CONTEMPORARY SITUATION OF THE BULGARIAN HEALTHCARE SYSTEM

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Abstract: During the past 20 years, the Bulgarian healthcare system (BHS) changed dramatically. The resulting situation is of dubious nature and suffers the criticism of all the interested parties: patients and medical representatives, as well as the foreign bodies.

The GOAL is to estimate the efficiency of the money spent in the BHS and to analyze the system from the provision of fundamental economic principles for a stable market.

The METHODS used in the research paper, include statistical data analyses, analysis of the criticism on the BHS, analysis of the hypothesis considering the connection between money increase and better health results, and analysis of the violation of fundamental economic provisions by the BHS which are obligatory for a market to function properly, to be stable and predictive.

The RESULTS of the research show that the BHS needs substantial reconstruction.

In CONCLUSION, the BHS has undergone many radical changes for the past 20 years, many of which of dubious nature and with suspicious "positive" results. Regardless of any increase in the National Health Insurance Fund budget, the money is never enough, which raises a lot of questions, especially concerning the inpatient treatment, the private hospitals investments and funding, and the money spent on pharmaceutical products.

Keywords: Bulgarian healthcare system; National health and insurance fund; Revenue and Expenditure; GDP; Inflation rate; Market failure; Population; Outpatient; Inpatient; Health insurance contribution; Asymmetric information; Marginal utility of money.

HIGHLIGHTS

- The budget of the National Health Insurance Fund is constantly increasing
- The population is steadily dropping
- There is a growing number of patients registered with GPs over the population
- The whole healthcare system is strongly criticized by foreign authorities
- The healthcare system severely violates fundamental marked principals

I. INTRODUCTION

The Bulgarian healthcare system has undergone significant changes since the late 1990s. Though the changes are happening relatively fast and the money for healthcare is constantly increasing, especially considering the fast decreasing of the population, the criticism is substantial, both from foreign organization, patients and medical staff in the country. These changes led to the emergence and the fast growing of the private sector in Bulgaria, but the results might be considered dubious and unsatisfactory.

Therefore, before conducting the survey amongst the medical experts, patients and patients' organizations, we will summarize the general changes for the past twelve years, namely from 2007 to 2019, and draw the attention to some economic provisions, observed and severely violated in this healthcare model. All the data presented is official and is provided by the Ministry of Health, the Ministry of Education and Science, the National Statistical Institute (NSI) and the National Health Insurance Fund (NHIF) under the provisions of the Law on Access to Public Information.

II. STATISTICAL DATA AND CHANGES IN THE BULGARIAN HEALTHCARE SYSTEM

1. Health insurance contribution

The money for health in Bulgaria is constantly increasing. The compulsory health insurance contribution by the employees in Bulgaria rose form 6% in 2007 to 8% in 2008 and remains at this level up till now. Officially, the burden was shared between employers and employees at a ratio of 80:20. But this ratio has been changed to 60:40 (Dimova, et al, 2012, p. 55). According to the data provided by the NHIF, the contribution rate increased to 8% in 2008, though some sources point to 2009 as the year of the increase of the percentage. The idea behind this measure was to "decrease the number of individuals without SHI [Social Health Insurance – my note] coverage and to secure the financial stability of the system… Yet the efforts did not lead to the desired results (Dimova, et al, 2012, p. 55)."

Regardless of the official statements about the shares of the burden, most economists support the idea that all the taxes and insurances are paid by the employees, since the employers calculate in advance all the workforce expenses before negotiating a certain salary. Therefore, we might say that the 8% are covered by the individual workers and they are the main contributors to the NHIF.

2. Budget of NHIF, GDP and Inflation rate

The budget of the NHIF increased substantially considering its initial stage as shown in Figure 1. It almost tripled during the research period starting from 1.47 billion levs in 2007 and reaching up to 4.35 billion levs in 2019. This makes an average annual rise of the budget with about 240 million levs. The GDP of Bulgaria rose by 70% during the research period (Gross domestic product at market prices, 2019), while the budget of the NHIF rose by nearly 200%. The inflation rate since the end of 2007 till July 2019 is only 27%.

Therefore, *there is not any economic justification of the expenditure and budget increase of the NHIF*, apart from getting more and more money by the health service providers and pharmaceutical representatives in the sector.

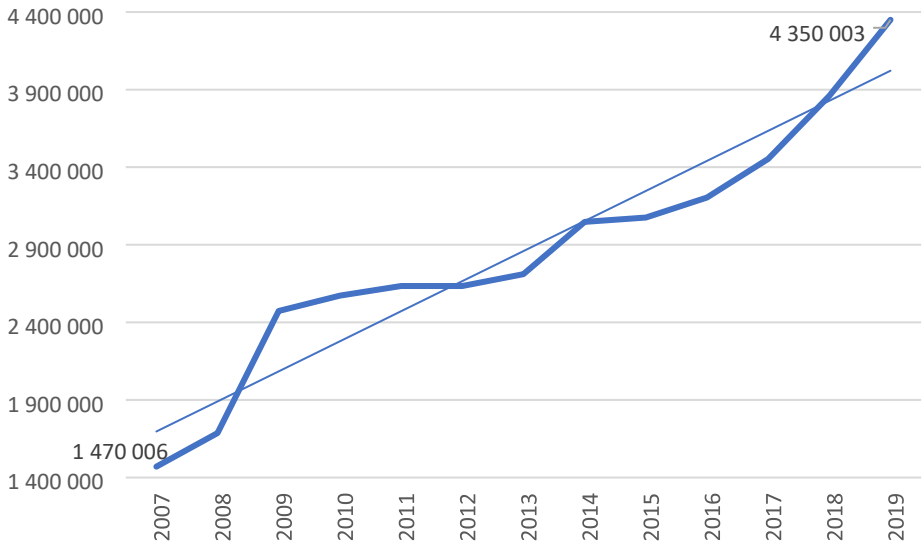

Figure 1: Budget of the NHIF for the period 2007-2019 (in thousand levs)
Source: Author's chart based on the data provided by NHIF

3. Population in Bulgaria

The official data of NSI and Eurostat show that the population in Bulgaria for the same period dropped by about 8% (or by more than 570 000 people). In 2007 the population amounted to 7 572 673, and in January, 2019, it was 7 000 039 people (Bulgaria – Population, 2019; Население –

демография, миграция и прогнози, 2019). This means that the money of the NHIF are directed for prevention and treatment of continuously diminishing number of people. Therefore, the money per head more than tripled for about 13 years. If the two trends are preserved, and we can definitely expect that, since there are no indicators for the opposite, we will observe a substantial increase of the amount of money per patient in Bulgaria in the upcoming decade.

4. NHIF revenue and expenditure

The chart for revenue and expenditure of the NHIF shows that there was a substantial budget surplus during 2008 – 2010 period, after which no such a situation has been observed – Figure 2.

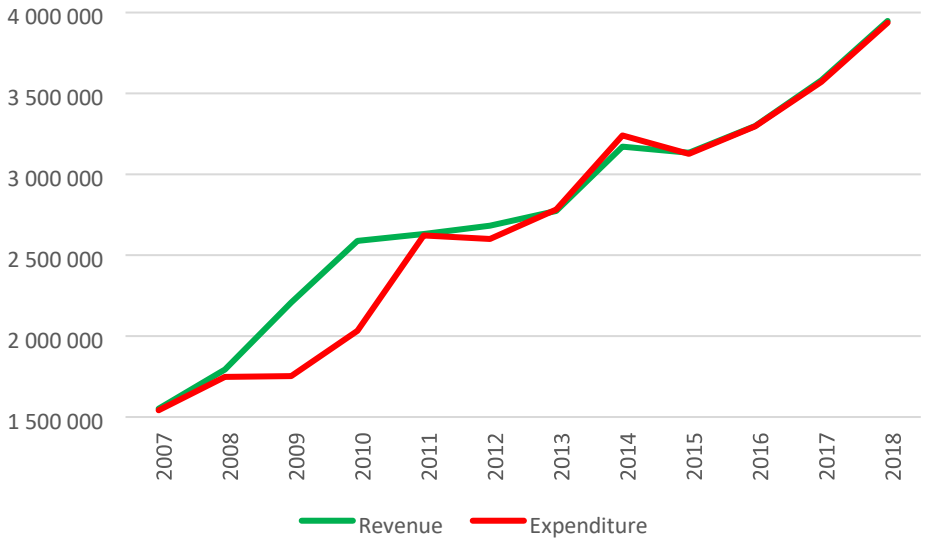

Figure 2: Actual Revenue and Expenditure of the NHIF for the period 2007-2018 (in thousand levs)

Source: Author's chart based on the data provided by NHIF

The surplus reached more than half a billion levs in 2010. We have to point out that no severe epidemic or pandemic diseases are reported in the country during the research period. A plausible explanation might be that the interested parties learned how to get more money from the NHIF – a serious issue nowadays. Since 2011, regardless of the budget increase, the money has been almost entirely absorbed by the healthcare service providers and pharmaceutical representatives – Figure 3.

The trendline has a negative slope, showing that deficits are more likely to be expected in the future (we have to bear in mind that there is an upsurge in 2010, which might influence the trend line). This is not an indicator for the necessity of money increase, but more or less for a stricter audit of the healthcare service providers, which nowadays appears almost impossible to happen.

Health Insurance Revenue has risen ever since 2007. One explanation might be the rise of the health insurance contribution rate to 8% in 2008. Yet, the data provided by the NHIF is inconsistent with economic theory, economic logic and situation in the country. During a period of a considerable dropdown of the GDP and economic stagnation, a significant rise in the unemployment rate and almost no change in the Health Insurance Transfers by the Government, Health Insurance Contribution by the Workforce continued to rise. The only plausible explanation, if the provided data are correct, is that there had to be a substantial salary increase in Bulgaria, which was not observed due to the austerity policy adopted and the economic logic of a company during a recession or a stagnation period – Figure 4.

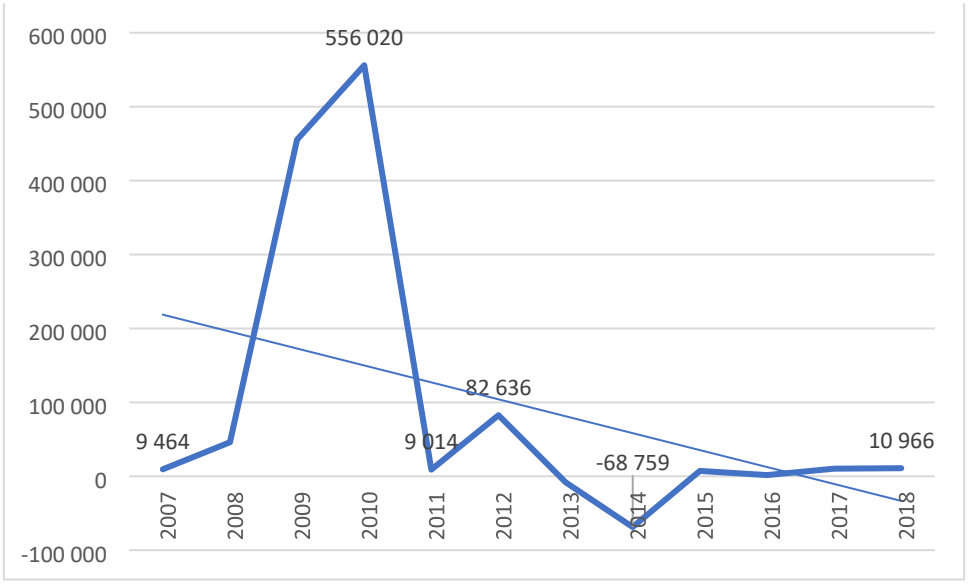

Figure 3: Deficit / Surplus of the NHIF budget for the period 2007-2018 (in thousand levs)
Source: Author's chart based on the data provided by NHIF

