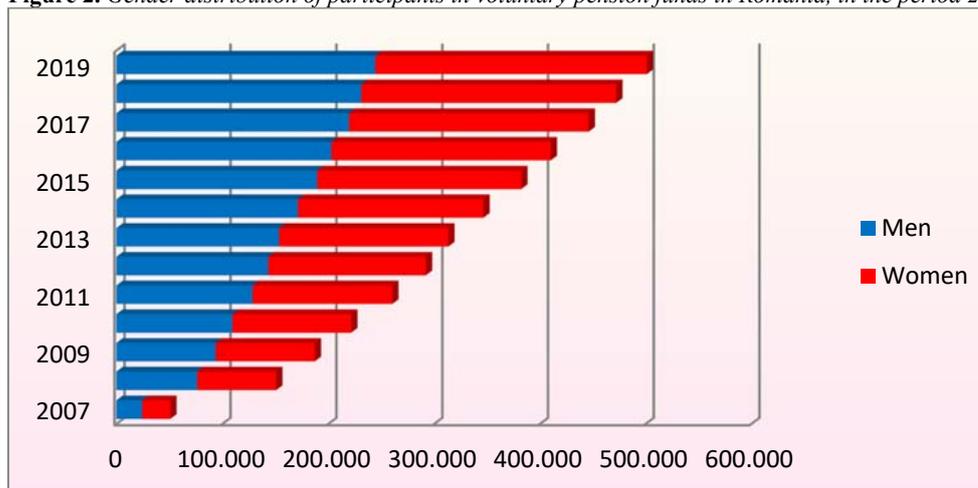
Source: Financial Supervisory Authority, accessed April 21, 2020, own systematization.

*End of December values;

**Own calculations.

There is a balanced situation, the differences between the two genders being less than 1%, aspects highlighted in the graphical representation of the data in Figure 2.

Figure 2. Gender distribution of participants in voluntary pension funds in Romania, in the period 2007-2019



Source: Own representation based on data published by the Financial Supervisory Authority.

Regarding the distribution by age groups of the participants, in the whole analysed interval, the age group 16-29 years was the weakest represented. Regarding the other two groups, until 2013 inclusive, the age group 30-44 years registered the most participants in voluntary pension funds. The situation has changed starting with 2014, due to the fact that the new members were older, but also to the fact that after seven years, the active participants moved from the second group to the third. Thus, in the period 2014-2019, most participants are part of the group over 45 years, which records increases from one year to another. It should be noted that, in 2019, the number of participants in the third group reached 266,156, more than half of the total number registered at system level.

Table 3. Distribution by age groups of participants in voluntary pension funds in Romania, in the period 2007-2019

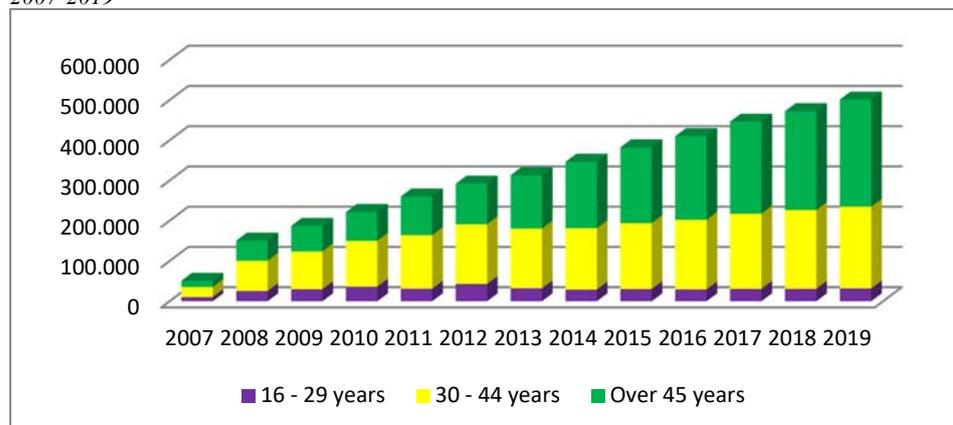
Year*	Age groups		
	16-29 years	30-44 years	Over 45 years
2007	10,247	25,103	15,537
2008	25,496	75,302	49,947
2009	29,842	93,982	63,348
2010	36,295	114,036	71,274
2011	31,183	133,129	96,067
2012	42,880	148,557	100,709
2013	32,117	148,564	132,667
2014	28,917	152,678	164,857
2015	30,293	163,867	188,158
2016	29,354	173,077	207,810
2017	30,769	186,834	228,528
2018	30,780	195,811	245,576
2019	31,710	203,257	266,156

*End of December values.

