The Medium-term Financial Sustainability of the Czech public Health Insurance System

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Abstract. This paper deals with the forecast of the Czech public health insurance system in the period of 2018-2020. In recent years, the expenditures on healthcare have been exploding very quickly. The strong growth of the Czech economy has provided sufficient resources for covering of the expenditures rally. The authors strive to answer the question, what will happen if the economy swings to the recession. Two alternative scenarios are constructed to project two types of an economic slump. The paper quantifies the risk for the state budget in the range of 10-40 bill. CZK and indicates the risk of delays in payments to health care providers. Both risks could be mitigated by immediate increasing the reserve ratio of the health insurance companies.

Keywords: Czech public health insurance, financial sustainability

JEL Classification: H51, I13

1 Introduction

„*The problem of sustainability presents itself as an accounting problem, where health system revenue is insufficient to meet health system obligations.*" (Thomson, Foubister, Mossialos., p. xiv). When talking about sustainability of public finance, a discussion usually focuses on long-term view in connection with demographical changes (i.e.OECD). This affects mainly social systems, including public health insurance system. However, we can not omit a medium-term sustainability which is determined by other factors than demographic changes. The purpose of this paper is to point out the risks of current unsustainable trends of financing the Czech public health insurance system in the mid-term period and quantify potential impact on the reserves of the health insurance companies and the state budget. Unsustainability is demonstrated by the projection of possible economic recessions in the three-year horizon. Projected recessions have the same parameters as the real 2009 and 2012-2013 recession in the Czech republic.

The paper is divided into five parts. In the following chapter, we describe the development of the system in recent years to understand where the current trends came from. The next chapter is devoted to the construction of baseline projection and two alternative scenarios of economic recession. Then, the results of the models are discussed and implications for policy-makers are formulated. In the end, the conclusion is added to highlight the most important findings.

2 Public health insurance system in recent years

Table 1 shows the basic parameters of the Czech public health insurance system during 2004-2017, provided by the Ministry of Finance which collects and elaborates data reported by the health insurance companies. Dataset represents most comprehensive and stable source of information on the Czech public health insurance system and includes the subsidy from the state budget that accounts for approximately one quarter of the overall revenues. The 2017 year parameters are based on the plans of the health insurance companies. The period of 2014-2017 is determined by expansive reimbursement decree, although the year 2016 brings the surprisingly lower rate of growth of expenditures on healthcare. In 2014 and 2015, the compensation for abolished out-of-pocket fees took place as the singular influence of expenditures.

On the contrary, regular influence is the effort of the government to assure promised increasing in the salaries and wages in the segment of bed-care. This effort is mostly visible in 2017 (increase wages by 10 %) and it is going to continue in 2018. Apart from that, rather restrictive reimbursement decrees were applied in order to deal with financial resources shortage during a mild but long recession.

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Table 1: Czech public health insurance system (2004-2017)

Year	2004	2005	2006	2007	2008	2009	2010
Revenues in mil. CZK	157,053	168,881	182,833	202,808	211,360	212,199	215,615
Expenditures in mil. CZK	156,811	168,417	180,011	185,610	200,592	218,630	222,500
Surplus(+)/deficit(-)	242	464	2,822	17,198	10,768	-6,431	-6,885
Year	2011	2012	2013	2014	2015	2016	2017 plan
Revenues in mil. CZK	220,391	223,631	228,568	241,258	252,586	264,853	276,590
Expenditures in mil. CZK	225,547	230,371	229,905	239,012	252,003	258,999	276,566
Surplus(+)/deficit(-)	-5,156	-6,740	-1,337	2,246	583	5,854	23

Source: data sent at the request from the Ministry of Finance of the Czech Republic

Deep crisis in 2009 deteriorated health insurance companies´ reserves that were accumulated during the times of previous economic boom. This development is visible in Figure 1."Reserves" are here defined as the whole liquidity of the health insurance companies on the bank accounts, not only sources held in Reserve Funds. They serve as the buffer that can absorb negative shocks without financial intervention from the state budget and without negative impact on quality and access of healthcare. Thus they ensure financial stability of the public health insurance system.

