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## **BULGARIAN PENSION SYSTEM IN THE LIGHT OF THE DEMOGRAPHIC AND ECONOMIC CHANGES IN THE COUNTRY**

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The Bulgarian pension system is a classical three pillar structure. The first pillar functions on a pay-as-you-go principle and is a mandatory one, the second and third pillars are fully funded. The insurance into the second column is mandatory and that into the third one is voluntary. The demographic trends in the country are unfavorable and they put an increasing pressure on the pay-as-you-go part of the system. At the same time the economic growth realized in the last years made possible the financing of the deficit formed in the state pension system with comparative ease. The current research is trying to put some light on these tendencies and their influence on the government decisions regarding pension reforms and the development of the funded components of the pension system. The paper is structured in two parts. The first one gives information on the demographic and economic changes in Bulgaria in the last 20 years and the effects of these variables on the pay-as-you go pillar of the system and the second part concerns the reforms needed for strengthening the funded components of the system. Further reforms are needed only if the second and third pillar of the pension system are seen as complementary elements of the state pension system in the long term.

**Keywords:** Bulgarian pension system, demographic structure, risks, pay-as-you-go

### **1. DEMOGRAPHIC AND ECONOMIC CHANGES IN BULGARIA AND THEIR IMPACT ON THE PAY-AS-YOU-GO PENSION SYSTEM**

The Bulgarian pension system is a three pillar structure where the first pillar functions on a pay-as-you-go principle and the second and third pillar incorporate the fully funded one. The first and the second pillar are mandatory, whereas the

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third pillar is a voluntary one (Social Security Code, 1999). This structure of the pension system was promoted by the World Bank in the mid 1990's and introduced into the systems in a number of countries in Central and Eastern Europe. According to Davis (1995) the funded component of the pension system could resist the process of population aging much better than the PAYG part of the system. Blake (2006) also considers funded pension plans as a necessary element in the pension systems for managing effectively the risk of poverty among the elderly. Daneva (2018) notes that this type of reform is needed in countries with high emigration rates, where the number of individuals who contribute into the pension system constantly decreases compared to those who receive pension benefits. According to her when PAYG pension system enters into a mature state, deficits tend to become constant. In research by Gochev and Manov (2003) for the private pension funds a positive relationship is shown between contributions paid into a personal pension account and the wish for paying those contributions on the "real wage". The loyalty towards the employer increases as well. The fully funded pension insurance is seen as a method for managing the grey sector in the economy. Szczepanski (2015) notes that in a situation of demographic aging, state PAYG pension systems "cannot guarantee the level of benefits and financial security in old age as was possible in the 1980's and 1990's".

Table 1. Old Age Dependency ratio in Bulgaria (2007–2018)

<b>Year</b>	<b>Dependency ratio in Bulgaria</b>
2007	25.0
2008	25.2
2009	25.4
2010	25.9
2011	27.8
2012	28.5
2013	29.3
2014	30.2
2015	31.1
2016	31.8
2017	32.5
2018	33.2

Source: National Statistical Institute in Bulgaria.

The ultimate idea behind the reform introduced in the late 1990's in Bulgaria was to strengthen financially the pension system as a whole. The policymakers of that time envisaged a replacement rate for the future generation retirees at around

70–75% in the long term if the insured individuals contributed into all of the pillars. The main motives of the reform were closely related to the unfavorable prognosis regarding the future demographic trends in the country influenced by both the high emigration rates of young individuals in the mid 1990's and the expected low birth rates in the coming years. The old-age dependency ratio (the ratio between the individuals aged 65 and more and individuals aged between 15 and 65) constantly rises.

The ratio between the number of pensioners and the number of those individuals who contribute to the system is also quite unfavorable. It's not a surprise that the share of pensioners constantly rises in relation to the whole population and to the insured individuals.