Source: Financial Supervisory Authority, accessed April 21, 2020, own systematization.

For a better understanding of the evolution of the distribution by age groups of the participants in the voluntary pension funds in Romania, from the beginning of the operation of the system until now, the data are presented graphically in Figure 3.

Figure 3. Distribution by age groups of participants in voluntary pension funds in Romania, in the period 2007-2019

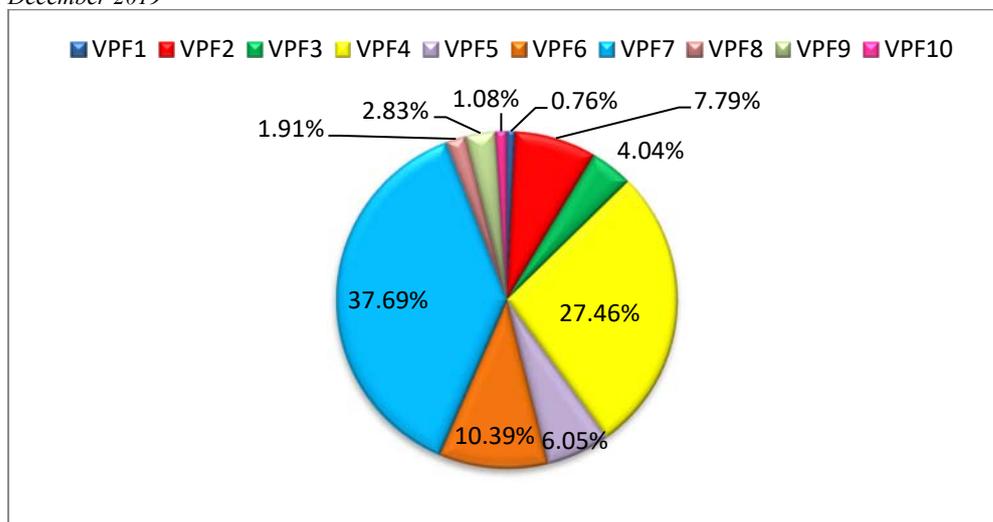


Source: Own representation based on data published by the Financial Supervisory Authority.

There are currently ten voluntary pension funds operating, of which eight are included in the medium risk category and two are characterized by a high degree of risk.

Regarding the market share of voluntary pension funds according to the number of participants, at the end of 2019, there is an inhomogeneous structure, two funds holding together a share of over 65%. These are followed by three funds with shares in the range of 6-10%, the remaining five funds having market shares below 5%. The data are represented graphically in Figure 4

Figure 4. Market share according to the number of participants in voluntary pension funds in Romania, in December 2019



Note: The voluntary pension funds are coded by authors with numbers from 1 to 10.

Source: Own representation based on data published by the Financial Supervisory Authority.

Regarding the allocation of resources by different asset classes, at the end of December 2019, the highest shares are related to government securities (56.42%), stocks (25.60%) and corporate bonds (8.39%). Investments in bank deposits, in December 2019 represented only 2.50% of total assets.

The assets of Pillar III were invested, in a proportion of over three thirds in Romania, while the difference in the European Union and the European Economic Area. Thus, fund managers invest in Romanian financial instruments such as government securities, bonds, deposits and Undertakings for the Collective Investment in Transferable Securities (UCITS). The foreign assets in which the pension management invests are financial instruments of issuers from the USA, the Netherlands, Germany, Luxembourg, Ireland, France and the United Kingdom or of the type of bonds issued by the EBRD, the EIB, etc. Of all foreign currency investments, the largest share is held by the euro, followed by the US dollar.