"Reserve Ratio" means the share of "reserves" on the overall expenditures:

$$Reserve\ Ratio = \frac{Reserves}{Expenditures}\ x\ 100\ \%$$

We include even operational and investment expenditures as their share of overall expenditures is marginal and relatively stable. And what is more, health insurance companies use savings in operational and investment expenditures to subsidy payments to healthcare providers when necessary.

Figure 1: Reserve Ratio of the public health insurance system
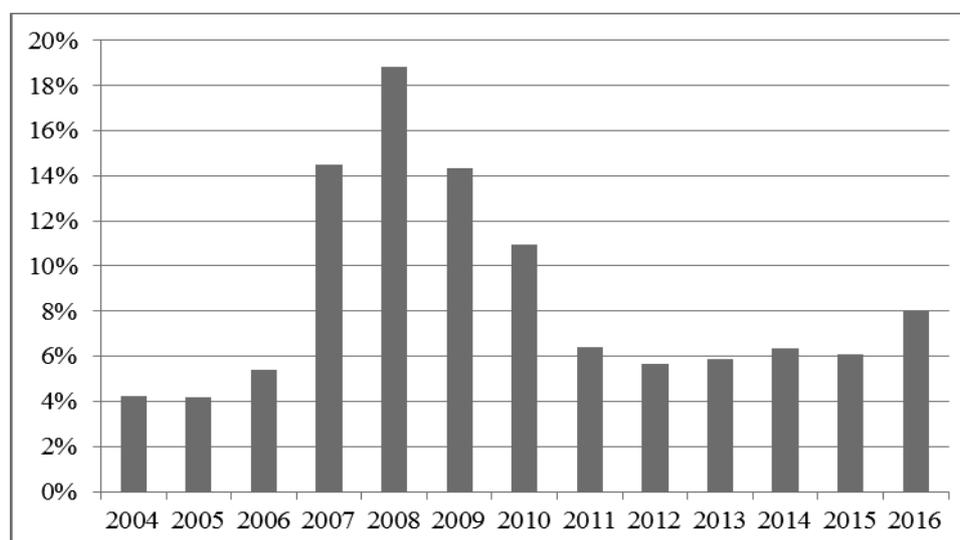
Source: data sent at the request from the Ministry of Finance of the Czech Republic

From Figure 1 is also visible that high Reserve Ratio appeared very helpful to sustain the both recession of 2009 and 2011-2012 without increasing subsidy from the state budget. The long period of economic boom in the previous decade was contributed to the reserve accumulation up to nearly 19 % overall expenditures of the system. The following recessions decrease Reserve Ratio by 12 p.b. to approximately 6 %.

3 Baseline prognosis and alternative scenarios

For our purposes, we construct two alternative scenarios. The first one simulates the mild but long recession, the second one simulates deep recession similar to the 2009´s economic slump and slow recovery. The baseline prognosis data are connected with the Macroeconomic Forecast published by the Ministry of Finance in January 2017.

The input parameters crucial for difference from baseline projection are following: the nominal growth rate of wages and salaries (Ministry of Finance of the Czech Republic, p.37) and the number of unemployment persons. The first dominantly affects the revenues from the public health insurance that generally covered people without income. The second mainly determines the subsidy from the state budget in the short and mid-term period.

The output parameter and result of the alternative scenarios is deficit/surplus defined as the difference between overall revenues and overall expenditures. Deficit/surplus is directly projected to the sum of reserves of the public health insurance system. As each model brings a simplification, all alternative scenarios are based on several assumptions. The common assumptions for both models are:

- Annual growth rate of expenditures is equal to the average of 2016 and 2017 growth rate.
- 2017 growth rate of expenditures and other parameters are taken from the Cabinet approved plans of the public health insurance companies.
- Models are static. It means we assume no reaction on the worsening of revenue situation such as lowering payments to providers of healthcare.
- Public health insurance companies automatically subsidies their Basic Funds by financial sources from other funds when necessary.
- The change in the subsidy from the state budget is only a matter of the change in the number of unemployed and the agreement between the ministers of health and finance. This agreement means that the year-to-year increase in state subsidy will reach circa 3.5 billion CZK in the period of 2018-2020. State budget subsidy is calculated as follows:

  State budget subsidy = No. of persons covered x 12 x monthly rate per person
- Monthly rate per person is equal to 969 CZK (2018), 1,018 CZK (2019) and 1,067 (2020).
- The change in the volume of collected public health insurance is equal to the growth rate of volume of wages and salaries for baseline projection.