Table 2. Number of pensioners, insured individuals and population in Bulgaria (2007–2017)

Year	Number of pensioners (in thousands)	Number of insured individuals (in thousands)	Number of population (in thousands)	Relative share pensioners/ insured individuals	Relative share pensioners/ population
2007	2,252	2,863.5	7,659.8	78.6%	29.4%
2008	2,214.9	2,851.2	7,623.4	77.7%	29.1%
2009	2,192.5	2,829.8	7,585.1	77.5%	28.9%
2010	2,191.9	2,831.5	7,534.3	77.4%	29.1%
2011	2,199.6	2,765.7	7,416.1	79.5%	29.7%
2012	2,217.6	2,770	7,305.9	80.1%	30.4%
2013	2,195.9	2,729.8	7,265.1	80.4%	30.2%
2014	2,181.9	2,735.1	7,223.9	79.8%	30.2%
2015	2,177.7	2,755.9	7,178.0	79.0%	30.3%
2016	2,180.9	2,765.1	7,127.8	78.9%	30.6%
2017	2,172.8	2,779.8	7,075.9	78.2%	30.7%

Source: National Social Security Institute.

The figures above show that financing of the pay-as-you-go part of the pension system is put under increasing pressure. The ratio of almost 1:1 between contributing individuals and pensioners and the perspective of additional worsening is a fundamental factor that presumably must force the government to introduce reforms which would allow future generation retirees to receive pension benefits partly financed by the funded component of the pension system (Daneva, 2018). That was the logic of the reform made in the late 1990's. From the economic point of view it is still valid in 2019. However, after the crisis of 2008 the government stopped the reforms needed for further support of the funded part of the pension

system. First, it cancelled the process of the promised increasing of the contribution rate for the second pillar of the system; second, the regulations that were prepared for the introduction of the multifund system into the second and into the third pillar were postponed for an indefinite time; third, legislation was adopted that allowed insured individuals to opt out of the funded part of the system and to transfer their resources into the state pension system; fourth, important regulations concerning the pay-out phase of the funded system were delayed in time and in this way insured individuals were indirectly stimulated to choose only the first pillar of the system as a source of their pension benefit. What are the factors that support the government in accomplishing this and what is the logic behind this behavior? Despite the unfavorable demographic trends in Bulgaria in the past years, the realized economic growth is an important factor that let government finance the pay-as-you-go part of the system and even neglect the reforms needed for further bolstering the funded part of the system. The Aaron's rule (Davis, 1995) is well known in pension finance and it determines the return of the pay-as-you-go part and that of the fully funded pension system. According to Aaron the return of the pay-as-you-go part of the system depends on the growth rate of the average earnings (which determines the growth in total contributions) and the ratio between contributing

Table 3. Contributory income and contributory rate for pension for the period 2002–2018

Year	Average monthly contributory income (euro)	Rate of increase of average monthly contributory income	Yield realized by pension funds
2002	132.81	–	10.58%
2003	143.55	8.09%	10.99%
2004	157.89	9.99%	11.92%
2005	169.55	7.39%	7.86%
2006	181.25	6.90%	8.31%
2007	203.58	12.32%	15.67%
2008	255.93	25.72%	–20.76%
2009	283.65	10.83%	7.22%
2010	291.61	2.80%	5.18%
2011	303.78	4.18%	–0.96%
2012	316.01	4.02%	7.49%
2013	331.69	4.96%	4.50%
2014	349.39	5.34%	5.70%
2015	371.40	6.3%	1.37%
2016	393.73	6.01%	4.01%
2017	416.70	6.68%	6.09%
2018	455.00	8.32%	–4.15%

Source: National Social Security Institute; Bulgarian Financial Supervisory Commission.

workers and pensioners (dependency ratio). The return of the funded part of the system depends on the rate of return on accumulated assets and the “passivity” ratio (number of years in retirement relative to the working age). If we assume that the dependency ratio equals the passivity ratio, then the return depends solely on the growth of average earnings and the return on financial assets. The empirical studies (Davis, 1995) show that under certain normal circumstances the return on financial assets exceeds the growth rate of average earnings. In Bulgaria, however, the opposite is true for the period 2002–2018.

The basic reason for the high growth rate of the average income is the extremely low basis we started from in the late 1990’s. In 1997, the year after the hyperinflation hit the Bulgarian economy, the average wage in the country equaled \$63.92. The growth rate of the average income is a result from the growth rate of the economy as a whole.