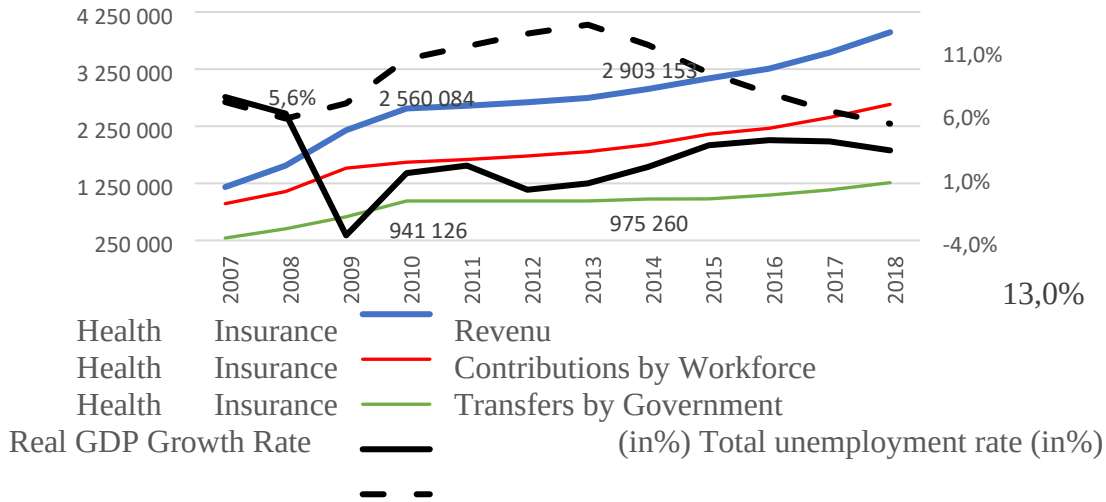

Figure 4: Health Insurance Revenue (in thousand levs – left scale), GDP and Unemployment (in percentage – right scale) Rate for the period 2007-2018
Source: Author's chart based on the data provided by NHIF and Eurostat

There are three reported transfers from the state budget for covering the deficit of NHIF presented in Table 1. The transfers in the first two years might be due to miscalculations and adjustments of the new healthcare model. For the year 2014 it remains unclear by the provided data by NHIF why the government transferred 225 million levs, since the deficit is only about 69 million levs.

Year	Amount of money
2007	338 689 600
2008	206 430 400
2014	225 000 000

Source: Author's table based on the data provided by NHIF Table 1: Transfers from the state budget for the period 2007-2019

The expenditure for health services amounts to 98% of total expenditure of NHIF. They also follow the increase trend of the total expenditure – Figure 5. We have to point out again that there was not a substantial disease or heal problem in the country.

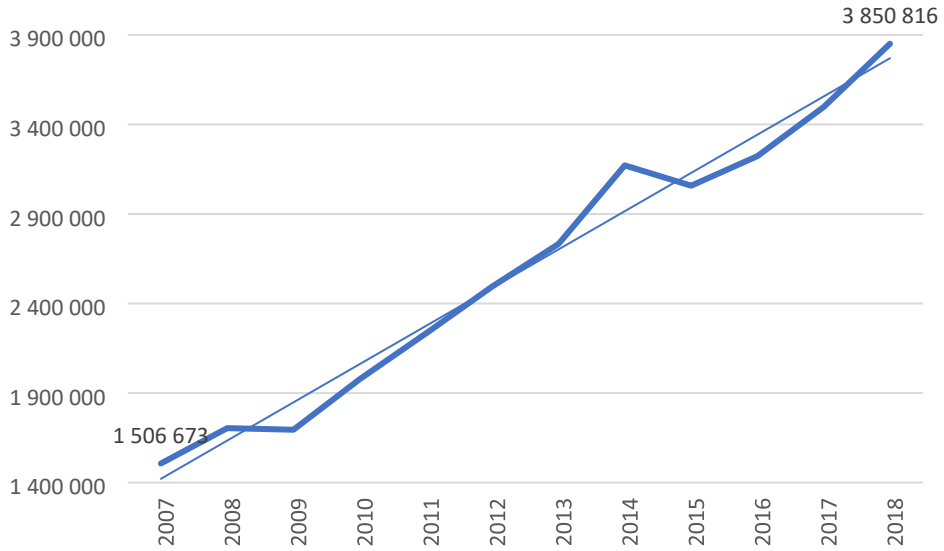

Figure 5: Total expenditure for health services for the period 2007-2018 (in thousand levs)
Source: Author's chart based on the data provided by NHIF

a) Outpatient treatment

Primary outpatient medical care expenditures almost doubled for the period, regardless of the fact that the population in the country is decreasing. There was some deviation from the budget in 2009, when the actual expenditure dropped by some 33 million levs – Figure 6

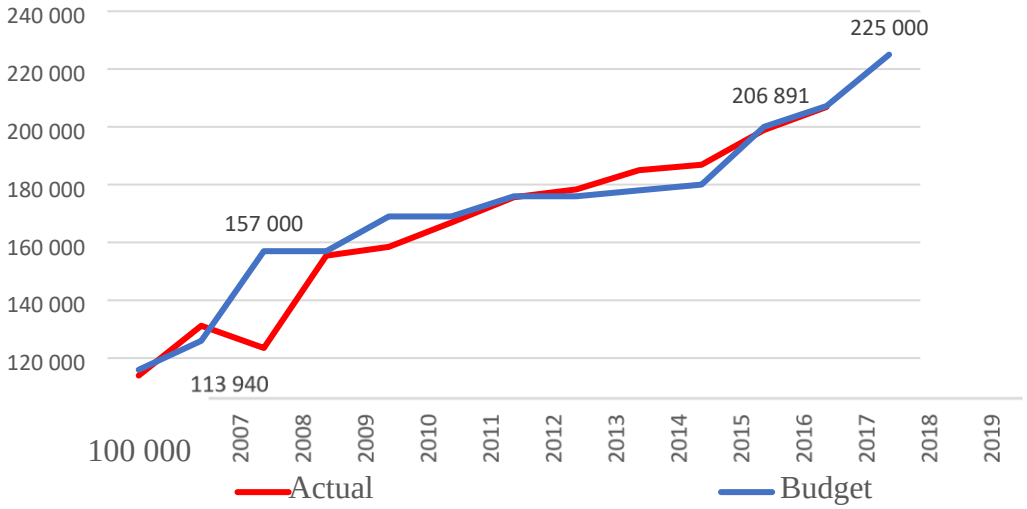

Figure 6: Primary outpatient medical care expenditure for the period 2007-2019 (in thousand levs)
Source: Author's chart based on the data provided by NHIF

The doubling of the expenditure trend is also observed in the Specialized outpatient medical care. Since 2012, there has been a constant deficit in this account regardless of the budget increase – Figure 7.

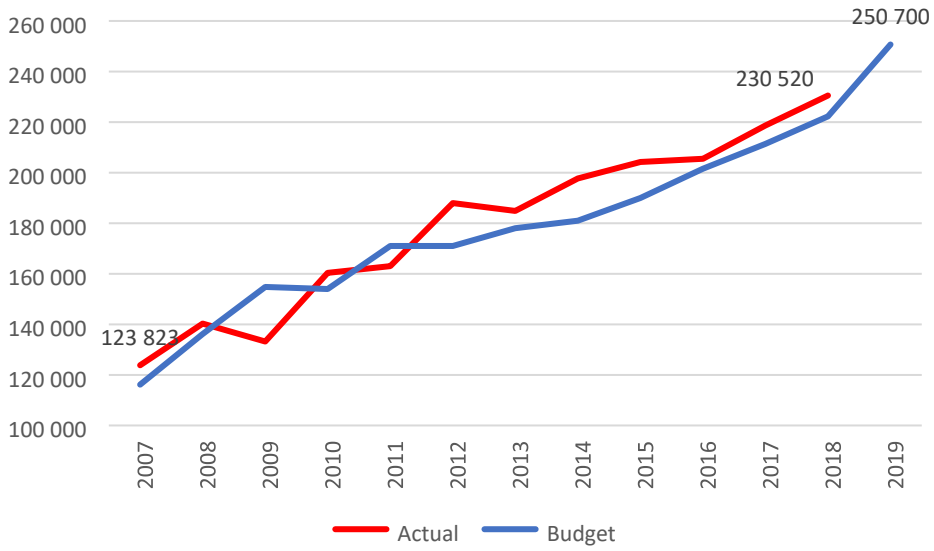

Figure 7: Specialized outpatient medical care expenditure for the period 2007-2019 (in thousand levs)
Source: Author's chart based on the data provided by NHIF

b) Dental care

Dental care expenditures are also on the increase. They doubled with a peak in 2017. However, there is not a significant deviation of the actual expenditures from the budget during the research period – Figure 8.

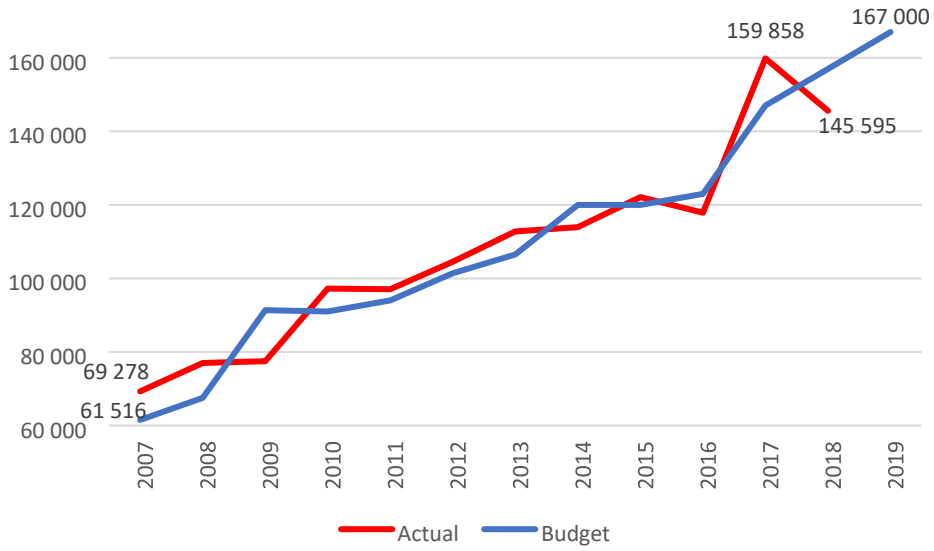

Figure 8: Dental care expenditures for the period 2007-2019 (in thousand levs)
Source: Author's chart based on the data provided by NHIF

c) Medical-diagnostic activity

The expenditure rose in Medical-diagnostic activity moderately by 57.2% reaching 80 million levs – Figure 9.

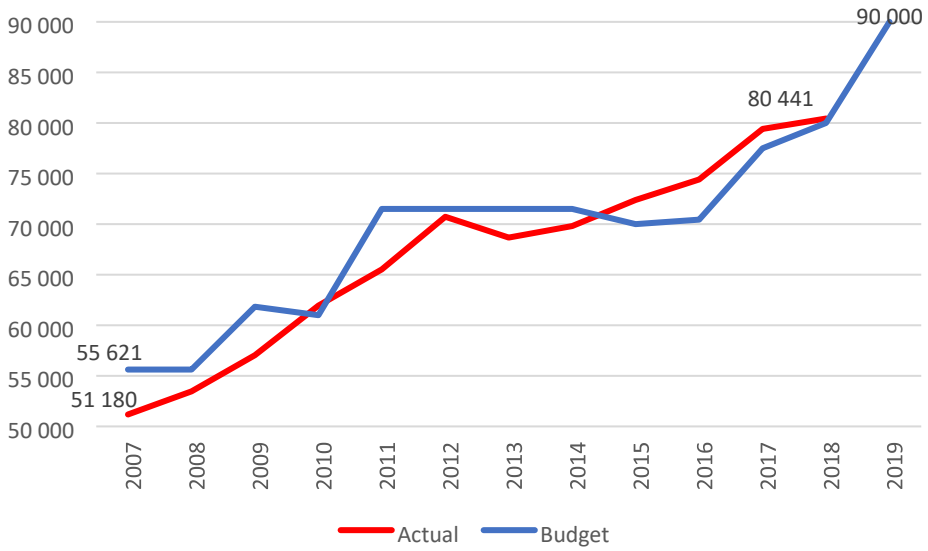

Figure 9: Medical-diagnostic activity expenditures for the period 2007-2019 (in thousand levs)
Source: Author's chart based on the data provided by NHIF

d) Medicinal products, medical devices and dietary foods

There is a substantial expenditure increase in Medicinal products, medical devices and dietary foods for special medical purposes for home treatment on the territory of the country and for medicinal products for treatment of malignancies in the conditions of hospital medical care, which NHIF pays beyond the value of the provided medical services. These expenditures *quadrupled* during the research period – Figure 10.

