

PAYMENTS FOR STATE INSURED PERSONS IN THE CZECH HEALTHCARE SYSTEM - NEW CHALLENGES AND FUTURE PERSPECTIVES¹

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ABSTRACT

The paper highlights the importance of payments for state insured persons in the Czech Republic financial and healthcare system, and subsequently, structural components are described. This is a very current issue, as payment is defined only until the year 2020 and the situation after that date remains unclear. The article deals with four possible approaches to the determination of the payments, i.e. how the assessment base for these payments might change in the year 2021. Based on these scenarios and demographical projections, development of this payment is calculated until the year 2030. It can be concluded that the development of the payment will on the one hand depend on the available resources of the state budget and on the other hand on the needs of the healthcare system.

Keywords: ageing, healthcare, public expenditures, sustainability, health insurance.

JEL Classification: I10, H51

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INTRODUCTION

Today, financing of the healthcare system poses a problem for almost every developed country due to its many consequences and the complexity of the system. The system undoubtedly affects functioning of a national economy as described in the crucial publication, “National Strategy Health 2020”, issued by the Czech Ministry of Health (MoH, 2014). An individual’s health status can be determined by genetics, lifestyle, education, healthcare, wealth, environment and other aspects. On the other hand, the health of the population influences a national economy’s productivity, labour supply, education, capital formation and rate of savings and investments (European Commission, 2005). The relevant question is the proportion of the above mentioned factors. Based on the literature we know that the major factor is lifestyle (50 %), followed by the environment (20 %), genetics (15 %) and healthcare system (15 %) (Drbal, 2005; Maatyová, 2012). Also social determinants including income, employment, education (Janečková, Hnilicová, 2012) should not be neglected. It is clear that the healthcare system has a limited influence on human health, but its importance cannot be denied if we want to achieve economic objectives.

Healthcare comes first and foremost when it comes to the impact of ageing on public finances. In this context the issue of increasing life expectancy is often mentioned as it results in a longer use of healthcare services and a wider use of these services, especially in old age, because of more complex diseases (Heady, 2015), (Mertl, 2014). The absolute public spending on healthcare is growing steadily. Scientific sources define a number of other causes of this growth, along with the above mentioned ageing of the population they include: expansion of new technological approaches, income effect, Baumol’s cost disease, various institutional characteristics and the level of health services’ centralization (Chernew, Newhouse, 2011; Martín at al., 2011; Oxley, Morgan, 2009).

Politicians have to manage the opportunities on the revenue side to meet the increasing demand on the expenditure side of the system. Public finances significantly influence healthcare financing in many countries, and they especially contribute to the reimbursement of healthcare to people who are unable to pay for it themselves due to their social situation, age, health status etc. The financing generally relies on a high level of solidarity because there is no link between contribu-

tions and the consumption of services. There are two main groups of typologies of the public financing schemes (the revenue part) in European countries – the Beveridge system of the National Health Service financed by collected taxes and the Bismarck mechanism of social health insurance (Olsen, 2017). In practice we usually see a mix of these two approaches. In recent years, efforts have been made to allocate part of the revenues from excise taxes for financing of the healthcare – by taxing unhealthy commodities (e.g., highly caloric or sugary diet). In 2017 the Czech Republic also discussed the possibility of a similar tax used for covering investments in hospitals, but it was not put into practice (CTK, 2017).

The Czech state budget is also involved in healthcare financing for people who are unable to pay for it themselves. It is done through “payments for state insured persons”. This payment is unified for all persons belonging to this group. This amount, together with the collected premium, is then distributed on the basis of age, sex and from the year 2018 also based on pharmaceutical economic groups among health insurance companies (Act No. 592, 1992). It is a known fact that revenues and expenditures associated with state insured persons differ significantly (Gajdošová, 2017; Mertl, 2011).

The paper deals with one of the most topical questions of today’s Czech healthcare financing issues, as the future of this payment is defined only until the year 2020 and further development is unclear (Act No. 297, 2017; MoF, 2017b). In light of these facts, the research question focuses on the analysis of the possible approaches to determine the amount of the payment. The answer to this question is crucial and should be used by policymakers as one of the bases in case of intervention in this mechanism. The undisputed added value of this question is its possible use in real decision-making; thus, this approach can be considered as an evidence-based policy.