Table 4. GDP, Growth of GDP and Inflation rate in Bulgaria (2000–2018)

Year	GDP, mln euro	% growth	Inflation rate	Real growth
2000	14,279	–	–	–
2001	15,723	10.11%	4.82%	5.04%
2002	17,285	9.94%	3.81%	5.90%
2003	18,589	7.54%	5.64%	1.81%
2004	20,905	12.46%	3.98%	8.16%
2005	23,852	14.10%	6.45%	7.18%
2006	27,210	14.08%	6.49%	7.13%
2007	32,449	19.25%	12.48%	6.02%
2008	37,199	14.64%	7.76%	6.39%
2009	37,317	0.32%	0.56%	–0.24%
2010	38,230	2.45%	4.53%	–1.99%
2011	41,291	8.01%	2.75%	5.11%
2012	41,947	1.59%	4.25%	–2.55%
2013	41,857	–0.21%	–1.59%	1.40%
2014	42,824	2.31%	–0.88%	3.21%
2015	45,288	5.75%	–0.38%	6.15%
2016	48,128	6.27%	0.09%	6.17%
2017	51,662	7.34%	2.77%	4.45%
2018	55,181	6.81%	2.67%	4.03%

Source: National Statistical Institute in Bulgaria.

If we measure the size of the economy using data for the realized GDP for the period 2000–2018, we may conclude that the Bulgarian economy almost tripled during that period. That’s why the government is able to finance the promised pension benefits and to postpone reforms needed for strengthening the funded components of

the pension system. However, the crises of the pay-as-you-go part of the system could be seen quite well if we look at the budget of the state pension system.

Table 5. Budget of the State PAYG Pension Fund (thousand euro)

Year	Revenue	Expenses	Deficit	Year	Revenue	Expenses	Deficit
2002	1,053,438	1,507,915	-30.14%	2010	1,333,735	3,448,400	-61.32%
2003	1,236,585	1,600,872	-22.76%	2011	1,576,099	3,440,775	-54.19%
2004	1,285,491	1,763,583	-27.11%	2012	1,500,770	3,564,282	-57.89%
2005	1,236,399	1,946,351	-36.48%	2013	1,692,897	3,850,580	-56.04%
2006	1,187,306	2,129,118	-44.23%	2014	1,723,721	3,974,404	-56.63%
2007	1,317,640	2,293,997	-42.56%	2015	1,780,841	4,095,209	-56.51%
2008	1,560,631	2,597,717	-39.92%	2016	1,941,680	4,271,086	-54.54%
2009	1,716,268	3,216,613	-46.64%	2017	2,230,717	4,382,906	-49.10%
				2018	2,610,417	4,657,449	-43.95%

Source: National Social Security Institute, [www.nssi.bg](http://www.nssi.bg).

It is obvious that in spite of the realized growth of the average earnings for the last decade, the revenue from pension contributions is not even close to the amount of the expenses, needed by the government to cover the pension benefits of the current pensioners. It is worth noting that the pension contribution rate has decreased several times during these years and from 29% at the beginning of the period, it is 19.8% at the end of the period. Nonetheless, the implication is straightforward – current employees and the contributions paid by them cannot cover the pension benefits of current pensioners. The government is forced to finance the deficit via revenues from the state budget and funds collected via general taxation. In a certain sense we can assert that the pension system in Bulgaria is financed by pensioners themselves, because all of them pay taxes (VAT for example, which counts for almost 50% of all revenues of the state budget in Bulgaria). The government uses this money to finance the huge pension deficit of around 50% in the last years. The economic growth made possible the financing of the pension deficit without making a deficit in the state budget, but at the same time the average pension amount stays extremely low (less than 200 euro per month) and the aggregate replacement rate although improving is still very low (0.45) (European Commission, 2018). The “At risk of poverty” rate among persons aged 65+ is significant (24.3% for 2016) which means that retired individuals in the country are among the most vulnerable groups in the society. Aaron’s rule shows that the return of pay-as-you-go system depends both on the growth of the average earnings and on the ratio between contributing workers and pensioners. The perspective of a continuously deteriorating dependency ratio means that the return for the future generation retirees will be even lower than that for the current generation. The growth of the econ-

omy could hardly compensate for this negative trend. The possibility of continuous rising of retirement age is overwhelming and the perspective of reducing the poverty rate among pensioners is gloomy. From this point of view the government must continue making reforms that could strengthen financially the pension system as a whole. Any delayed efforts now could cost more in the future.