For the first three years of the research period, the provisions in the budget entirely covered the needs in the healthcare system. Ever since 2010, the actual expenditure on medical products has always been higher than their budget regardless of the fact that the budget is constantly increasing. If the providers of medical products, devices, etc. are assured that the state will always cover the deficit, they would not have any incentive to keep the prices at a lower level, neither to negotiate better deals with the producers. The highest spread detected was in 2017, amounting to about 190 million levs. The growing spread between the trendlines is worrisome.

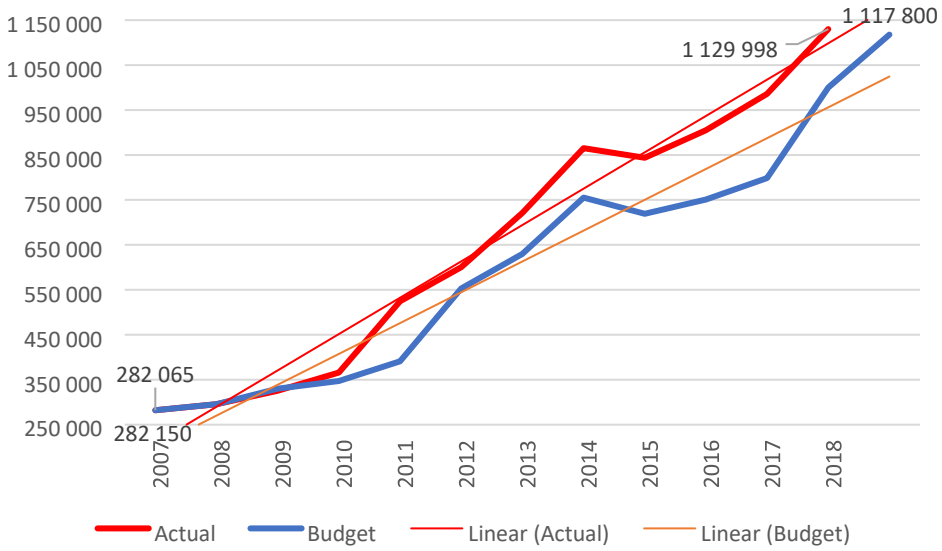

Figure 10: Medicinal products, medical devices, etc. expenditures for the period 2007-2018 (in thousand levs)
Source: Author's chart based on the data provided by NHIF

e) Health insurance payments for hospital

The actual Health insurance payments for hospital care rose by 117.3%, or more than doubled, which, compared to the rise in the Medical products expenditures, might not seem so impressive – Figure 11.

Yet, there is a significant spread between what is provided in the budget of the NHIF and what is absorbed by the hospitals. The highest spread so far was observed in 2014, amounting to about 340 million levs. The chart clearly shows that, regardless of the provisions in the budget, the hospitals will always require more money.

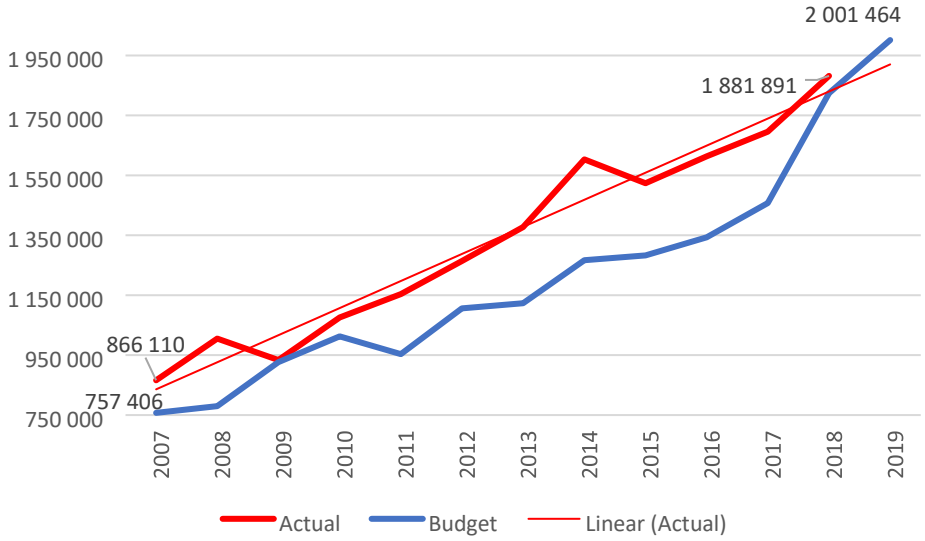

Figure 11: Health insurance payments for hospital care for the period 2007-2019 (in thousand levs)
Source: Author's chart based on the data provided by NHIF

f) Hospital care

Nowadays, the payments for hospital care absorbs about 48% of the total revenue of the NHIF. It started by 56.2% in 2007 and there was a significant drop around 2009 – 2010 with the lowest value of 41.6%. Since 2015, the hospital care absorbs similar percentage of both Revenue and Expenditure of NHIF, but this happens on the background of ever-growing healthcare budget, so the money as absolute sum is increasing – Figure 12.

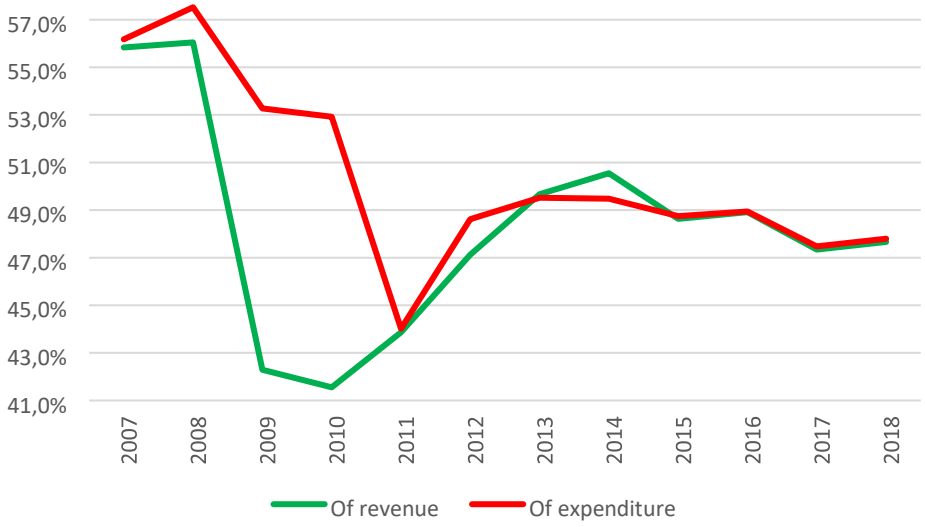

Figure 12: Payments for hospital care as percentage of NHIF revenue and expenditure for the period 2007-2018
Source: Author's chart based on the data provided by NHIF

g) NHIF budget reserve

According to the NHIF budget law, Bulgaria has to maintain a reserve for contingency and emergency expenses. In 2017, the law provides for the reserve to be over 340 million levs. Though, for the past two years, there is a significant reduction, the trendline is still positive. Yet, the data provided by the NHIF state that the reserve for contingency and emergency expenses equals to 0 – Figure 13. This contradiction in the data is not explained by the NHIF in the provided information.

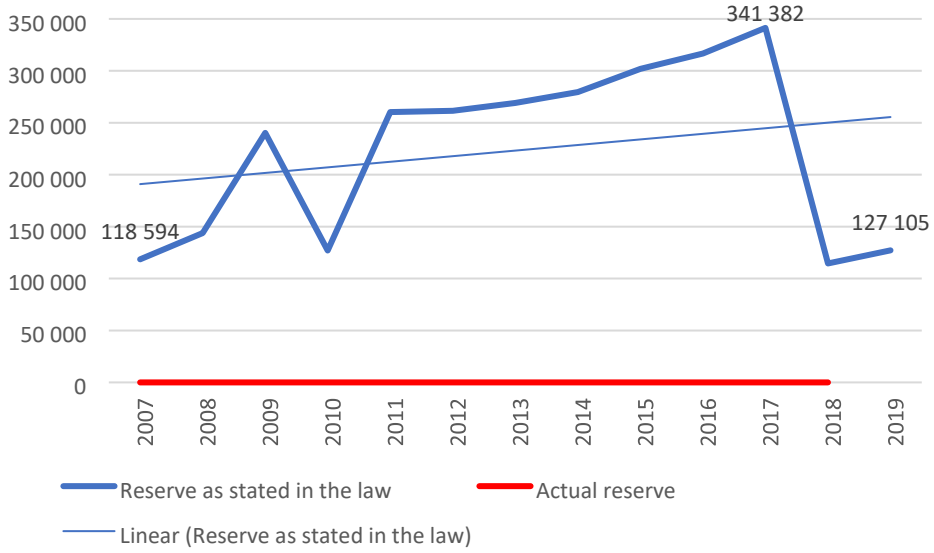

Figure 13: A Reserve for contingency and emergency expenses for the period 20072019 (in thousand levs)

Source: Author's chart based on the data provided by NHIF

5. Population and patients

There is a significant decrease in the population in Bulgaria. This trend is characteristic for several EU countries, but not at such a high rate. The trendline entirely covers the actual data line which might be considered a real problem – Figure 14. On average, Bulgaria loses more than 44 thousand people per year. The only positive effect of this trend is that the money from NHIF is directed to an ever-diminishing number of people.

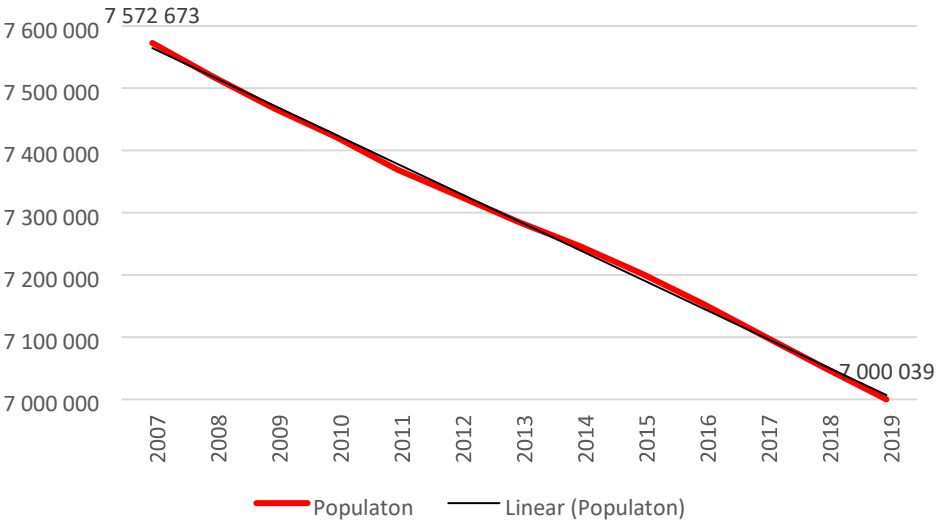

Figure 14: Reduction of the population in Bulgaria for the period 2007-2019

Source: Author's chart based on the data provided by Eurostat, NSI and Bulgaria – Population

The diminishing population normally leads to a diminishing number of patients. In 2007, the total number of registered patients with the general practitioners (GPs) were 7 613 022 people, and in 2019 they are 7 272 478 people – Figure 15. On average Bulgaria loses more than 28 thousand patients per year.