The paper is divided into three parts (excluding introduction and conclusion). The first part evaluates the significance of these payments in healthcare financing and state budget expenditures in the Czech Republic. The second one describes structural elements of payments. The most important part is the third one, where approaches for determination of the assessment base are included. The last section is based on these scenarios and demographical projections and focuses on development of this payment is calculated until the year 2030.

The data on the numbers of state insured persons are obtained from the Czech Ministry of Finance (MoF, 2005-2017). Total payments for state insured persons are also retrieved from statistics published by the same institution (MoF, 2017a). To meet the stated goals, the article uses general scientific methods including the method of analysis, comparison and specification. The results obtained by quantitative analyses are also generalized. The synthesis method is used at the end of this contribution.

1 SIGNIFICANCE IN THE PUBLIC FINANCE SYSTEM OF THE CZECH REPUBLIC

There are many ways to evaluate the significance of these payments in the Czech Republic's financial system.

At first, a table with an absolute indicator is included. There we can see that in the analysed period the payment almost doubled. There is no information about the development of other related variables needed for significance evaluation, so the share in the total budget expenditures was calculated. Payments for state insured persons are an additional source to collected premiums for public healthcare system financing, but there are other revenues in the system, which means that the share in total revenues can be the best indicator (see below).²

Tab. 1 » Total payments for state insured persons (bn CZK)

| 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| 33.7 | 43.0 | 47.5 | 47.3 | 48.7 | 52.7 | 52.7 | 52.9 | 53.7 | 59.9 | 60.9 | 62.3 |

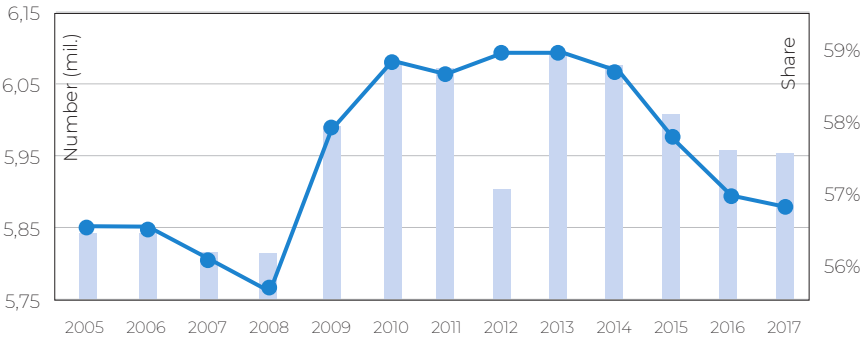
Source: (MoF, 2017a)

The payments for state insured persons are undoubtedly influenced by the number of these persons. Another aspect that is also closely linked to the number of these persons is their high share in the total number of insured persons and whether this kind of “social benefit” is necessary for this number of state insured

² Under the standard of national accounting ESA 2010, public health insurance system is part of general government sector (subsector S.1314), if the public health insurance system is in deficit, it also has an impact on the general government sector (CZSO, 2015).

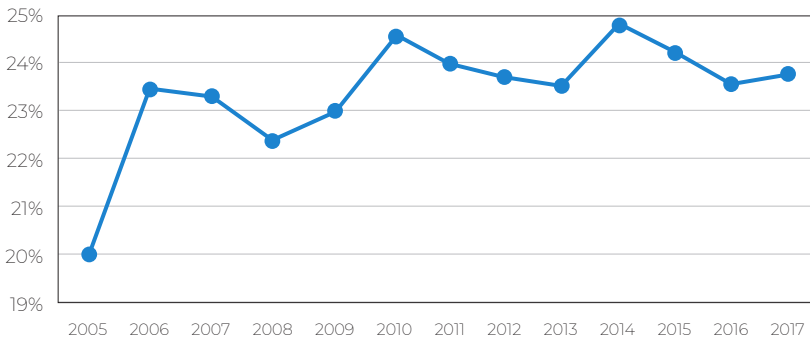
persons. The number of state insured persons is linked to economic development (especially job seeking category) and demographical conditions (pensioners and children are the majority) – see Figure 5.