## **2. FUNDED PENSION SYSTEM – A POSSIBLE SOLUTION FOR THE FUTURE GENERATION RETIREES IN BULGARIA**

The mandatory second pillar and the voluntary third pillar of the pension system in Bulgaria have been in existence for more than 15 years. In the early 2000's they were seen as complementary elements of the pay-as-you go part of the system that would allow future generation retirees to achieve replacement rates adequate to their pre-retirement income (Gochev, Manov, 2003). However, Orzag and Stigliz (2001) consider the funded component of the pension system as not suitable for all of the countries. They disagree with many of the ideas in the main report of the World Bank (1994) which was the basis for promoting the private pension schemes in Central and East European countries. According to them the administrative costs are too high and many of the countries do not have the capacity to manage this type of scheme. Szczepanski (2015) also notes that many of the supposed advantages of the private pension schemes did not materialize in practice and significant normative changes were needed in order to raise the effectiveness of the second and third pillar of the system. So after the world financial crises in 2008 the situation in Bulgaria changed and although there has not been an official statement, the policy of the governments since then suggests, that funded part of the pension system is not seen as a priority element any more. Two basic arguments are stated by some officials as problems of the second pillar of the pension system: first, the accumulation of resources into the individual accounts is small for a number of insured individuals and second, the stock exchange in Bulgaria is still characterized by a lack of instruments, low turnover and many possibilities for manipulation. In addition, the "reverse" reform in Hungary and partly in Poland affected strongly the enthusiasm among those policymakers who were able to publicly defend the funded pension system in the country. So, what is the current situation of the private pension funds in Bulgaria and could they be a real option for the future generation pensioners?

The defined contribution pension schemes are considered the simplest form of pension schemes (Blake, 2006). This type of pension insurance was introduced in a number of countries in Southern and Eastern Europe, including Bulgaria in the late 1990's and early 2000's. A typical feature of this type of pension plans is that the insured individual is exposed to many risks – asset price risk, interest rate risk, risk of inadequate contribution, inflation risk, etc. All these risks, if realized, could affect adversely the sum accumulated at the end of the period and the amount of

the future pension benefit. The design of the pension scheme is quite important in order to mitigate these risks, especially when the insurance into such a scheme is compulsory (Kirov, 2010).

When this type of scheme was introduced into Bulgarian practice, the legislator adopted a special rule, which specifies the reduction of the so-called individual coefficient<sup>1</sup> for those individuals who are obliged to pay contributions into the second pillar of the system (all persons born after 31.12.1959). The idea here is straightforward – those who make contributions into the private pension fund will receive part of their pension benefit from the second pillar, that's why the pension amount received from the first pillar could be reduced. This approach seems fair since the contribution rate for the first pillar was lowered for those born after 31.12.1959 and the deduction was forwarded to the private pension fund. In this way the second pillar of the system was supposed to support financially the pay-as-you-go column in the long term. The problem comes from the methodology for reducing the individual coefficient elaborated still at the beginning of the reform. It prescribes that the individual coefficient must be corrected with a ratio that roughly equals the contribution rate for the first pillar for those born before 01.01.1960 and the contribution rate for the second one for those born after 31.12.1959. This methodology could be valid only if the pay-as-you-go part of the system was able to finance the whole amount of pension benefits using money collected via pension contributions. The current situation as we were able to see is not even close to that. The deficit in the first pillar of the system is almost 50% and it is covered by subsidy from the state budget. But if this is the case, then it is quite unfair to state that money, accumulated in the persons' individual accounts is not enough. The resources are not enough only if they have to compensate for a reduction of the first pillar pension benefit that is not proportionate at all to the real contributions paid for both pillars if we take into account the strong subsidy that comes from the state budget. In other words the government is trying to convince the insured that pension funds are not able to manage their savings effectively just because the state is able to pay at the moment higher pension benefits without mentioning the important detail that it actually uses money of the pensioners themselves to ensure in the short term this amount of pension benefits. In theory it is even possible the government to equalize the contributions paid for the first and for the second pillar making them 5% (the percentage for the second pillar) and then to ask pension funds to bear 50% of the financial burden for the payment of the pension benefits. The assertion of not having enough money in the savings accounts becomes even more absurd if we take into account the fact that those individuals, who have the right to receive first pension benefits from the second pillar, actually do not have a full period of time of paying contributions into their pension fund. They started to