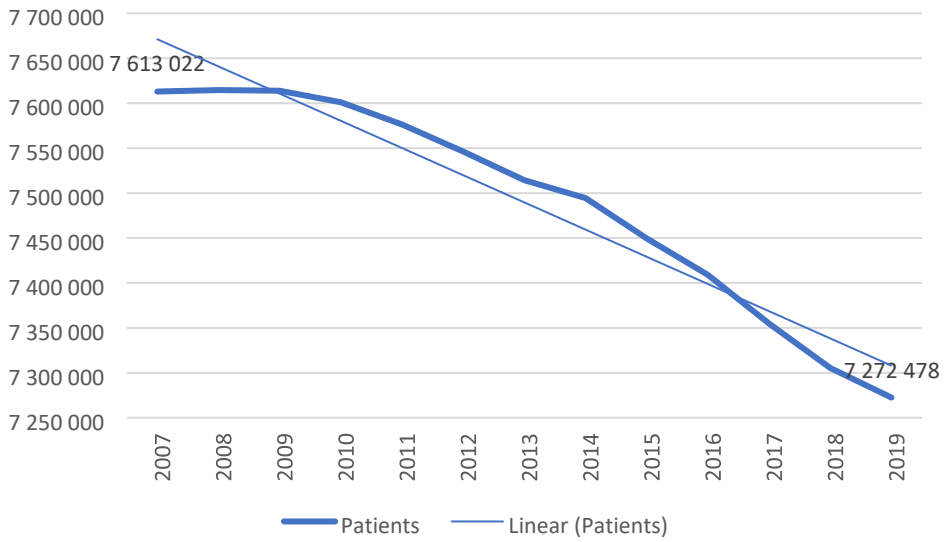

Figure 15: Reduction of the patients in Bulgaria for the period 2007-2019
Source: Author's chart based on the data provided by NHIF

If we combine the upper two charts in one, a serious question arises, namely "How is it possible for the population to reduce at a relatively steady pace, and the number of patients not to?" – Figure 16. The only lawful explanation should be that the there is a considerable increase of the foreigners in Bulgaria, which is not supported by the statistical data and this cannot explain the spread of more than 272 thousand patients over the population. As of 1st January, 2018, the number of foreigners permanently living in Bulgaria was about 84 thousand people (Russians are the largest group of foreigners in Bulgaria, 2019).

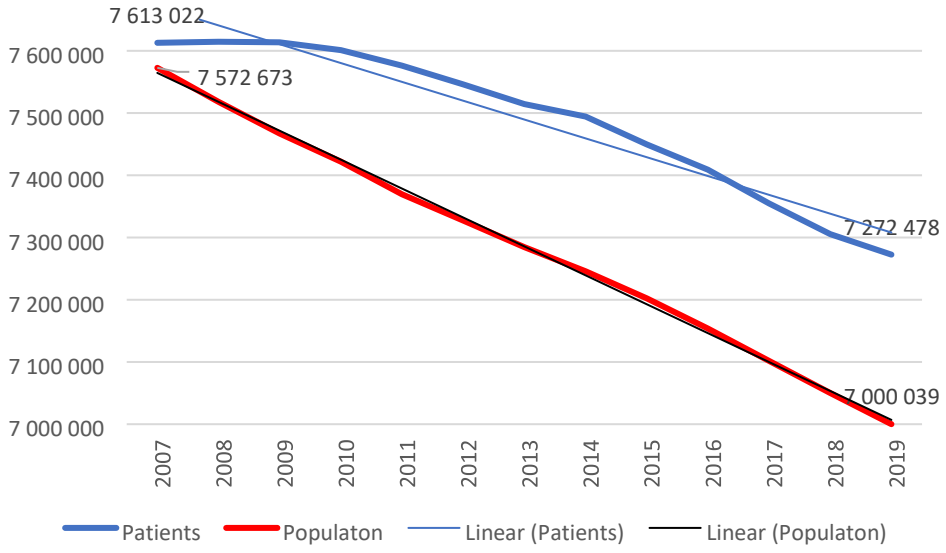

Figure 16: Reduction of the population and the patients in Bulgaria for the period 2007-2019
Source: Author's chart based on the data provided by NHIF, Eurostat, NSI and Bulgaria – Population

There is an astonishing increase of the spread between the number of the population and the number of the patients registered with the GPs – Figure 17. What is more striking is that this spread has been on an increase path ever since 2007 with a definitely positive trendline. Until 2011 the increase was really fast, followed by a slowdown period up to 2014, when a plateau was reached, and a new steeper growth since 2018. The positive trendline is really worrisome since the growing spread is hard to be explained.

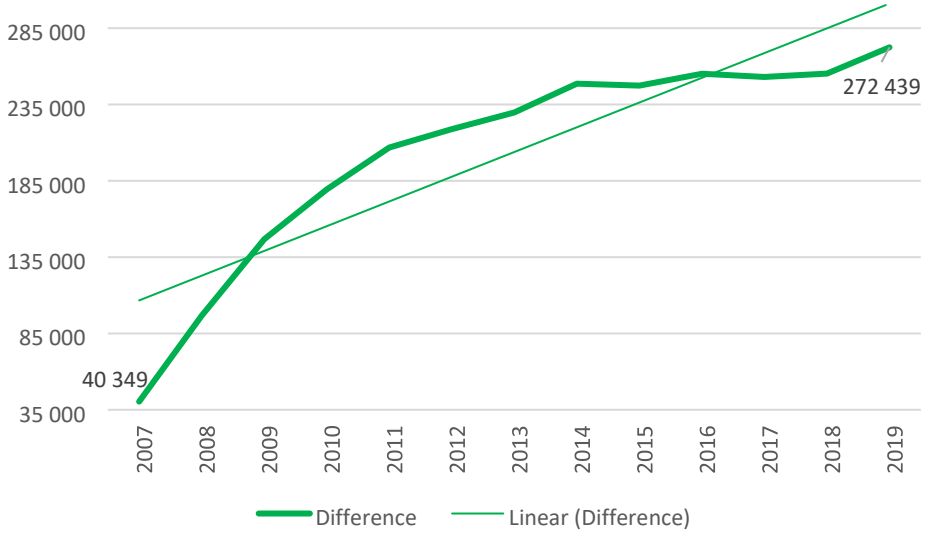

Figure 17: Increase of the spread between the population and the patients in Bulgaria for the period 2007-2019
Source: Author's chart based on the data provided by NHIF

If, in 2007, 63% of these 40 thousand patients more could be explained by the foreigners with permanent residence in Bulgaria, as shown in Figure 18, and the remaining 15 thousand patients might be attributed to some miscalculation or data error, nowadays the foreigners are about 30% and the rest 188 thousand patients in excess are hardly explained by any data error, especially with the positive trendline in mind.

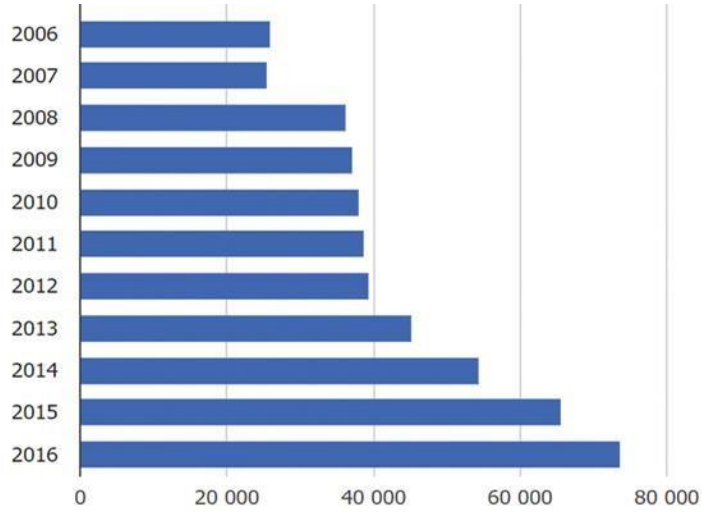

Figure 18: Increase of the foreigners with permanent residence in Bulgaria for the period 2006-2016
Source: Business Club

6. General practitioners

The number of the GPs in country dropped by 637 people from 4817 in 2007 to 4180. This tendency might be expected considering the demographic trends, but in no case should be considered normal at present state. However, the number of GPs is dropping much faster than the number of the patients and on average in 2019 there are 1 740 patients per GP, compared to 1580 in 2007. This trend is observed in all the regions in Bulgaria except in Gabrovo and Vidin, where the proportion is more or less preserved. In Vidin, there was a slight increase of just 5 patients per a GP, and in Gabrovo the change was -4 patients. In Kardzhali and Razgrad, there is a significant increase of patients per a GP – 597 and 437 correspondingly. The average change for Bulgaria is an increase of 159 patients per a GP.

7. Changes in patients number

Considering the number of the patients, there are only three regions in Bulgaria where an increase is observed. This is normally explained by the migration processes in the country (Own calculation on the bases of the data provided by the NHIF) – Table 2.

Regional Health and Insurance Fund (RHIF)	Patients change from 2007 to 2019	General Practitioners change from 2007 to 2019
RHIF Blagoevgrad	-10 448	-18
RHIF Burgas	5 622	-34
RHIF Varna	7 811	-36
RHIF Veliko Tarnovo	-23 212	-16
RHIF Vidin	-23 827	-15
RHIF Vratsa	-29 715	-19
RHIF Gabrovo	-16 878	-10
RHIF Dobrich	-21 093	-19
RHIF Kardzhali	-7 092	-19
RHIF Kyustendil	-19 253	-15
RHIF Lovech	-22 815	-16
RHIF Montana	-22 168	-16
RHIF Pazardzhik	-18 445	-19
RHIF Pernik	-11 476	-13
RHIF Pleven	-23 759	-21
RHIF Plovdiv	-9 407	-61
RHIF Razgrad	-10 643	-14
RHIF Ruse	-20 527	-16
RHIF Silistra	-16 676	-13
RHIF Sliven	-6 031	-17
RHIF Smolyan	-18 550	-12
RHIF Sofia – city	86 164	-93
RHIF Sofia – district	-20 554	-21
RHIF Stara Zagora	-23 156	-39
RHIF Targovishte	-14 580	-12
RHIF Haskovo	-17 752	-26
RHIF Shumen	-15 485	-15
RHIF Yambol	-16 599	-12
Bulgaria	**-340 544**	**-637**

Source: Author's table based on the data provided by NHIF Table 2: Change in patients and GPs from 2007 to 2019

8. Changes in the healthcare institutions

There are considerable changes in the healthcare institutions, namely hospitals and clinics. During the research period, twenty-three non-private clinics and hospitals were closed all over the country: one state and twenty-two municipal institutions. For the same period, the number of newly opened state and municipal hospitals was only three – two in Sofia and one in Varna.

What is striking is that during 2007-2019 110 private hospitals and clinics were opened, of which only 11 were closed. Considering the fact that these are huge investments, not only in land and buildings, but also in equipment, and that the Bulgarian people cannot afford to pay for medical treatment, the newly established private healthcare institutions relay mostly on the money they receive from the NHIF. This is supported by the Eurostat data on People at risk of poverty or social exclusion presented in Figure 19. We have to point out that these data cover only the poor, many of which not included in the statistics, since they cannot be reached, and there is a significant percentage of the population who are just above the poverty line. Up till 2014, ninety-one private hospitals were opened (Ministry of Health). This happens during a period when half of the population in the country is officially poor.

We also have to point out that "In 2013, an estimated 12% of the population did not have social health insurance coverage (Advisory Services Agreement, 2015)".