Fig. 1 » Average total number of state insured persons and their share in total number of insured persons in healthcare system



Source: authorial computation based on (MoH, 2005-2016; (MoH, 2017)

Fig. 2 » Share of payments in total healthcare system revenues



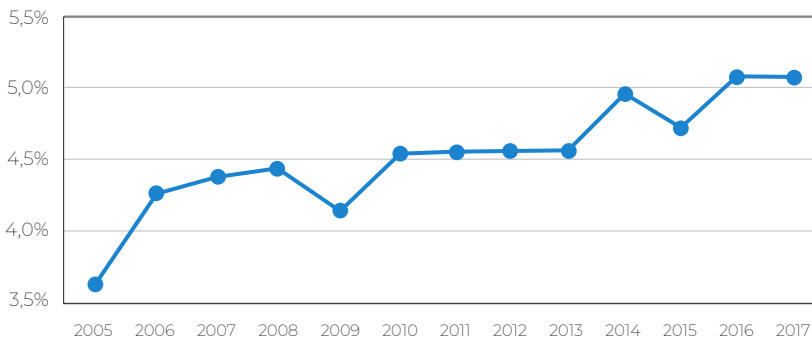
Source: authorial computation based on (MoF, 2017; (MoH, 2005-2016; MoH, 2017)

Figure 2 focuses on the importance on the revenue side of the Czech healthcare funding (for more details see annexes). Payments for state insured persons are an additional source to collected premiums. These payments represent around

a quarter of total revenues. By comparing Figures 1 and 2, we get a clear evidence of solidarity of the Czech system (for more than a half of all insured persons are paid just about 25% of healthcare revenues, the major part of collected premiums comes from employees and their employers).

Based on previous information a question might arise as to why the payment is not higher. The answer to this question is quite challenging because the payment is at the same time expenditure of the Czech state budget (see annexes). At present, Czech budgets have high share of mandatory and quasi-mandatory expenditures. Between the years 2005 and 2017, it was on average about 74% of all expenditures (Government, 2017). Therefore, the possible space for active fiscal policy is already very limited and increasing the mandatory spending is not desirable.

Fig. 3 » Share of payments in total state budget expenditures



Source: authorial computation based on (MoF, 2017a; MoF, 2018a; MoF, 2018b)

2 STRUCTURAL ELEMENTS OF PAYMENTS FOR STATE INSURED PERSONS

This part of the paper concentrates on mechanisms that are necessary to understand the suggestions in the key part of the article.

These payments are set by the Ministry of Finance in cooperation with the administrator of a special redistribution account (i.e., the VZP insurer) (Act No. 592, 1992). In the year 2017, the system of premiums redistribution was amen-

ded (because of the above mentioned new system of pharmaceutical economic groups) (Act No. 145, 2017). For our purposes we can assume that the nature of the structural elements remained the same.

The monthly payment for the next month¹ is calculated based on the equation:

$$\text{Payment}_M = (R \times AB_M) \times (N_t + C_{t-3}). \quad (1)$$

All mentioned variables need to be described in more detail (current state and development in the past, from 2005 to 2017).

- Payment_M = total payment in a specific month,
- Rate of public insurance premiums (R) = 13.5 %, throughout the whole period
- Monthly assessment base for state insured persons (AB_M) = in monitored years, the figure was mostly growing and so was the monthly payment (see Figure 4)⁴,
- The number of state insured persons in the month of the payment (N_t) = this indicator is influenced by a number of factors (e.g., unemployment, economic development, etc.). It should be mentioned that no significant new groups of state insured persons were established and the shares of individual groups did not change in the analysed period either (for indication, Figure 5 shows the structure in 2017).⁵
- Correction of the number of state insured persons in the month $t-3$ (C_{t-3})⁶= this feature was crucial for deciding in which years this analysis should be done. System $t-3$ has been used since 1 January 2005 (Decree No. 644, 2004).