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<sup>1</sup> Individual coefficient is a special ratio between the contributory income of the insured and the average national contributory income. The higher the coefficient is, the bigger the pension amount will be.



save in their mid 40's, when almost half of their length of service had been passed. So, yes, those who were born at the beginning of the 1960's do not have enough money in their personal accounts, but this fact doesn't mean at all that their money has been managed ineffectively and even less that funded pension schemes cannot support efficiently the pay-as-you-go column of the system in the long term.

The second argument against the funded component of the pension system regards the illiquid and underdeveloped stock exchange in the country. The opponents of the private pension funds state that it is not possible to have a financially strong funded pension system without a well-developed and transparent capital market. As a matter of fact, this argument is a robust one. It is true that after 17 years of operation, pension funds still cannot rely on the capital market in the country to trade actively corporate instruments. Pension funds are the biggest traders at the Bulgarian stock exchange. However, the scale of the resources they currently manage allows them to easily manipulate the bid and ask offers for almost all of the offered instruments. This is a problem both for the insured individuals and for the pension companies. The latter do not have a real market test for the value of the corporate instruments they possess. Pension funds in the country are still in their accumulation phase, but the moment when they're going to start paying pensions is coming closer. If they have to liquidate some of the positions they hold currently in their asset portfolio, they could face a tough problem, because they could hardly find a buyer of such scale on the Bulgarian stock exchange. In this sense it is really crucial to have a comparatively liquid market of financial instruments. There are some objective arguments for this unfavorable situation. First, during the first years of their operation (2002–2006), pension funds had to structure their asset portfolios taking into account very strict investment regulations. For example, minimum 50% of their assets had to be invested into government bonds. It was not a surprise that for the first five years of their business, pension fund managers invested predominantly into government bonds and bank deposits. So they hardly contributed to the trade on the Bulgarian stock exchange. In 2006 investment regulations were changed partly because of the upcoming EU membership. As a result pension funds obtained better access to investment instruments and the following year they changed significantly their portfolio composition. They started to invest much more heavily in corporate instruments including those traded at the Bulgarian stock exchange. So they played an important role in raising the liquidity and turnover of the capital market during that year. Unfortunately, the global financial crises hit the Bulgarian stock exchange quite badly in 2008 and stopped the increasing enthusiasm among portfolio investors in the country including pension funds, which suffered huge losses in that particular year. They have been very cautious for any investments concerning equities and bonds traded on the market in Bulgaria since then. At the same time the policy of quantitative easing started by the European Central Bank influenced significantly the interest rate in the country. Interest rates have dropped unprecedentedly and the companies from the real sector obtained access to comparatively cheap financing from banks so they didn't have any need

and stimulus to issue new corporate instruments. Therefore, this policy of zero interest rates, held by the central banks in Europe, indirectly affected trade with corporate instruments on the stock exchange in Bulgaria. All these facts contributed to the current unsatisfactory condition of the stock market in the country. The funded pension system was not able to help the development of trade with corporate instruments – something that was observed for example in Chile, after the initial start of the funded pension system in the 1980's. At the same time the significance of this argument should not be exaggerated. Bulgaria is part of the EU and currently Bulgarian pension funds have access to all of the European stock exchanges and to all of the instruments traded on them. The investment regulations do not differentiate between Bulgarian corporate instruments and European Union ones. So if we have a closer look at the portfolio structure of the Bulgarian pension funds we are going to see that they are pretty well balanced with many instruments traded abroad and evaluated correctly on the market. At the same time the fact that Bulgarian corporate instruments are not traded actively does not mean that they do not bear yield for their owners. Currently many of the bonds issued by private companies are just held until maturity bringing an extra yield for the low liquidity they have. As far as the equities, possessed by the funds – the risk here is much higher but also the potential for growth, having in mind that many of the shares have price/book ratio at around one. Pension funds can really benefit from their equity holdings but they must well know the core business of the companies they invest in and exert continuous control over them.