In accordance with the legal provisions in force, the administrator of the voluntary pension fund invests in the types of financial instruments presented in Table 4.

Table 4. Types of the financial instruments and the maximum percentage in which they can be invested from the total value of the assets of the voluntary pension fund

Type of the financial instrument	Maximum percentage that can be invested from the total value of the assets of the voluntary pension fund (%)
Money market instruments, including accounts and deposits in lei at a bank	20
Government securities issued by the Romanian Ministry of Public Finance, issued by member states of the European Union or belonging to the European Economic Area	70
Bonds and other securities issued by local public administration authorities in Romania or in EU Member States or belonging to the EEA	30
Securities traded on regulated and supervised markets in Romania, EU Member States or EEA	50
Government securities and other securities issued by third countries	15
Bonds and other securities traded on regulated and supervised markets, issued by local government authorities in third countries	10
Bonds and other securities of foreign non-governmental organizations, if these instruments are listed on authorized stock exchanges and meet the rating requirements	5
Participation certificates issued by collective investment undertakings in securities from Romania or from other countries	5

Source: Law no. 204/2006 on voluntary pensions, with subsequent amendments and completions; own systematization.

To these forms of investment are added others which are provided for by the rules adopted by the supervisory authority. The legislator also established the maximum percentages that are allowed to be invested in the assets of a voluntary pension fund, depending on the type of issuer of financial instruments, i.e. the administrator of an voluntary pension fund has the right to invest a maximum of 5% in a single company or in each of its assets, respectively a maximum of 10% of the assets of a voluntary pension fund may be invested in the assets of a group of issuers and their affiliates.

An indicator that needs to be analyzed is the total value of the assets of an optional pension fund, which is determined by summing the value of all the assets in its portfolio. These assets can be financial and cash instruments, resulting from the investment of the personal assets of the participants. By subtracting the obligations of the voluntary pension fund from the total value of its assets, the net value of the assets of the respective voluntary pension fund is obtained, according to the following calculation formula:

$$VAN_{(i)} = VAT_{(i)} - VO_{(i)}$$

where:

$VAN_{(i)}$ – the net assets value of the voluntary pension fund “i”;

$VAT_{(i)}$ – the total assets value of the voluntary pension fund “i”;

$VO_{(i)}$ – the value of the obligations of the voluntary pension fund “i”.

The data registered by the voluntary pension system in Romania regarding the evolution of the value of the total asset and that of the net asset can be found in Table 5.

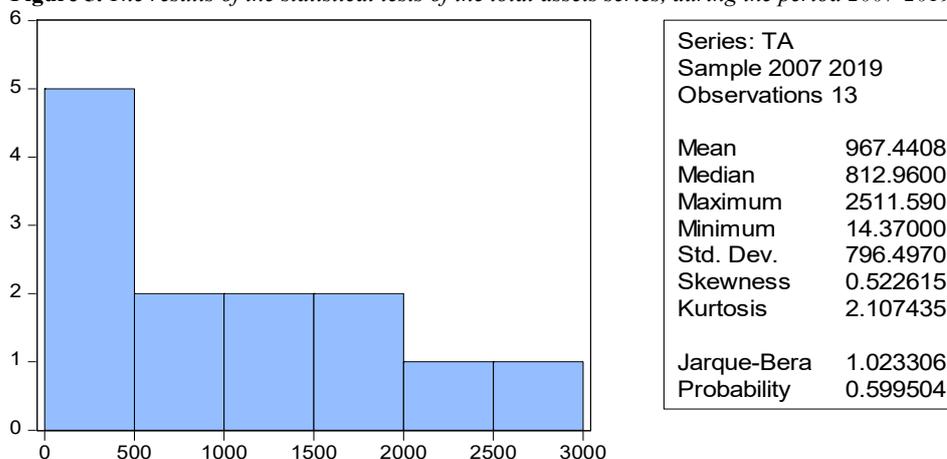
Table 5. The value of the total assets and the value of the net assets related to the Pillar III of pensions in Romania, during the period 2007-2019

Year *	Total assets (million lei)	Net assets (million lei)
2007	14.37	14.32
2008	84.42	84.29
2009	204.40	204.04
2010	328.61	328.0
2011	436.41	435.65
2012	599.97	598.92
2013	812.96	811.61
2014	1,041.52	1,039.79
2015	1,254.32	1,252.22
2016	1,504.07	1,501.66
2017	1,783.30	1,780.58
2018	2,000.79	1,997.47
2019	2,511.59	2,507.42

Source: Financial Supervisory Authority, accessed April 21, 2020, own systematization.