The Table 2 displays input parameters for each alternative scenario and their comparison with the baseline prognosis. For Alternative Scenario 2, we assume the same increase in the number of persons state budget pays the public health insurance for that occurs in 2009-2011 when the rate of unemployment rapidly grew. The increase for the same parameter of Alternative Scenario 1 was nearly halved.

Table 2: The Parameters of different scenarios

No. of person (covered state budget subsidy)	2017	2018	2019	2020
Baseline projection	6,010	6,000	6,000	6,000
Alternative Scenario 1	6,010	6,090	6,130	6,110
Alternative Scenario 2	6,010	6,184	6,267	6,269
State budget subsidy in bill. CZK	**2017**	**2018**	**2019**	**2020**
Baseline projection	66.4	69.8	73.3	76.8
Alternative Scenario 1	66.4	70.8	74.9	78.2
Alternative Scenario 2	66.4	71.9	76.6	80.3
Public health insurance collected in bill. CZK	**2017**	**2018**	**2019**	**2020**
Baseline projection	207.9	217.3	227.0	236.6
Alternative Scenario 1	207.9	212.3	217.2	225.5
Alternative Scenario 2	207.9	206.9	207.9	213.6

Source: own projection

The development of the collection of public health insurance revenues was copied from the past experience. For Alternative Scenario 1 the period of 2012-2014 was reproduced in terms of year-to-year changes. For

Alternative Scenario 2 the deep crisis of 2009 was projected and then a slow recovery of 2010-2011 was reproduced.

4   Results and implication for financial sustainability

From the assumptions described in the third chapter we calculated projected revenues in Table 2. Now we compare them with projected revenues in order to quantify deficit of the public health insurance system. The results of alternative scenarios and the differences between them and the baseline projection are displayed in Table 3. As the expenditure numbers are the same for all three models the variance in deficits and reserves is caused by the different projection of the revenues.

Table 3: Output parameters of different scenarios

Parameters/scenario	2017	2018	2019	2020
Overall expenditures in bill. CZK	276,6	289,8	303,7	318,2
Surplus(+)/deficit (-) in bill. CZK	**2017**	**2018**	**2019**	**2020**
Baseline projection	0,0	0,1	-0,4	-1,9
Alternative Scenario 1	0,0	-3,8	-8,7	-11,6
Alternative Scenario 2	0,0	-8,1	-16,3	-21,4
Reserves in bill. CZK	**2017**	**2018**	**2019**	**2020**
Baseline projection	20,8	20,9	20,5	18,6
Alternative Scenario 1	20,8	17,0	8,3	-3,3
Alternative Scenario 2	20,8	12,8	-3,5	-24,9

Source: own calculations

The impacts on the Reserve Ratio of the public health insurance system are pictured in Figure 2. Even baseline projection indicates the steady fall of Reserve Ratio as the overall expenditures continue to grow. Alternative Scenario 1 leads to exhausting of reserves during the year 2020, Alternative Scenario 2 results in the quick negative progression.