Both of the stated arguments against the funded component of the pension system are not very consistent. At the same time the delayed reforms needed for strengthening the funded component of the pension system mean that insured individuals continue to face many risks during the pay-out phase. For example, Bulgarian pension insurance companies keep on managing just one portfolio of assets without taking into account the investment horizon of the insured individuals. The so-called multifund system has been discussed for a decade and it is still not introduced in practice. When the pension reform was made in the late 1990's, one of the arguments for establishing a funded component of the pension system was the constant political risk on which the PAYG part of the system is exposed. After two decades of operation of the pension funds in the country it became obvious that private pension companies are exposed to political risk as well. The ruling political party can change the rules of the game in such a way that it can motivate insured individuals to change their insurance from one pillar into the other and vice versa. Currently if there are no other changes into the normative rules, the insured individuals are strongly motivated to opt out of the second pillar and to insure themselves only in the first one. If this is a constant trend in the next years then the risk of poverty among the elderly will continue to be a predominant issue because of the unfavorable demographic structure of the population. The pension system in the country is exposed to a number of risks but the political one seems to be the most important one. The wish for attracting voters in the short term makes politicians

avoid important but sometimes painful reforms. The pension system needs long term decisions and at the same time it needs policymakers with enough courage to face the problems and sort them out and not just delay them in the near future.

### 3. CONCLUSION

The Bulgarian pay-as-you-go part of the pension system is hit by unfavorable demographic trends in the last years. Currently, the government is able to finance it and to raise pension benefits of the current pensioners because of the realized economic growth and increasing average incomes. At the same time, despite the strong subsidies from the state budget, pension benefits continue to be extremely low, making pensioners one of the most vulnerable groups in the society. The basic arguments against future development of the funded component of the pension system are not very consistent and could easily be refuted if we look at the current data in more detail. The Bulgarian pension system and economy need this type of insurance and the future generation retirees can surely benefit from the savings they made in the course of their working career.

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**BUŁGARSKI SYSTEM EMERYTALNY W ŚWIETLE KRAJOWYCH ZMIAN  
DEMOGRAFICZNYCH I EKONOMICZNYCH****Streszczenie**

Bułgarski system emerytalny ma klasyczną strukturę trójfilarową. Pierwszy filar funkcjonuje zgodnie z zasadą *pay-as-you-go* i jest obowiązkowy, a filary drugi i trzeci są w pełni kapitałowe. Uczestnictwo w drugim filarze jest obowiązkowe, a w trzecim – dobrowolne. Trendy demograficzne w kraju są niekorzystne, co powoduje coraz większą presję na repartycyjną część systemu. Jednocześnie wzrost gospodarczy występujący w ostatnich latach umożliwił stosunkowo łatwe finansowanie deficytu w państwowym systemie emerytalnym. Badania przeprowadzono, aby rzucić nieco światła na te tendencje i wyjaśnić ich wpływ na decyzje rządu dotyczące reform emerytalnych i rozwoju kapitałowych składników systemu. Artykuł składa się z dwóch części. Pierwsza z nich zawiera informacje na temat zmian demograficznych i gospodarczych w Bułgarii w ostatnich 20 latach, a także opis wpływu tych czynników na filar PAYG. Druga część dotyczy reform niezbędnych do wzmocnienia kapitałowych składników systemu. Dalsze reformy są potrzebne tylko w sytuacji, gdy w długim okresie drugi i trzeci filar systemu emerytalnego są postrzegane jako uzupełniające elementy systemu państwowego.

**Słowa kluczowe:** bułgarski system emerytalny, struktura demograficzna, ryzyko, *pay-as-you-go*