*End of December values.

The statistical tests applied for the data series regarding the evolution of total assets in the period under analysis reflected the fact that its average value is 967.44 lei. It can also be seen that the distribution of this data series does not correspond exactly to the normal distribution, a situation that cannot be considered to be very serious because it is specific to most data series in the financial field. The data are highlighted in Figure 5.

Figure 5. The results of the statistical tests of the total assets series, during the period 2007-2019

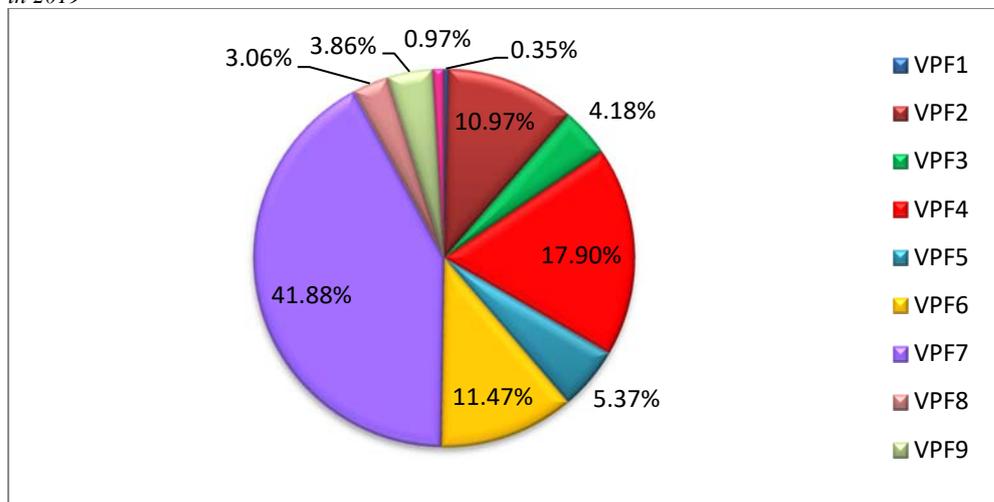
The statistics of the series show that the value of the total assets at the level of the voluntary pension system oscillated between a minimum of 14.37 million lei and a maximum of 2511.59 million lei. For the analyzed interval, the median value is 812.96 million lei.

The shape of a distribution is characterized by the flattening index (Kurtosis) and the asymmetry index (Skewness). The asymmetry index is positive or negative, as the distribution is asymmetric to the right or left. In the present situation, the analyzed series is characterized by positive asymmetry, as the Skewness index is positive, as a result the distribution is asymmetric to the right. Also, the positive value recorded by the Kurtosis index, but different from its reference level (3) shows that the series does not follow a

normal distribution, being leptokurtic, which implies a wide deviation of the extreme values from the average of the considered population.

The market share of voluntary pension funds in 2019 depending on the value of the net asset is presented in figure no. 6. As in the case of the market share according to the number of participants analyzed above, in this situation there is an inhomogeneous structure, the evolution being relatively similar, the same two funds above (7 and 4) holding together a share of about 60%. Five funds had market shares below 5%, and one fund had a very close share, respectively 5.37%. The other two funds had shares of about 11%.

Figure 6. Market share of the voluntary pension funds according to the value of net assets in Romania, in 2019



Note: The voluntary pension funds are coded by authors with numbers from VPF1 to VPF10.

Source: Own representation based on data published by the Financial Supervisory Authority.

Another important indicator that characterizes the activity of the voluntary pension system is the unit value of the net asset, which is calculated based on the calculation ratio below:

$$VUAN_{(t)} = \frac{VAN_{(t)}}{n_{u(t)}}$$

where:

$VUAN_{(t)}$ – the unit value of net assets on day “t”;

$VAN_{(t)}$ – the net value of the fund's assets on day “t”;

$N_{u(t)}$ – the number of the fund units on day “t”.