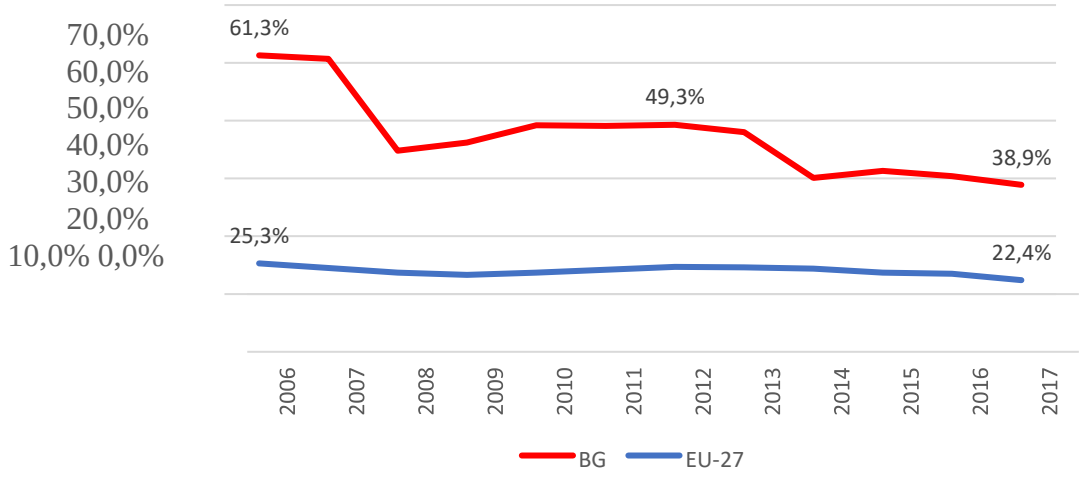

Figure 19: People at risk of poverty or social exclusion in Bulgaria and EU-27 for the period 2006-2017

Source: Author's chart based on the data provided by Eurostat

9. Staff

There are some changes in the staff both at the state or municipal, and private hospitals. The Ministry of Health did not provide any data before 2010 as was requested, but the provided information is sufficient enough to show the trends in this sphere. The main employment contract staff at the state and municipal hospitals and clinics for the period 2010 – 2018 is clearly diminishing by more than 5 thousand people, or 10% – Figure 20.

At the same time the staff at the private hospitals and clinics more than doubled, with an increase by 133%, or by more than 8 thousand people – Figure 21. The trendline in this direction is strongly positive almost covering the actual data.

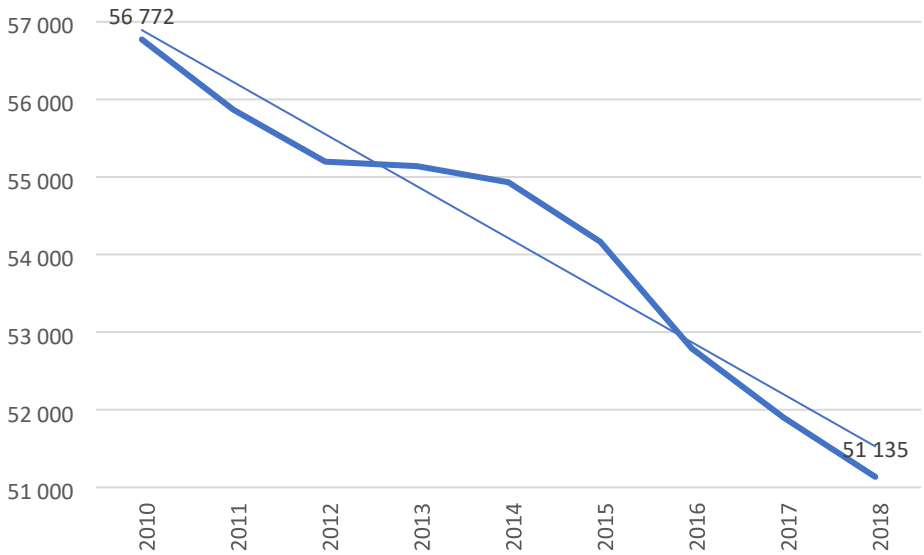

Figure 20: Staff at state and municipal hospitals for the period 2010-2018
Source: Author's chart based on the data provided by Ministry of Health

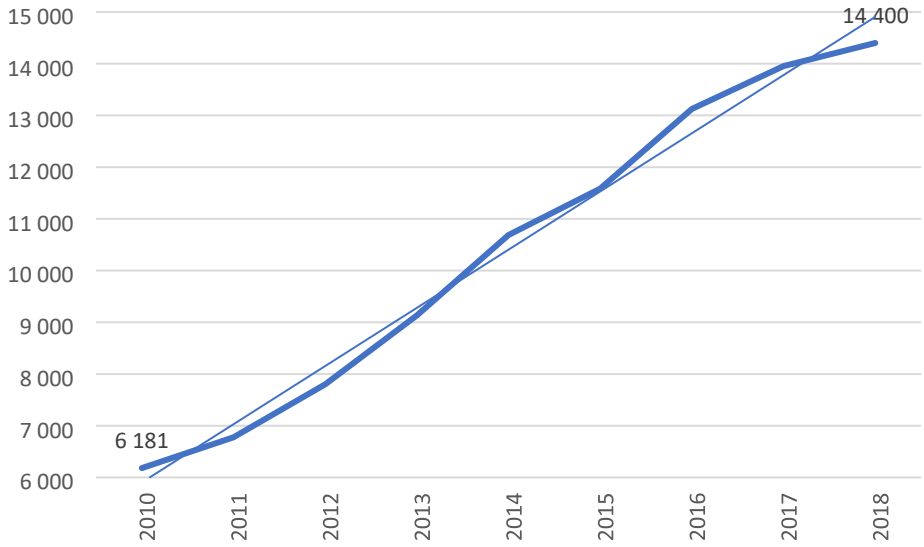

Figure 21: Staff at private hospitals for the period 2010-2018
Source: Author's chart based on the data provided by Ministry of Health

The total number of the main employment contract staff at all hospitals and clinics, both state and private increased by 2 582 people on the background of diminishing population and patients and increasing budget of the NHIF. Many representatives of the medical professions work at several medical institutions simultaneously.

The Ministry of health did not provide the requested information on the exact positions occupied at the various regions, namely doctors, nurses, midwives, etc.

10. Graduating medical universities

The number of people graduating the four medical universities in Bulgaria during the research period is 35 798 people, of which 25 958 subsidized education by the state, and 9 840 paid education. The trendlines in the two forms of education are positive – Figure 22.

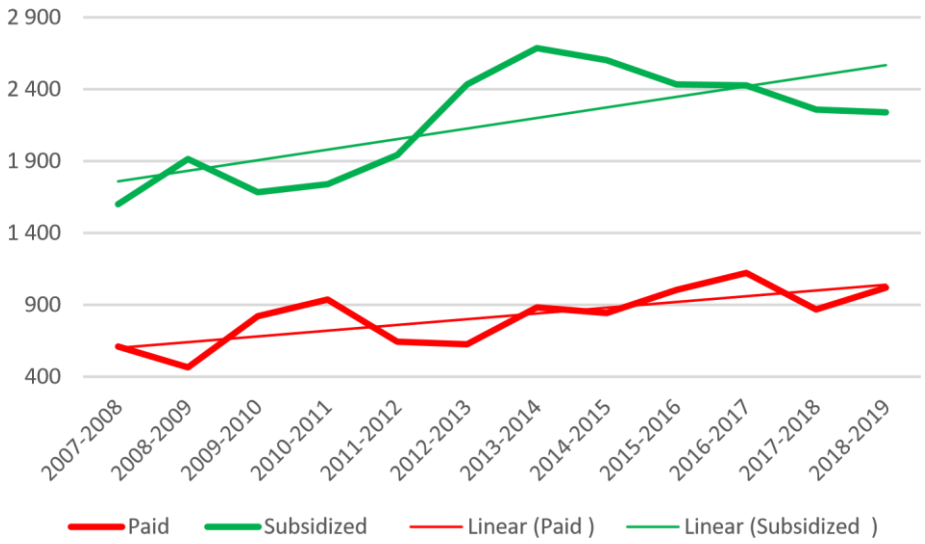

Figure 22: Paid and subsidized graduates from the medical universities for the period 2007-2019
Source: Author's chart based on the data provided by Ministry of Health

Of all the graduates, 7 508 are doctors of medicine (5 214 subsidies and 2 294 paid), and 2 366 dentists (1 538 subsidies and 828 paid). The nurses amount to 3 525, of which only 45 where paid education, and the midwives amount to 1 392, of which only 13 where paid education (Ministry of Health). The low number of the nurses and midwives in paid forms education could be explained by the really low salaries in the sector.

We have to draw the attention to the fact that the increase in the hospital and clinic staff is only one-tenth of the total number of graduates from the medical universities. This raises a lot of questions about the realization of those specialists and the investments made by the state in their education, and namely the most significant one is "Are they sunk costs?".

"In 2015, 2 636 medical doctors who had trained in Bulgaria worked abroad, with Germany, France and the United States being the most popular destinations. This reflects a sixfold increase since 2003 and constitutes more than half of the currently employed GP workforce. According to the Bulgarian Nursing Association, a similar trend exists for nurses but exact data are lacking (State of Health in the EU, p. 8, 2017).

11. Distribution of money amongst hospitals

The NHIF did not provided the requested detailed information on the money received by the private, state and municipal hospitals, as was asked. Instead, they directed us towards their website, where the information is not structured and covers only the past five years. The files are in *.pdf file format, which makes the comparison and the analysis really difficult and time consuming. The data of the Ministry of Health on the private hospitals is incomplete, since some of the private medical institutions are not listed. Thus, we present the data for the most interesting cases for 2018, since it is that last year with the final data.

The data for 2018 show that private hospitals and clinics received more than a quarter of the money dedicated for inpatient treatment.

In Burgas, there are 26 hospitals and clinics, twelve of which are private. They received about 55% of the money for inpatient treatment in the region.

In Plovdiv, there are 44 medical institutions, 16 of which private that received more than 40% of the money for inpatient treatment.

In Sofia, there are 80 medical institutions, 24 of which private that received about 30% of the money for inpatient treatment. We have to point out that a single private hospital in Sofia received more money than any other state or municipal hospital in the city. What is more, the same hospital,

with its branches, received about 20% more money than the biggest state medical institution in the country.

The data for 2019 till the month of July are relatively similar. Private medical institutions absorb large proportions of the money of the NHIF. This raises a lot of questions especially considering that the Bulgarian population is relatively poor and the huge investments made by the private medical institutions.

III. CRITICISM OF THE BULGARIAN HEALTHCARE SYSTEM

Regardless of all the data changes and budget increases there is a serious criticism of the Bulgarian healthcare system, and it has been going on ever since the foreign institutions monitor this sector in the country. The summary of the research of OECD, the World Health Organization and the European Commission, named "State of Health in the EU. Bulgaria:

Country Health Profile 2017" is really alarming. The report states that "heart diseases and stroke remain the leading causes of mortality and are three times as high as the EU average (State of Health in the EU, p. 3, 2017)".

Apart from that "infant mortality is 80% higher than the European average (6.6 deaths per 1 000 births versus 3.6 in 2015). What is more, the worst performing region (Yambol) recorded an infant mortality rate that is six times higher than the best performing region (the capital Sofia) in 2016 (State of Health in the EU, p. 2, 2017)." This is a good example of a serious regional inequality not only in income, but also in healthcare, regardless of the NHIF budget increase.

The report states that Bulgaria had the second lowest life expectancy at birth in 2015 (State of Health in the EU, 2017), and the latest Eurostat data show that it is the lowest so far, and even there is a slight decrease in the index (Life expectancy by age and sex, 2019), which questions the expected positive correlation between increasing money for healthcare and life expectancy.