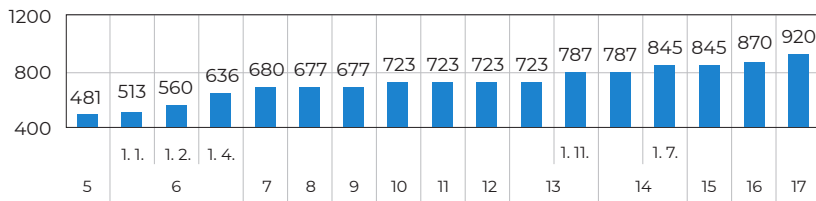
³ Under relevant legislation, the payment paid in month t is the payment for the next month ($t+1$). (e.g., the payment for April 2018 is paid in March 2018) (Act No. 592, 1992).

⁴ After multiplying the assessment base by the rate, the result is rounded up to the whole crown.

⁵ This is a simplified overview, a list of all groups can be found in the related legislation (Act No. 48, 1997).

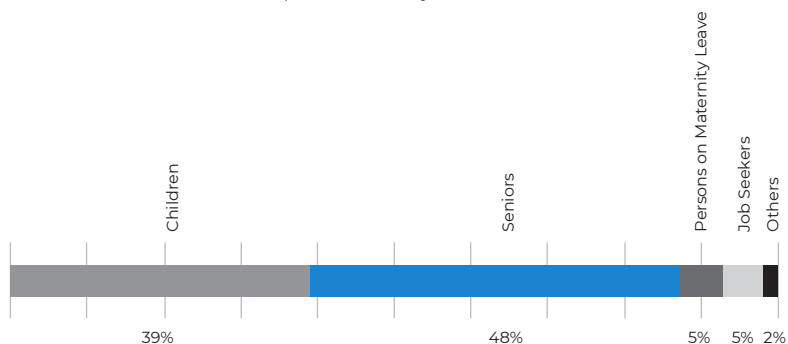
⁶ E.g., the number of state insured persons in March 2018 is corrected by the number in December 2017. Since 1 January 2018 the rule has changed, the present decree was abolished, but the same mechanism was incorporated directly into the law (Act No. 145, 2017). Until 2005, the conditions were not precisely defined.

Fig. 4 » Monthly payment per one person between the years 2005–2017 (CZK)



Source: authorial computation based on (MoF, 2017)

Fig. 5 » Structure of state insured persons in the year 2017



Source: authorial computation based on (MoF, 2017)

3 CONSIDERED APPROACHES AND THEIR IMPACT IN THE YEAR 2021

As is shown in Figure 4, the changes in the payment per one person differed throughout the period. This can be explained by the mechanism of the change. It is stipulated in a government decree that takes into account the development of the average salary published by the Czech Statistical Office, the available resources of the state budget and the financial balance of the public health insurance system (Act No. 592, 1992). For the year 2018, the same mechanism of increasing the assessment base to 7,177 CZK is used (Government Regulation No. 140, 2017). Act No. 297/2017 Coll. meant a turning point, as the assessment for the

years 2019 and 2020 was directly incorporated into the law. For the year 2019 it is 7,540 CZK and for the year 2020 it is 7,903 CZK.

Tab. 2 » Prediction of payments for state insured persons⁷

| | 2018 | 2019 | 2020 |
|---------------------------------|-----------|-----------|-----------|
| Monthly assessment base (CZK) | 7,177 | 7,540 | 7,903 |
| Payment per person (CZK) | 969 | 1,018 | 1,067 |
| Total payment (bn CZK) | 69.80 | 73.32 | 76.85 |
| Number of state insured persons | 6,002,000 | 6,002,000 | 6,002,000 |

Source: authorial computation based on (MoF, 2017b; Government, 2017)

The aim is to verify the different scenarios and their impact in the year 2021. The options are as follows: the same amount as the average absolute increase (*AAI*) between the years 2005 and 2020, the same amount as the average relative increase (*ARI*) between the years 2005 and 2020, the same proportion of total state budget expenditures (*PB*) as in the year 2019⁸, the same amount as the average proportion of total healthcare system revenues (*APH*) between the years 2005 and 2020.

These options represent the result of rational thinking about possible decisive criterion chosen for assessing the payment for the year 2021. Of course, it is also possible to consider more complicated and complex models working with a number of distinct input variables. We used simple scenarios but this is their advantage as they are easy to comprehend.