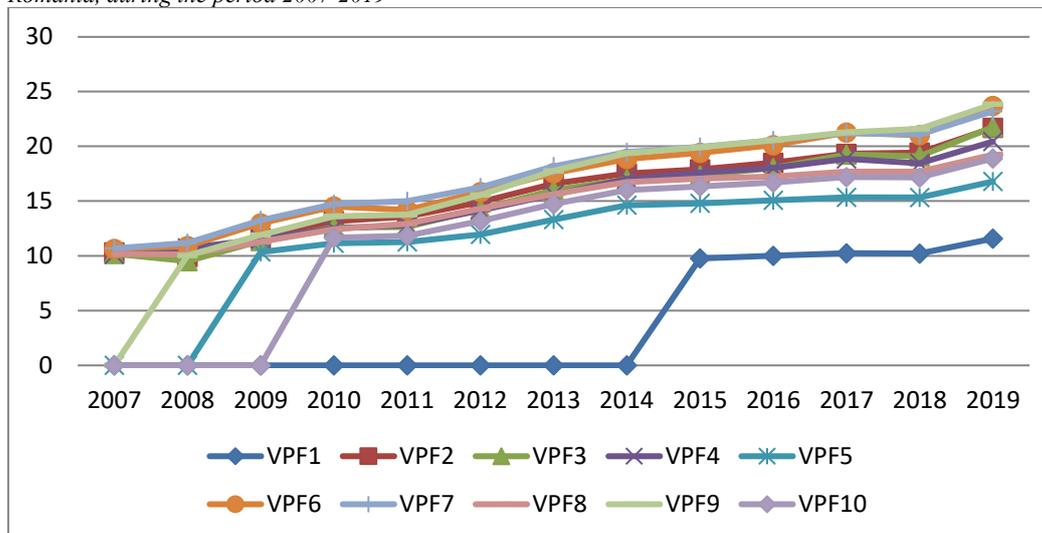
In Table 6 are presented the data registered, in the period 2007-2019, by the ten voluntary pension funds that were active at the end of 2019. We mention that, over time, four more voluntary pension funds have been present and operated on the market, but they no longer work. Of these, one fund operated only two, respectively in 2009 and 2010, another fund operated in the period 2008-2012, the third fund operated for six years, in the period 2009-2014, and the second the fourth fund has been active for four years, since the beginning of the system's operation, respectively in the period 2007-2010.

Table 6. The unit value of net assets recorded by voluntary pension funds in the period 2007-2019 (lei)

Year	VPF1	VPF 2	VPF3	VPF4	VPF5	VPF6	VPF7	VPF8	VPF9	VPF10
2007	0	10.3213	10.1817	10.1400	0	10.6300	10.6800	10.1678	0	0
2008	0	9.8958	9.5224	10.7104	0	10.8885	11.1692	10.1298	10.0218	0
2009	0	11.6064	11.3611	11.5216	10.3489	12.9631	13.2447	11.2748	11.9031	0.0000
2010	0	13.1625	12.6015	12.4956	11.1480	14.5023	14.7264	12.4264	13.6129	11.6495
2011	0	13.5844	12.6339	12.7935	11.2672	14.1857	14.9895	12.9240	13.7499	11.8344
2012	0	14.9085	14.2581	14.1510	11.9528	15.8129	16.2504	14.3020	15.5532	13.1648
2013	0	16.5809	15.9939	15.5936	13.3064	17.5494	18.1643	15.6303	17.7582	14.7249
2014	0	17.5145	16.9863	17.0080	14.6181	18.8455	19.4635	16.7241	19.3689	16.0049
2015	9.7625	17.8923	17.3522	17.6043	14.7949	19.4036	19.9407	17.0413	19.9089	16.3339
2016	10.0070	18.4979	18.0224	18.0191	15.0688	20.0998	20.5374	17.2340	20.5519	16.6913
2017	10.2360	19.3162	19.2421	18.8485	15.3411	21.2436	21.1984	17.6915	21.2703	17.1877
2018	10.2118	19.4265	19.0879	18.4423	15.3262	21.0142	21.0781	17.6884	21.5917	17.1582
2019	11.571807	21.685602	21.758347	20.432636	16.792615	23.690274	23.207055	19.245100	23.850858	18.885176

Note: The voluntary pension funds are coded by authors with numbers from VPF1 to VPF10; values recorded on the last working day of December.