Figure 2: Reserve Ratio projections 2017 - 2020
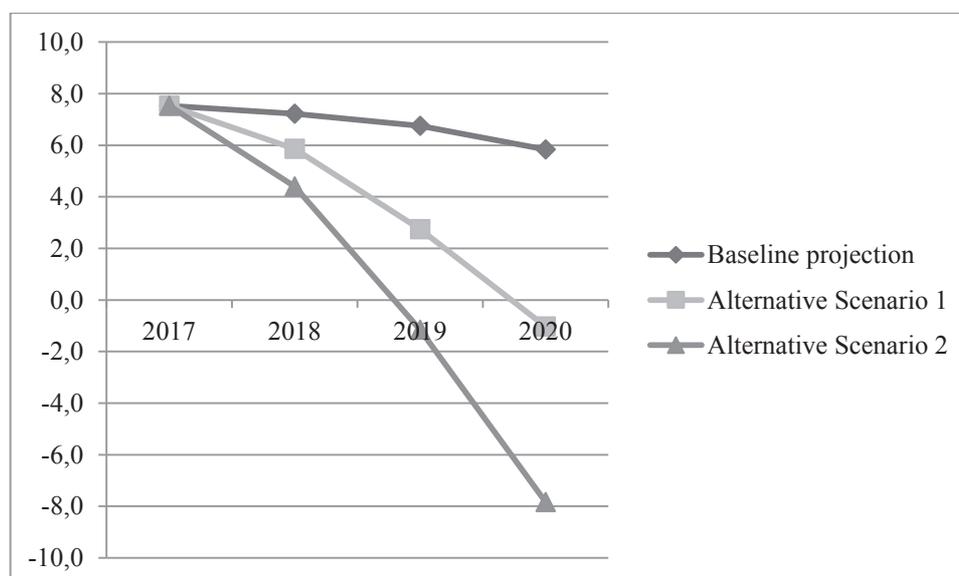
Source: own calculations

The negative value of reserves means that debts after deadline occur. They are represented by the delays of payment to the providers of healthcare. These delays might have a negative impact on the quality and access to the healthcare. It would happen that the wages and salaries of doctors, nurses and other workers in the healthcare

sector are also delayed. Two impacts that the policymakers strive not to occur. And the stakeholders, especially trade unions and Czech Medical Chamber, usually put press on policymakers in order to raise the state budget subsidy instead of lower the expenditures on healthcare or raise the health insurance rate.

What is important, the increasing subsidy from the state budget because of rising unemployment would not prevent the system from rising deficit. But we want to answer the question what additional amount of the subsidy would avoid delays of payment. The theoretical minimal increase is equal to the amount when Reserve Ratio reaches 0 %. Nevertheless, keeping zero reserves would not be sufficient to deal with fluctuating payments to healthcare providers when revenues are fluctuating too within a month. This requires Reserve Ratio reaches at least 2% austerity level. This level is set according to long term experience with health insurance companies which had problems with cash-flow when debts after deadline occurred. With this assumption, Table 4 displays the needed increase in the subsidy from the state budget and also quantifies potential risk from the state budget that current policy-makers have to bear in mind.

Table 4: Increase in the state budget subsidy to avoid delayed payment

Scenario	2017	2018	2019	2020
Baseline projection	***	***	***	***
Alternative Scenario 1	***	***	***	9.7
Alternative Scenario 2	***	***	9.4	30.3

Source: own calculations

Of course, there is always a possibility of lowering the pace of health-related expenditures. Future development needs not to keep growth rate that occurs in recent years. However, the strong pressure from stakeholders, especially trade unions, makes this impossible to realize. This implies much more probable pressure on the state budget to compensate for missing sources of health insurance revenues.

5 Conclusion

Our models of alternative scenario indicate the inappropriate current configuration of the Czech public health insurance system from the view of mid-term financial sustainability. The recent high growth rate of healthcare expenditures relies on strong growth of the domestic economy. External negative shock leading to mild recession would lead to a sizeable deficit and a decrease in reserve ratio of health insurance companies. The deeper crisis would eliminate reserves very quickly and lead to undesirable delays of payments to healthcare providers.

Current Reserve Ratio of the public health insurance system is insufficient to sustain negative revenue shock in comparison with the 2008 level, which allowed overcoming economic recessions of 2009 and 2012-13. Economic recovery from 2014 onwards has not been used for adequate restoration of reserves. Instead of that, the rapid growth of expenditures has been progressing and it requires more and more sources, both from the collection of public health insurance revenue and the state budget.

The mild but long recession similar to the slump of 2011-2012 would wind up reserves of public health insurance companies during 2020 and require additional sources of 9,7 bill. CZK. The crisis similar to the one of 2009 would liquidate reserves after two years and require additional sources of 39,7 bill. CZK to avoid payment delays to healthcare providers. When consider unwillingness of policymaker to lower healthcare expenditures it is more likely they would find these additional sources in the state budget.

Acknowledgements

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