Furthermore, there are problems with the access to the medical experts. "[The] Travel distance and availability of doctors remain important barriers, especially for lower income groups (State of Health in the EU, p. 2, 2017)." In some regions there is a shortage of medical experts. These are predominantly the poor regions of the country. The medical personal is predominantly in the urban areas – Figure 23. A state intervention and specific economic measures could increase the personnel in these regions.

"A considerable share of Bulgarians (4.7% in 2015) reported unmet needs for a medical examination or treatment, with financial reasons being the most important cause. Travel distance and the availability of doctors also remain important barriers to access, especially for low income patients (State of Health in the EU, p. 11, 2017)."

Cancer and cardiovascular diseases account for more than 80% of the population's deaths. The other causes are almost insignificant compared to these two – Figure 24.

The total number of deaths in 2014 amounted to 108 199, namely Women – 51 955, and Men – 56 244 (State of Health in the EU, 2017). For the period 2007-2018, the trendline of death cases in negative, but if we take the 2009-2018 period, when the most significant NHIF budget increase was observed, the trendline of deaths is positive. This raises the question whether more money for healthcare leads to more death cases in Bulgaria – Figure 25.

The NHIF did not provide the requested information on the number of people with Social health insurance. We have to rely on external sources for this information. About 12% of the citizens are without health insurance (State of Health in the EU, 2017). This is a huge number, considering the fact that children, pensioners and state employees have SHI. Therefore, these twelve percent must be people between 18 and 64, unofficially employed or unemployed.

Regardless of the ever-increasing budget of the NHIF, the out-of-pocket money paid by the Bulgarian citizens for healthcare is highest in the EU, where on average it amounts to 15% of all payments (State of Health in the EU, 2017). The Bulgarian patients provide almost the same amount of money for the health sector in the country – Figure 26. If the tendency is preserved, and we have

no reasons to believe the opposite, the patients will provide about 4.1 billion levs, and the total amount of money will be 8,53 billion levs in 2019.

"Pharmaceuticals absorb the largest share of out-of-pocket payments followed by hospital services (State of Health in the EU, p. 12, 2017)." The prices of the medicines are on average about 3 to 4 times higher than those in the neighboring country – Turkey.

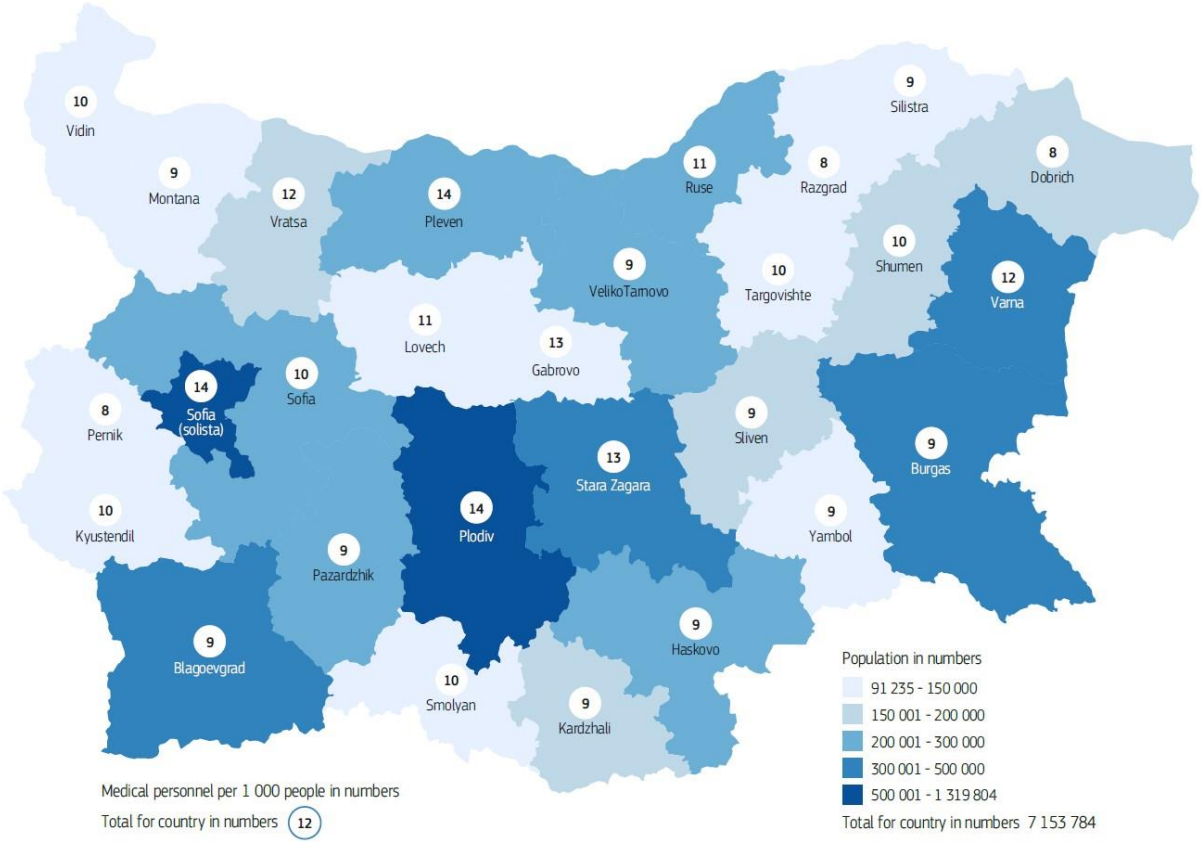

Figure 23: Medical personnel per 1000 people in 2017
Source: *State of Health in the EU*

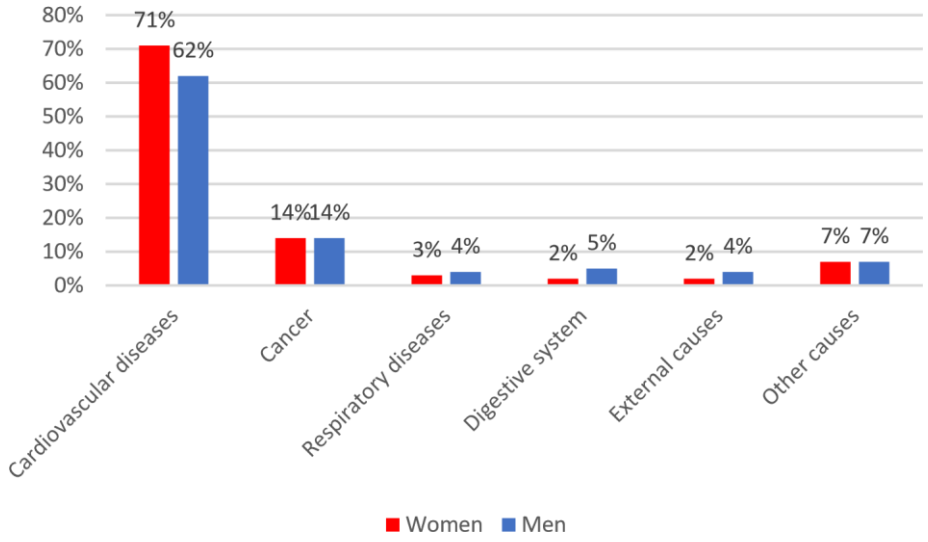

Figure 24: Death causes in 2014
Source: Author's chart based on the data provided by State of Health in the EU

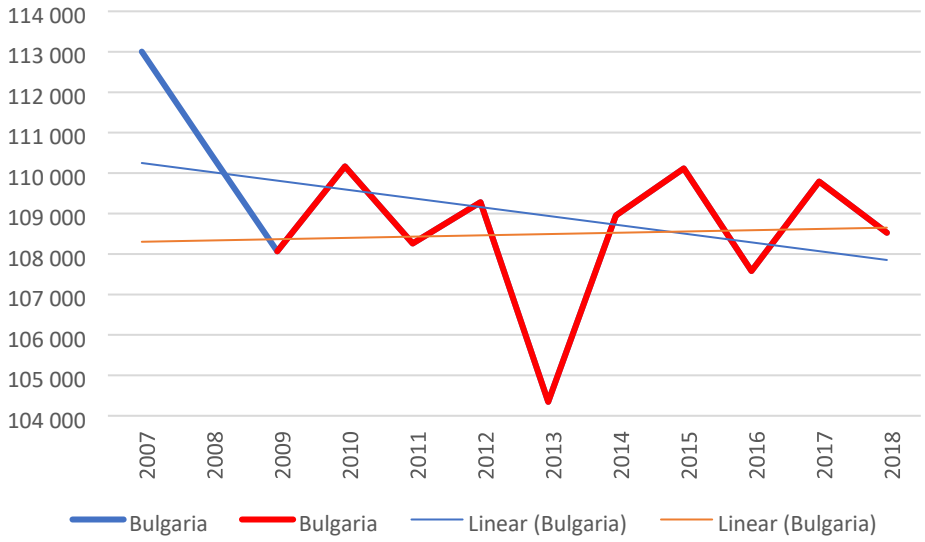

Figure 25: Total number of deaths for the period 2007-2018
Source: Author's chart based on the data provided by Eurostat

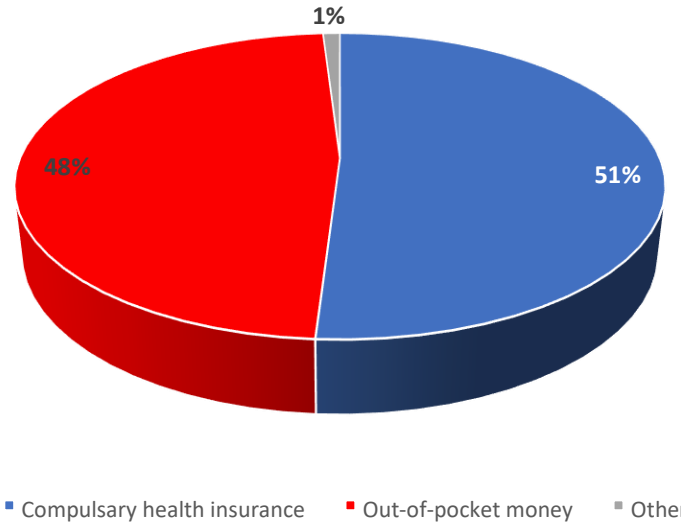

Figure 26: Out-of-pocket spending in Bulgaria for healthcare in 2015
Source: Author's chart based on the data provided by State of Health in the EU

Bulgaria has the highest number of inpatient discharges in the EU – Figure 27. This is indicative of two problems. First, the primary care and outpatient treatment is poor (State of Health in the EU, 2017). Second, the hospitals are economically stimulated to accept more and more patients. The "high rates of avoidable hospital admissions point to weak primary care and lack of coordination… In fact, a 2013 analysis of hospitalizations suggested that at least 20% of inpatient procedures performed in Bulgaria could have been conducted in outpatient settings. Nevertheless, the inpatient care sector has continued to grow since 2013 (State of Health in the EU, p. 10, 2017)." The growth of inpatient care sector is entirely due to the emerging of private hospitals and clinics, as the data provided by the Ministry of Health suggests. "…financial incentives encourage hospitals to treat more patients; ceilings on some diagnostic referrals in primary care lead to patients being admitted for inpatient care… (State of Health in the EU, p. 10, 2017)."

Apart from that, the GPs operate with strictly limited number of referrals to outpatient specialists and inpatients services (State of Health in the EU, 2017). This forces them to try to cure

diseases in which they are not experts, which prolongs the state of illness, and have severe impact on the person's general health, family, income and the economy as a whole.