⁷ The State Budget of the Czech Republic for the year 2018 is used because it was published later than the Budgetary Strategy 2018–2020. The number of insured persons was calculated by the authors of this paper, this quantity is important for predicting possible assessment base.

⁸ It is expected that the total state budget expenditures in the year 2021 will be rising in the same amount as between the years 2019 and 2020. The calculation is also done with an average proportion of the total state budget expenditures between the years 2005 and 2020. As the average proportion is just 4.7%, it means a year-on-year decrease in the payment, which is unrealistic.

3.1 AVERAGE ABSOLUTE INCREASE BETWEEN THE YEARS 2005 AND 2020

This indicator was chosen because it is not possible to expect a steep increase in this expenditure. The average absolute increase (*AAI*) is calculated as:

$$AAI = \frac{\Sigma(P_t - P_{t-1})}{n} = \frac{43.12}{15} = \mathbf{2.87} \quad (2)$$

Where P_t is the total payment in year t ; P_{t-1} is the total payment in year $t-1$ and n is the number of analysed years. These symbols are used in the following equations.

3.2 AVERAGE RELATIVE INCREASE BETWEEN THE YEARS 2005 AND 2020

The relative indicator was chosen for a similar reason like the previous one. The average relative increase (*ARI*) is calculated as:

$$ARI = \frac{\Sigma(P_t/P_{t-1})}{n} = \frac{15.88}{15} = \mathbf{1.06} \quad (3)$$

3.3 PROPORTION OF TOTAL STATE BUDGET EXPENDITURES IN THE YEAR 2019

One possible way to determine the payment in the year 2021 is to maintain its share in state budget expenditures. This, however, is unrealistic, firstly because of the legislative process and secondly, in order to ensure foreseeability for sovereign entities to use for their calculations the amount used in the previous year (i.e. 2020), it is necessary to use the amount for 2019.

The proportion of total state budget expenditures (*PB*) is calculated as:

$$PB = \frac{P_{2019}}{BE_{2019}} = \mathbf{5.47 \%} \quad (4)$$

Where P_{2019} is the total payment in the year 2019 and BE_{2019} is the total state budget expenditures in the year 2019.

3.4 AVERAGE PROPORTION OF TOTAL HEALTHCARE SYSTEM REVENUES

Another way to assess the variable is to fix the ratio of the total system revenues. Here, the Ministry of Finance in cooperation with the Ministry of Health first calculate the share of payments in the total healthcare system revenues immediately after they evaluate the Annual Reports of Health Insurance Companies for the year 2019 (it is also necessary to omit one year). In the next step, the revenues of the system in 2021 will be estimated. And finally the share will be multiplied by the revenues to obtain an estimate of the required amount of payments and the change of the assessment base will be determined. The Average Proportion of Total Healthcare System Revenues (APH) is calculated as:

$$APH = \frac{\sum(P_t / THR_t)}{n} = \frac{3.52}{15} = 23.5 \% \quad (5)$$

Where P_t is the total payment in year t ; THR_t is the total healthcare system revenues in year t and n is the number of analysed years.

3.5 RESULTS

We can conclude that the obtained results are not the same, which was to be expected. Obviously, there are many factors that must be taken into account in the final decision (economic conditions and their impact on the state budget, employment and wages, various aspects of healthcare financing, etc.).

Tab. 3 » Results for payments for state insured persons in the year 2021

| | Total (bn CZK) | Assessment base (CZK) | Per person (CZK) |
|---------------------------|----------------|-----------------------|------------------|
| Absolute increase | 79.72 | 8,199 | 1,107 |
| Relative increase | 81.34 | 8,366 | 1,129 |
| Proportion on budget exp. | 78.56 | 8,080 | 1,091 |
| Proportion on system rev. | 77.71 | 7,992 | 1,079 |

Source: authorial computation

4 FUTURE PERSPECTIVES UNTIL THE YEAR 2030

There are many possibilities how to assess the number of state insured persons until the year 2030. The simplest model deals with groups containing only children (aged 0–14) and pensioners (aged 65+); but as they cover just about 78% of all state insured persons, this model is inaccurate. We use a different approach, which provides a more accurate number, based on this calculation:

The total number of state insured persons in year t ($NSIP_t$):

$$NSIP_t = (K_{ch} \times NPch_t) + (K_p + NPP_t) + AV_{oth} \times (K_{ch} \times NPch_t + K_p + NPP_t) \quad (6)$$

Where K_{ch} is the average relation between children as a category of state insured persons and the number of inhabitants under the age of 15 (similarly the indicator K_p is used for pensioners). $NPch_t$ is the predicted number of inhabitants between the age of 0 and 14; NPP_t is the predicted number of inhabitants older than 65 and AV_{oth} follows average share of other groups of state insured persons (i.e., without children and pensioners) between the years 2005 and 2017 using the relevant statistics (MoF, 2005–2017 and CZSO, 2018a). The calculation of the last variable is needed to obtain a more realistic view of the situation, but it is based on the assumption of the same proportion of the selected groups and unchanged legislative background for the determination of state insured persons.

The prediction is based on a dataset from the medium variant of Czech demographical prediction to the year 2100 (specifically the table “Age Distribution of the Population by the Age Groups, Both Sexes (to 1.1.)”) (CZSO, 2018b).

4.1 HYPOTHETICAL SCENARIOS OF PAYMENT

Two scenarios of payment are considered, the first one assumes the same assessment base during the whole period and the second one uses the same year-to-year growth as it is calculated between the years 2020 and 2021. As other finding can be seen the influence of demographical conditions on total payment, because the total number of state insured persons remains the same for both versions.

Tab. 4 » Results for payments for state insured persons ($AB_{2021} = AB_{2030}$)

| Bn CZK | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| AAI | 84.68 | 85.19 | 85.34 | 85.23 | 85.13 | 85.22 | 85.33 | 85.77 | 86.31 |
| ARI | 86.36 | 86.88 | 87.03 | 86.92 | 86.83 | 86.91 | 87.03 | 87.47 | 88.02 |
| PB | 83.45 | 83.96 | 84.10 | 84.00 | 83.90 | 83.99 | 84.10 | 84.53 | 85.06 |
| APH | 82.38 | 82.88 | 83.02 | 82.92 | 82.83 | 82.91 | 83.02 | 83.44 | 83.97 |

Source: authorial computation

The first one shows the situation with an unchanged assessment base, which may cause minor year-to-year changes (when comparing with development in the past).

Tab. 5 » Results for payments for state insured persons ($AB_{t+1}/AB_t = AB_{2021}/AB_{2020}$)

| Bn CZK | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|--------|-------|-------|--------|--------|--------|--------|--------|--------|--------|
| AAI | 87.85 | 91.70 | 95.30 | 98.75 | 102.33 | 106.28 | 110.41 | 115.13 | 120.20 |
| ARI | 91.38 | 97.27 | 103.10 | 108.96 | 115.16 | 121.97 | 129.23 | 137.43 | 146.34 |
| PB | 85.33 | 87.78 | 89.91 | 91.81 | 93.77 | 95.98 | 98.27 | 100.99 | 103.91 |
| APH | 83.15 | 84.44 | 85.38 | 86.07 | 86.78 | 87.68 | 88.62 | 89.91 | 91.32 |

Source: authorial computation based on (MoF, 2017b; Government, 2017)

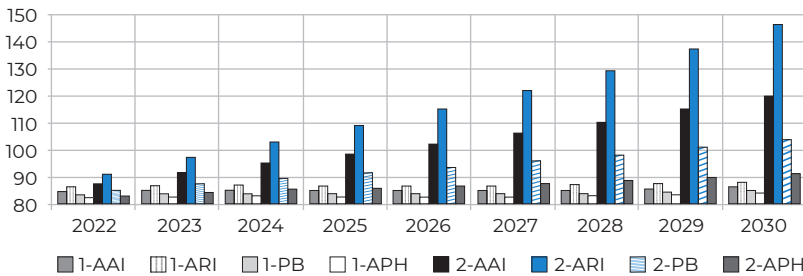
The second scenario with increasing assessment base is more interesting and maybe more likely. This table shows different results with different year-to-year growth. Especially the prediction for the last year 2030 is remarkable when comparing the obtained values.