The study of the presented data shows that each fund analyzed recorded the maximum unit value of net assets in 2019. Of these, three of the funds recorded the highest values at system level, respectively over 23 lei, and three other funds have registered VUAN of over 20 lei. The graphical representation of this indicator in the period 2007-2019 is highlighted in Figure 7.

Figure 7. The evolution of the unit value of the net asset registered by the voluntary pension funds in Romania, during the period 2007-2019

Note: The voluntary pension funds are coded by authors with numbers from VPF1 to VPF10.

Source: Own representation based on data published by the Financial Supervisory Authority.

Over the entire time period under analysis, it is found that all funds, with very few exceptions, recorded annual increases in the net asset value.

Until the end of 2019, in Romania, the value of assets paid from voluntary pension funds was 243.4 million lei, structured according to the data in Table 7. Starting with April 2018, participants can request the net asset also in the form of installments.

Table 7. *The value of assets paid from Pillar III funds*

	Single payments	Installment payments	Total
Death	14,279,822	634,175	14,913,997
Invalidity	1,395,141	41,846	1,436,987
Pension	202,355,518	24,717,806	227,073,324
Total	218,030,481	25,393,827	243,424,308

Source: own calculations based on data published by the Financial Supervisory Authority, accessed April 21, 2020, own systematization.

If the participant acquires illnesses that no longer allow the resumption of activity, he will receive a disability pension, in which case he can obtain the amount in his account in the form of a single payment or installments for a maximum of 5 years, if the asset his staff is not at least equal to the amount necessary to obtain the minimum optional pension provided by the legislation in force. We mention that the types and conditions for granting the private pension are included in the provisions of the Draft Law on the organization and functioning of the private pension payment system, which is currently in the process of public debate.

In the case of death of the participant, the law provides for the following situations of payment of the voluntary pension, which are presented below:

- if the death of the participant took place before the application for an optional pension was submitted, then the amount in the account will be paid to the beneficiaries, under the conditions and in the amount established by the individual act of accession and by the act of succession;
- if the participant has died after opening the right to an optional pension, then:
 - the related amounts will be paid to the nominated person or
 - if he has not chosen a type of voluntary pension with the survivor component, the related amounts will be paid to the beneficiaries.

Conclusions

The introduction of voluntary pensions was an important stage in the pension reform in Romania, aiming to reduce the pressure on the public pension system, by ensuring future retirees a private pension, which complements the public one.

The flexibility offered by the voluntary pension system is very high, the participant being the one who decides the pension fund or funds to which he contributes, the level of the contribution, as well as the contribution period. According to the law, the contributions to a voluntary pension fund are withheld and transferred by the employer, at the same time as the compulsory social insurance contributions, or by the participant, monthly, directly to the account of the pension fund specified in the individual act of adhesion.

Another advantage of Pillar III is the tax deductibility, which amounts to 400 euros / year for each employee. For the employer, the deductibility is integral to the calculation of the profit tax, thus constituting an efficient management tool, by offering to the employees a private pension packages for which they benefit from tax deductions.