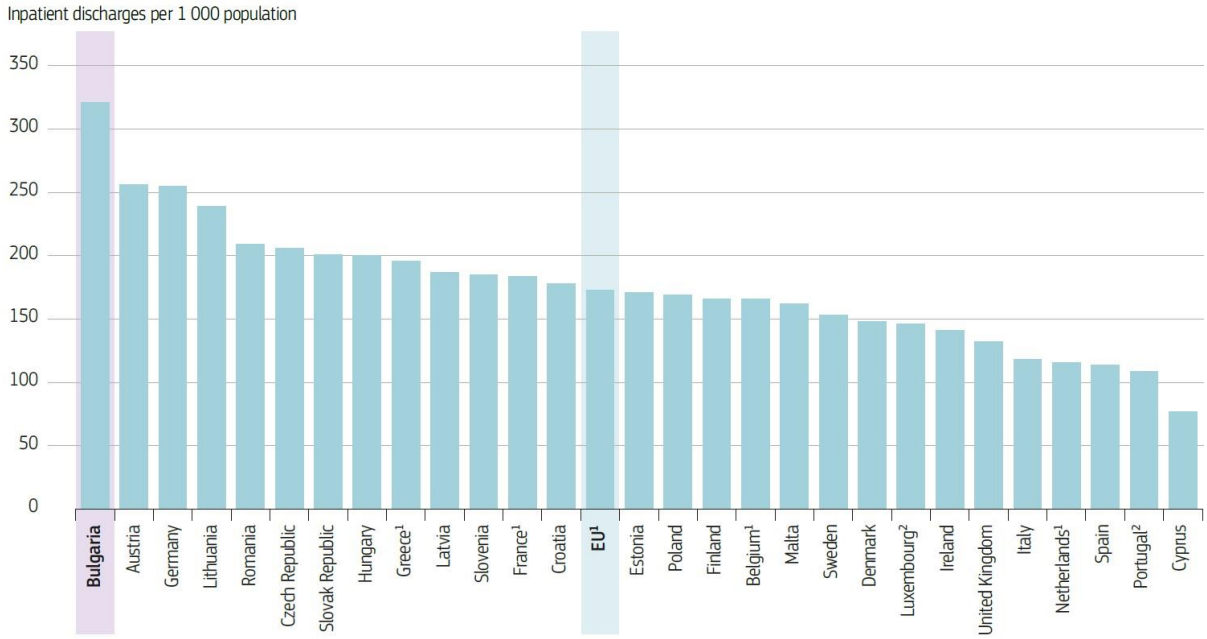

Figure 27: Inpatient discharges in EU per 1000 people in 2015
Source: *State of Health in the EU*

The State of Health in the EU undoubtedly states that the child immunization rates are low compared to the EU average and have begun to drop since 2013 (State of Health in the EU, 2017). This happens on the background of the ever-increasing budget of NHIF. "Long-term care is mostly excluded (State of Health in the EU, p. 12, 2017)."

The benefit basket, which changes frequently and thus contributing to uncertainty, is set by the Ministry of Health, while tariffs and payment mechanisms are specified in the National Framework Contract and negotiated on an annual basis by the NHIF and representative organizations of physicians and dentists. This can be overcome by state employed doctors and dentists, since the state hospital does not need to have economic profit and the money will be directed towards better qualification of experts and better healthcare.

Since the average Bulgarian household income is relatively low and since the prices of medicines and other payments are really high, the Bulgarians spend most of their budget on medical care – Figure 28. This is a constant trend regardless of the NHIF budget increase.

State of Health in the EU also indicates that the spending on healthcare increased much faster than the overall economics growth of the country. The authors of the report admit that "Better allocation and use of resources could potentially increase efficiency. Bulgaria spends most of its limited resources on pharmaceuticals and inpatient care. In 2015, the country spent more than 40% of total health spending on pharmaceuticals and medical goods, the highest share in the EU and more than twice the EU average. In addition, the inpatient care sector is comparably large as share of total health spending (34% versus 29% in the EU), while the share of outpatient care spending (18%) is the smallest in the EU (State of Health in the EU, p. 13, 2017)." In 2019 budget, 75% of the money of the NHIF will be directed towards medicines (26%), inpatient treatment (47.6%) and medical products for inpatient treatment (2.4%). Outpatient treatment and specialized medical care would absorb 5.2% and 5.8% correspondingly. Dental care will have about 4% of the budget. "Efficiency could be improved by strengthening primary care and shifting provision from expensive inpatient

care to outpatient and day care… Important gains could also be made on pharmaceutical spending (State of Health in the EU, p. 13, 2017)."

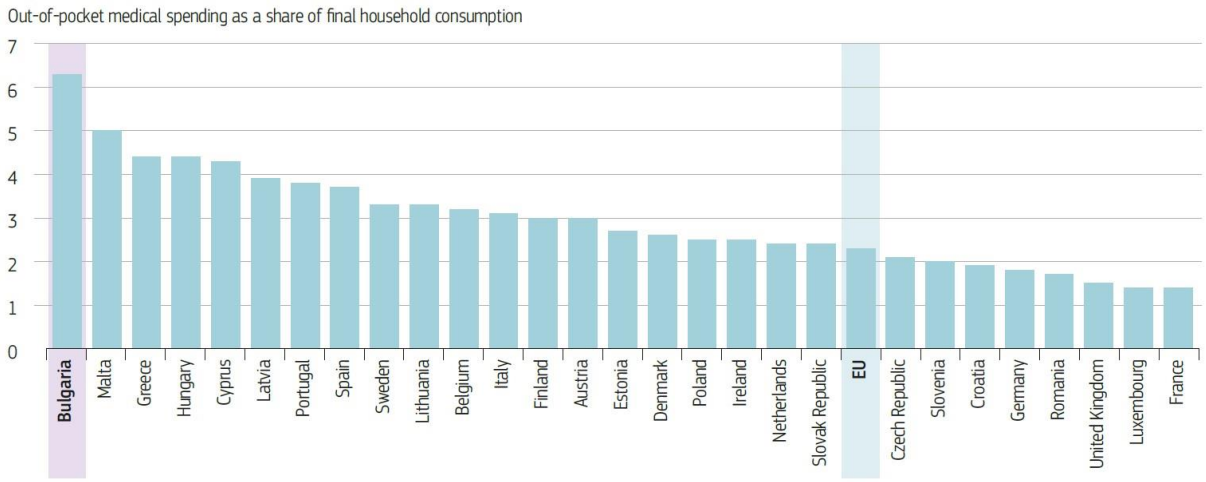

Figure 28: Household budget dedicated to medical care in EU
Source: State of Health in the EU

"Notwithstanding this, the root causes of Bulgaria's high share of pharmaceutical spending need to be better understood. It is most likely the result of high prices due to a lack of (centralized) purchasing power, an overconsumption of drugs paid out of pocket and perhaps still low generic penetration (State of Health in the EU, p. 14, 2017)." Even the foreign suggest that the there has to be a centralized government medicine purchasing body, which will significantly reduce the prices of the pharmaceutical products since a state-owned company does not have to work for economic profit.

Amenable mortality remains very high in the country. "The Bulgarian health system is one of the worst performing countries in this respect. Amenable mortality for both men and women is about twice as high as the EU average in 2014. About 20 000 deaths (or 19% of all deaths) in 2014 were still considered to be avoidable, much higher than the European average of 11% (State of Health in the EU, p. 9, 2017)."

According to the report, amiable mortality could be dramatically reduced by increasing the health expenditure – Figure 29. If a trendline in drawn one could easily reach to that conclusion. However, a closer look at the data shows an entirely different picture. The countries in the research are clearly divided into two groups. The first group, including Bulgaria, Romania, Poland, etc. are countries with almost similar health expenditures and having substantially different amiable mortality rate. For Poland it is about 170, and for Lithuania – about 310. The Czech Republic having relatively higher expenditure on health, compared to Poland, has also higher amiable mortality rate. The second group of countries, including Cyprus, Luxemburg, France, Germany, etc. are characterized by similar mortality rate for relatively different healthcare expenditures. For example, Cyprus, spending about three times less on health compared to Luxemburg, two times less than the Netherlands, France, Denmark, etc. has almost the same amiable mortality as these countries. On the other hand, Cyprus and Greece spend the same amount of money per capita on health as Hungary and Slovakia, but the amiable mortality in the Mediterranean countries is more than two times less.

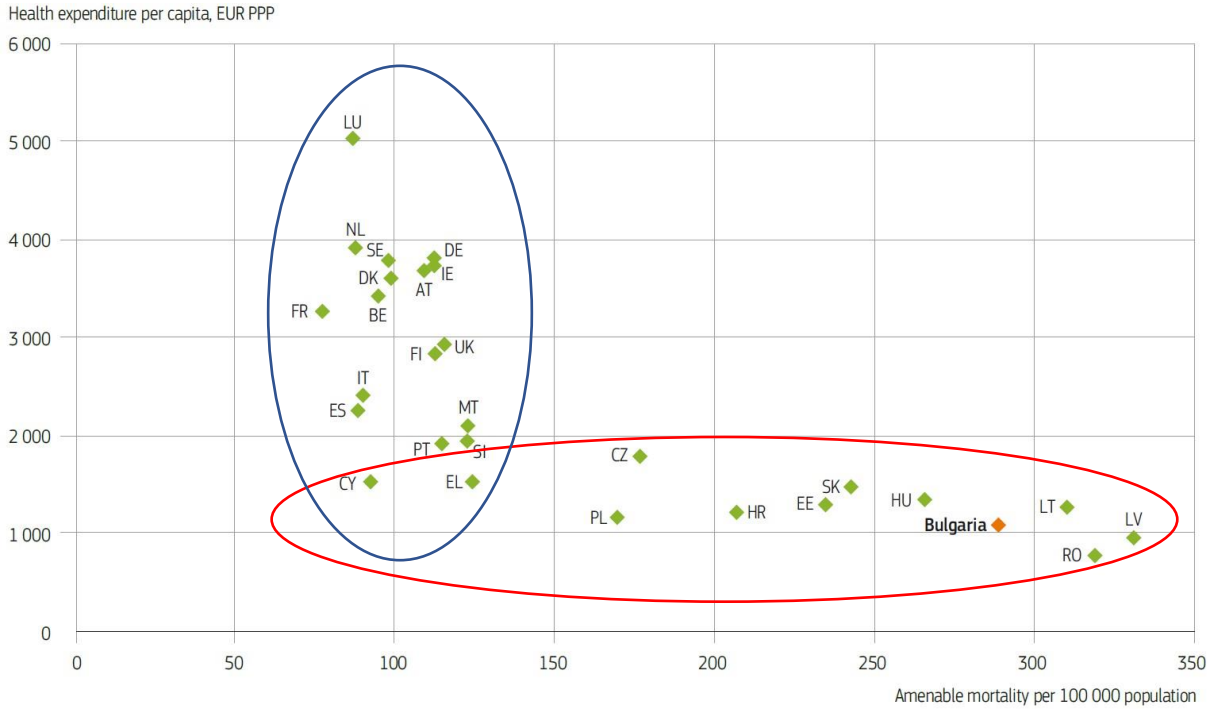

Figure 29: Amenable mortality and health expenditure in EU in 2014
Source: Author's chart based on the data provided by State of Health in the EU

The State of Health in the EU report suggest that "more resources are needed. Relating the level of amenable mortality to health expenditures shows that Bulgaria is performing in line with what can be expected with current spending levels. This suggests that to actually achieve improvements in health outcomes, besides polices that address risk factors and improve care, more resources are also likely needed. Indicatively, countries spending slightly more (e.g. Croatia and Poland) have much lower amenable mortality (State of Health in the EU, p. 15,

2017)." Yet, all these examples so far, and many more in the chart, question the "simple" connection between increase of money for healthcare and reduction of the amiable mortality. There might be some correlation, but amiable mortality is not a single factor problem. Apparently, after reaching a certain level of expenditure, money for healthcare no longer plays a significant role in amiable mortality and mortality rates as shown above in the comparison of the mortality rates in Bulgaria and the substantial increase of the NHIF budget.