4.2 EVALUATION

Figure 6 is included for better evaluation as it shows the joined impact of all considered mechanisms (scenario 1 and scenario 2). From the point of view of the state budget, the most expensive version is 2-ARI (average relative increase when using parameters of the years 2020 and 2021), when the amount for the

year 2030 exceeds 140 bn. CZK; conversely, the cheapest version can be determined by comparing the same part of the figure, possibility APH (average proportion of total healthcare system revenues) with the amount in the year 2030 under 100 bn. CZK. Clear system can be fixed proportion of the state budget expenditures (PB), whose advantage is its predictability in the future based on the existence of the budgetary frameworks and midterm budgetary strategic documents. This approach does not show any significant growth. The AAI is a simple option; however, it is quite inappropriate in our time to introduce new mechanism using this structural element.

Fig. 6 » Comparison (bn CZK)



Source: authorial computation

CONCLUSION

As the title of the article suggests, the discussed subject will become one of the biggest issues in on the coming years in terms of public finances allocated into the health system. Another related topic is the healthcare financing perspective is connection with the most represented groups, i.e. children and pensioners. The increase in their numbers undoubtedly reflects the developments in the demographic area. The article describes how the state payment is determined. The key point in the current discussions is the mechanism based on which the assessment base is determined. Its determination leads us to the conclusion that the most important aspects will be the available resources of the state budget and the needs of the healthcare system. As we know, the interval of the possible public spending increase is quite wide. Further publishing activities should focus on applying econometric approaches to determine the changes. Subsequently, these data could be

compared with results obtained in this article. Other crucial fact for future analyses of these payments is certainly the impact of the current economic growth, which influences the model trend development and has an impact on wages, the minimum wage, demographic structure, unemployment, etc. Recommendations for future research directions also include modelling of possible future scenarios.

ANNEXES

Tab. 1 » Comparison with total budget expenditures (bn CZK)

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Av. Share |
|-------------|--------|--------|--------|--------|--------|--------|--------|-----------|
| Payment | 43.0 | 47.5 | 47.3 | 48.7 | 52.7 | 52.7 | 52.9 | |
| Budget exp. | 1020.6 | 1092.3 | 1083.9 | 1167.0 | 1156.8 | 1155.5 | 1152.4 | |
| Share | 4.2 % | 4.3 % | 4.4 % | 4.2 % | 4.6 % | 4.6 % | 4.6 % | 4.6 % |
| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | |
| Payment | 59.9 | 60.9 | 62.3 | 65.3 | 69.8 | 73.3 | 76.8 | |
| Budget exp. | 1211.6 | 1297.3 | 1219.8 | 1279.8 | 1293.3 | 1341.5 | 1388.6 | |
| Share | 4.9 % | 4.7 % | 5.1 % | 5.1 % | 5.4 % | 5.5 % | 5.5 % | |

Source: authorial computation based on (MoF, 2017a; MoF, 2017b; MoF, 2018a; MoF, 2018b; Government, 2017)

Tab. 2 » Comparison with healthcare system revenues (bn CZK)

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Av. Share |
|----------|-------|-------|-------|-------|-------|-------|-------|-------|-----------|
| Payment | 33.7 | 43.0 | 47.5 | 47.3 | 48.7 | 52.7 | 52.7 | 52.9 | |
| Revenues | 168.9 | 182.8 | 202.8 | 211.4 | 212.2 | 215.6 | 220.4 | 223.6 | |
| Share | 20 % | 24 % | 23 % | 22 % | 23 % | 24 % | 24 % | 24 % | 23.5% |
| | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | |
| Payment | 53.7 | 59.9 | 60.9 | 62.3 | 65.3 | 69.8 | 73.3 | 76.8 | |
| Revenues | 228.6 | 241.3 | 252.6 | 264.9 | 276.6 | 290.5 | 303.8 | 316.9 | |
| Share | 24 % | 25 % | 24 % | 24 % | 24 % | 24 % | 24 % | 24 % | |

Source: authorial computation based on (MoF, 2017a; MoF, 2017b; MoH, 2005–2016)

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