References

- Alserda, G., Dellaert, B., Swinkels, L. and van der Lecq, F., 2019. Individual pension risk preference elicitation and collective asset allocation with heterogeneity. *Journal of Banking & Finance*, Elsevier, Vol. 101(C), pp. 206-225.
- Anghel, M.G. and Haşegan, D.A., 2019. General aspects related to computing and usage of the rate of return in the analyses of the privately manage pension funds in Romania. *Romanian Statistical Review, Supplement*, 12, pp. 13-22.
- Anghelache, C., 2008. *Tratat de statistică teoretică și economică*, Editura Economică, București.
- Anghelache, C. and Anghel, M.G., 2019. *Statistică economică generală*, Editura Economică, București.
- Barr, N. and Diamond, P., 2009. Reforming pensions: Principles, analytical errors and policy directions. *International Social Security Review*, 62 (2), pp. 5-29.
- Beetsmaa, R., Romp, W. and Vos, S., 2012. Voluntary participation and intergenerational risk sharing in a funded pension system. *European Economic Review*, 56 (6), August, pp. 1310-1324.
- Bouchet, M., Marchiori, L. and Pierrard, O., 2017. Pension reform in a worst case scenario: public finance versus political feasibility. *Journal of Pension Economics and Finance*, 16 (2), pp. 173-204.
- Cagetti, M., 2003. Wealth Accumulation over the Life Cycle and Precautionary Savings. *Journal of Business and Economic Statistics*, 21 (3), pp. 339-353.
- Casey, B. and Dostal, J., 2013. Voluntary Pension Saving for Old Age: Are the Objectives of Self-responsibility and Security Compatible?. *Social Policy & Administration*, 47 (3), pp. 287-309.
- Coile, C. and Gruber, J., 2007. Future social security entitlements and the retirement decision. *The Review of Economics and Statistics*, 89 (2), pp. 234-246.
- Chen, D., Beetsma, R., Ponds, E. and Romp, W., 2016. Intergenerational risk-sharing through funded pensions and public debt. *Journal of Pension Economics and Finance*, 15 (2), Cambridge University Press, April, pp. 127-159.
- Creedy, J. and Guest, R., 2008. Changes in the taxation of private pensions: Macroeconomic and welfare effects. *Journal of Policy Modeling*, 30 (5), September-October, pp. 693-712.
- Draper, N., Westerhout, E. and Nibbelink, A., 2017. Defined benefit pension schemes: a welfare analysis of risk sharing and labour market distortions. Cambridge University Press, *Journal of Pension Economics and Finance*, 16 (4), pp. 467-484.
- Foster, L., 2015. Financial Planning and the Reality and Requirements of Retirees with Private Pensions. *The Journal of Retirement*, 3 (1), pp. 115-127.
- Hairault, J., Langot, F. and Sopraseuth, T., 2010. Distance to Retirement and Older Workers' Employment: The Case for Delaying the Retirement Age. *Journal of the European Economic Association*, 8 (5), pp. 1034-1076.
- Haşegan, D.A., 2019. An analyses model of the Romanian privately managed pension system. *Theoretical and Applied Economics*, XXVI, 4(621), Winter, pp. 139-148.
- Iacob, Ș.V., 2019. The influence of physical phenomena and processes on the different economic situations faced by the economic agents. *Romanian Statistical Review, Supplement*, 10, pp. 12-19.
- Iacob, Ș.V., 2019. *Utilizarea metodelor statistico-econometrice și econofizice în analize economice*, Editura Economică, București.

- Manchester, C.F., 2010. The effect of pension plan type on retirement age: distinguishing plan incentives from career length preferences. *Southern Economic Journal*, 77 (1), pp. 104-125.
- Naczyk, M. and Domonkos, S., 2015. The Financial Crisis and Varieties of Pension Privatization Reversals in Eastern Europe. *Governance*, 29 (2), April, pp. 167-184.
- Novy-Marx, R. and Rauh, J., 2011. Public Pension Promises: How Big Are They and What Are They Worth?. *Journal of Finance*, 66 (4), pp. 1211-1249
- Thomas, A. and Spataro, L., 2016. The effects of pension funds on markets performance: a review. *Journal of Economic Surveys*, 30 (1), pp. 1-33.
- Zandberg, E. and Spierdijk, L., 2010. Funding of pensions and economic growth: are they really related?. *Journal of Pension Economics and Finance*, 1 (1), pp. 1-17.
- *** Law no. 204/2006 on voluntary pensions, with subsequent amendments and completions.
- *** Norm of the Financial Supervision Authority no. 28/2017 regarding the use of the net personal assets of the participant in a voluntary pension fund.
- *** Norm of the Financial Supervision Authority no. 11/2011 regarding the investing and evaluation of the assets of the private pension funds.
- *** www.asfromania.ro – the Financial Supervisory Authority website, Private pension statistics.