The disability adjusted life years, or DALY index, is an indicator used to estimate the total number of years lost due to specific diseases and risk factors. One DALY equals one year of healthy life lost. "The poor health status of many Bulgarians can be connected to a range of health determinants, including living and working conditions, the physical environment and behavioral risk factors. At least 40% of the overall burden of disease in Bulgaria (measured in terms of DALYs) can be attributed to behavioral risk factors, including smoking, alcohol consumption, dietary risks and low physical activity. Of all risk factors, dietary risks, smoking and a high body mass index contribute the most to poor health in Bulgaria (State of Health in the EU, p. 4, 2017)." Therefore, we cannot state with certainty that money increase for healthcare would reduce the DALY index in Bulgaria. If we look at the chart of DALYs for several countries and the world – Figure 30 – we see that the reduction is more or less a global trend and might be attributed to a new conscious of healthier lifestyle, and not to the increase in the money for health. Considering Bulgaria, this is supported by the fact that during the period 2007-2013, when DALYs dropped relatively faster, the budget of the NHIF increased by 1.2 billion levs, and from 2013 to 2017, when the total change is almost

insignificant and even an increase was observed, the NHIF budget increased by 1.6 billion levs. Thus, we see that the connection between money spent on healthcare and DALYs is not that simple and straightforward, since DALY is a multifactor index.

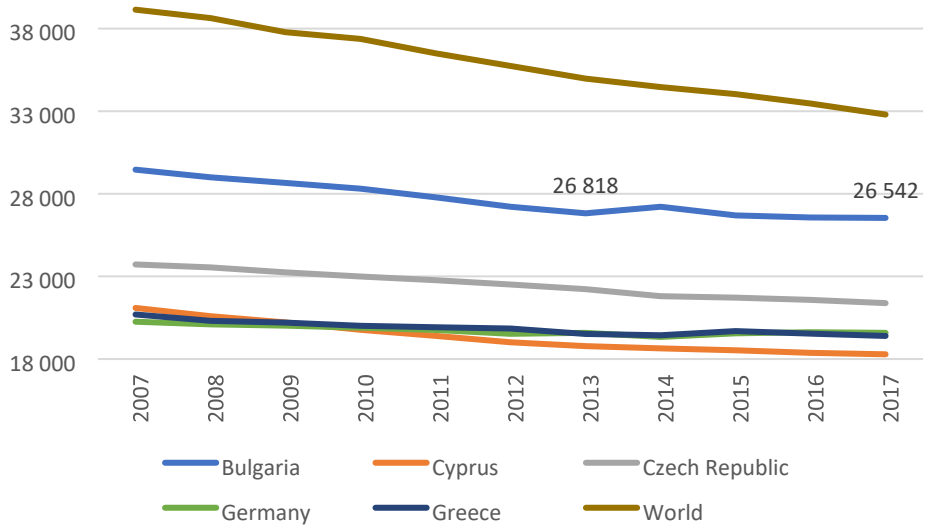

Figure 30: DALY index change for the period 2007-2017
Source: *Author's chart based on the data provided by DALYs rate from all causes*

IV. ECONOMIC ARGUMENTS

The Bulgarian healthcare system violates several fundamental economic provisions, which are obligatory for a given market to function properly, to be stable and predictive, as well as to reach the expected results by the society.

1. Asymmetric information

Asymmetric Information (AI) is also known as "information failure" and is considered one of the greatest market failures. AI is observed when one party to an economic transaction possesses greater material and factual knowledge than the other party. This is normally manifested when the provider of a good or service has greater knowledge than the receiver. Such situations of AI lead to enormous deviations of the market results from what is best for the whole society, and thus benefits a very minute part of it at the expense of the population. The situation in healthcare system is exactly the same. Healthcare market is the best example of severe manifestation of AI, which is almost close to the perfect situation, where one party possesses all the information and the other none of it. In this situation, all the medical experts and pharmaceutical products providers have the power to gain as much benefits, monetary and non-monetary, for their institutions at the expense of the NHIF and the patients, since the former cannot monitor all medical activities and the latter does not possess the knowledge to counteract in case of abuse or "market failure".

According to the Nobel prize winners in economics George Akerlof, Michael Spence, and Joseph Stiglitz, as well as many other prominent economists, AI and the resulting market failure can only be corrected by *a state intervention in the given market* (Nobel Prize Committee, 2001). The more severe the market failure as a result of the AI, the more intense and thorough the government intervention in the market has to be. In the face of imperfect competition and its extremes, prices can carry misleading information. According to Stiglitz, price is not as reliable as a carrier of information that reflects the true value of the product, as market advocates claim. If that were the case, then the information imperfections would be minimized and almost disappear. Stiglitz is on the opinion that deformations resulting from imperfect and asymmetric information are *the most difficult to correct* (Stiglitz, 2014). Mladenova states that "If the neoclassical theory assumes that a market economy works effectively (except for... „market failures"), then information economics proves that in

conditions of information imperfections markets are almost never effective (Mladenova, 2011, p. 197). It should be remembered that even weak information asymmetries can have a very serious impact on the distribution of benefits in a given market, what then remains of AI's extreme cases in the healthcare market.

The Nobel prize winner in economics Angus Deaton also draws attention to the imperfect information in a more specific light – to the doctor and the patient, where the former also pursues her / his own personal interest. Deaton calls for *better regulation of private healthcare* (Deaton, 2013). The appeal is especially relevant for the Bulgarian economy on the background of the growing budget of the NHIF since its inception. According to a member of the NHIF Supervisory Board, over 100 hospitals have been opened in our country in the last two years (Focus Agency, 2015). Because of the asymmetric information in physician and patient, the latter cannot control the actions of the former and, despite the positive effects on society, it should be remembered that private hospitals will behave on the market like all other companies pursuing their economic interest – *maximization of profit* (Deaton, 2013).

A great example of AI might be the constant increase of the NHIF budget, several times exceeding the GDP growth (three times the growth) and the inflation rate (7.5 times the inflation rate), on the background of diminishing population and the lack of epidemic and pandemic catastrophes, and the money is never enough. If the budget increase of the NHIF had to cover the inflation rate or corresponded to the growth of the GDP in the country during the research period, and we assume a linear growth for simplicity, the chart would be like this – Figure 31.

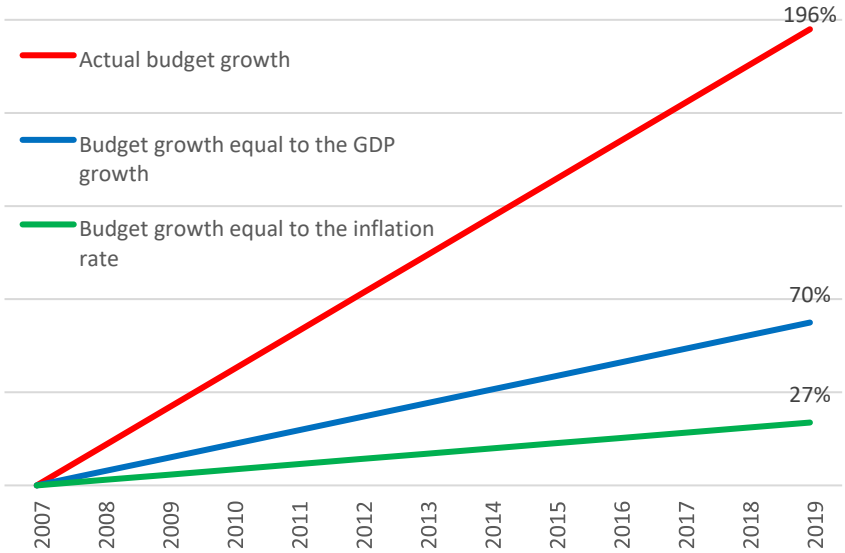

Figure 31: A linear representation of the NHIF budget growth corresponding to the inflation rate, economic growth and actual for the period 2007-2019 (in percentage)
Source: Author's chart based on the data provided by NHIF, NSI, Eurostat

2. Common goods and External effects

According to most economists healthcare and education must be regarded as *Common Goods* (CG). CGs are non-rivalrous and non-excludable, i.e. where one party gets more of the good this doesn't mean that the other party will get less of it. Since such CGs like education and healthcare provide enormous positive *External Economic Effects* (EEE), the market does not do a good job of suppling these goods. This is due to the fact that every provider of a given service will always try to internalize the positive effects. Such spill-overs are not acceptable by a private company, which would always try to be compensated for them. Therefore, all the economists know that when a CG is

placed under market conditions it deviates from the expected results, and does not serve the society the best possible way and normally cause serios market failures.

3. Marginal utility of money

Another serious issue is the *Money Marginal Utility* (MMU). In his 1923 study entitled "Industrial Fluctuations", Arthur Pigou concluded that the marginal utility of money as a good does not exist (Pigou, 1923). Similar is the assumption of the Austrian school, with the thesis that "money has no diminishing marginal utility" (Tchipev, 2016, p. 12). In this case, money is regarded as a means of accumulation. If money does not have marginal utility, holding 1 million units will not reduce the desire to increase wealth by 10% or more at an acceptable risk.

Therefore, if the medical institutions have the chance to secure more funds, they will always do it, since part of this money are directed towards salaries, dividends and other kinds of remuneration.

4. Private investments

We cannot but see that the private medical institutions invest huge amounts of money in physical capital. A private company, operating in any market would do that if only it expects for the invested capital to secure at least a normal profit and in most of the cases an economic profit. This leads to the constant pressure for an increase of the NHIF budget each year.

5. Economic stimuli created by the authorities

To the above stated economic provisions we can add the economic stimuli for the hospitals created by the NHIF and the Ministry of Health. The medical institutions in Bulgaria operate in a relatively poor society and the predominant source of funding is the money from the NHIF. The hospitals are paid per a patient, the days of treatment and the procedures applied. If we take into account that illnesses are not guaranteed to the hospitals, or the demand of medical services is not as stable as in the demand in other markets, and taking into account the huge capital investments made by the medical institutions, then it is normal to expect that the hospitals will try to take the best paid clinical procedures thus securing more money. In order to reduce the costs, it is also normal to expect that not all procedures and treatments are carried out. In such an economic situation and the stimuli created by the government institutions, the only barrier in front of information abuse remains the diminishing desire for more money, and Pigou proved that money does not have marginal utility. Therefore, the healthcare system in Bulgaria itself create prerequisites for abuses, including financial ones. In order to prevent such abuses, the government has to perform incessant control over the medical institutions in the country and monitor each case, which is almost impossible, since great resources in terms of financial and human capital would be required.

If the system itself is corrupt in its foundations and the market severely deviates from the best possible one for the society, then improvements are mandatory to be applied, or the system has to be changed. *Healthcare creates enormous positive external effects for the whole society and does not need to work for profit.*

V. CONCLUSION

The Bulgarian healthcare system has undergone many radical changes for the past 20 years, many of which of dubious nature and with suspicious “positive” results. The money for healthcare is constantly increasing regardless of the facts that: the population is quickly diminishing, there are not any severe epidemic or pandemic illnesses in the country, the health state of the population is not improved considerably, the GDP is relatively slowly growing and the inflation rate is within the desired limits of the Bulgarian National Bank. Regardless of any increase in the NHIF budget, the money is never enough, which raises a lot of questions, especially concerning the inpatient treatment, the private hospitals investments and funding, and the money spent on pharmaceutical products.

The efficiency of the GPs and the limited number of referrals to outpatient specialists and inpatients services is also considered problematic, since the postponement of adequate treatment prolongs the agony of the patient, increases the DALY index and is sometimes lethal.

All these have markedly strong negative effects on the society and the economy with all the secondary and tertiary negative effects. The example of a perfect asymmetric information market is, to put it mildly, really alarming, especially with the weak to nothing efforts from the state to compensate for the negative effects. In a market, where the income of the medical representatives depends on the clinical referrals, patients' diagnoses and medicines prescribed, we cannot expect anything but a severe market failure. Even the government admits that the budget of the NHIF is quite far from the better channeling of the funds, with a lot of holes unplugged and serious abuses.

The system is constantly being criticized by patients, patients' organizations, representatives of the medical professions, their organizations and foreign research and authority bodies.

Therefore, the next step in our research is to conduct surveys amongst the interested parties in the healthcare market and to come up with better suggestions for the system improvement or change.

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