POTENTIAL MACROECONOMIC RISKS FROM THE UNFAVORABLE DEMOGRAPHIC DEVELOPMENT OF POPULATION AGING ON THE EXAMPLE OF THE CZECH REPUBLIC

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Abstract

The main goal of the translated text is to point out the basic trends of demographic development related to the aging of the population in the Czech Republic after 2030 and based on them to identify the main areas of potential macroeconomic risks that may occur in this context for the Czech economy. The essence of the mentioned risks, aimed at weakening economic growth, lies in the insufficient saturation of needs in the labor market and a significant decrease in public financial resources (state budget, health and social insurance system). At the same time, the mentioned risks of an economic nature also represent social risks, which consist mainly in the sustainability of the level and availability of the social and health care system (social and health services and pensions). It is therefore clear that the circumstances described may also have an impact on lowering living standards. For the above reasons, the article also focuses on the area of possible reduction of negative impacts. It consists mainly in establishing an economic and social policy to shift the retirement age (finding a socially ideal length of working life) and to support employment for old-age pensioners.

Key words: demographic population aging, public financial resources, economic growth

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Introduction

Population development has become an increasingly discussed topic in recent years. The forthcoming changes in its development due to the aging of the population significantly affect the macroeconomic level of the Czech Republic. In this context, we can talk about a growing component of the economically inactive population, which, however, is not balanced by the component of the economically active population. Therefore, nowadays the problems associated with the process of demographic aging are especially discussed in connection with

the disproportion of the age structure of the population. This is one of the most important demographic processes, which is characterized by a change in the age groups of the population. The argument about the negative impact of population aging on the economies of today's European countries (including the Czech Republic) is based on the fact that the productive employed generation (Duernecker & Vega-Redondo, 2018) bears the main burden of financing welfare state programs. While the main beneficiaries of the most important fiscal spending programs are the elderly. The aging of the population is changing the age structure in favor of the old generation at the expense of the working age generation.

The expected demographic changes with the aging population of the Czech Republic will thus have a significant impact on its economy in the coming decades, specifically on the labor market and the public finance system. The growing number of social groups of seniors will also require an increase in expenditures from the social and health care system - old-age pensions, social support and assistance benefits, health and social care. This can be seen as the essence of the main potential macroeconomic risks that the Czech economy may face in the coming decades. These risks will not be completely eliminated, only mitigated through the established interconnected economic and social policy on pronatality measures, support for employment of seniors and a comprehensive reform of the social system, especially in the area of pensions, health and social care.

1. Data and metodology

At the turn of the 20th and 21st centuries, the issue of aging took on a whole new dimension, as it began to extend from the individual to the social, ie demographic (Duernecker, Vega-Redondo, 2018). The demographic structure of the population can be defined and described by a number of characteristics and indicators. In this respect, it is desirable to define several terms. One of them, which completes the idea of the share of the post-productive population, is the division according to biological and economic generations (Czech Statistical Office, 2020). Biological generations are clearly defined according to reproduction into children (0–14 years), parents (15–49 years) and grandparents generation (50 and more years). The division into economic generations is not uniform. The second generation is defined by the age of usual commencement of economic activity and the age of usual retirement. At present, the breakdown into pre-productive (0–19 years), productive (20–64 years) and post-productive (65 years and older) is often used (Czech Statistical Office, 2020).

Demographic aging in the Czech Republic is monitored by measuring the shares of age groups in the total population on the basis of indices, which is through comparative numbers (age index, productive burden indices) and average age or median age. The most common is the share of the three main age groups of the population, which are defined according to the expected economic activity of most people in a given age. It is therefore a pre-productive component of the population, which is usually stereotypically defined at the age of 0-14 years (or 0-19 years). The productive component of the population consists of persons aged 15–64 (or 20–64) and the age group of post-productive persons aged 65 and over (age group 65+). Based on the age categories divided in this way, the aging process is interpreted using the indicators of average age and age index (number of persons aged 65 + per 100 children aged 0-14) of dependency index I. (number of children aged 0-14) per 100 persons aged 15-64), addiction index II. (number of persons aged 65 and over per 100 persons aged 15–64) and economic burden index (number of children aged 0–19 and number of persons aged 65+ and more per 100 persons aged 20–59). The most common characteristic used in international comparisons is the proportion of people aged 65 and over in a given population. With regard to the specifics of monitoring potential macroeconomic risks in the context of population aging in the Czech Republic, the elaboration of the article requires in particular the application of methods of analysis, comparison, synthesis, observation and generalization.

2. Results

2.1 Initial philosophy of potential macroeconomic risks with an aging population

In essence, risks mean a potential danger that the expected phenomena will not take place and at the same time represent a term for the designation of the processes themselves, associated with such a danger as economic loss, etc. They are one of the main motivating elements of the decision-making process. On the one hand, they result from the necessity of choice, on the other hand, they force choice (Šetek & Petrách, 2016). Based on the risk reduction strategy, larger risks can be divided into a number of smaller ones. Depending on the state of readiness, risks can be identified for the expected - conscious and unforeseen. In essence, the risk involves the risk of adverse development, so it is biologically comparable to microorganisms, which, provided certain conditions are met, change their latent existence in the onset of infection (Šetek, 2015). To prevent these changes, prevention or treatment that mitigates or completely eliminates the causes of risks is of paramount importance. In order to prevent

economic losses, it is necessary for the selection of basic strategic measures in the economic and social sphere, the correct identification of risks, which can be guided from several aspects. These are, for example, risk reduction strategies: sufficient reduction, transfer or dialogue within the economic policy consensus (Šetek & Petrách, 2016). Another identification of the risk is its assessment of the probability of occurrence: risks that are completely or partially negligible, second and third degree. The cause, extent and probability of the occurrence of economic risk allow their quantification and their compilation for the creation of practical economic and social policy (Blomé et al., 2020).

2.2 Forecast of population development for the identification of macroeconomic risks

According to the forecasts of the population development of the Czech Republic, it is clear that in the coming decades it will face very significant demographic changes, caused mainly by low birth rates (after 1990 in connection with the transformation of the economy) and the associated aging population. The disproportions in the structure of the population will very significantly affect the entire economy of the Czech Republic, as well as all systems based on the redistribution of funds from economically active individuals to economically inactive - ie the entire system of public finances. This is a logical and inevitable consequence of the increasing old age dependency ratio (Blaga & Jozsef, 2014).

From the above, it is almost certain that the main problem with the appropriate macroeconomic impacts may arise after 2035. During this period, the population-strong years of the 1970s will retire. If we want to reduce the potential risks of the expected demographic development to the economy of the Czech Republic, it is necessary to take into account the long-term dynamics of the age structure of the population, including their respective predictions (Abraham & Laczo, 2018). These facts are evident from the following table 1, 2 with proven milestones in the years 2000 to 2065.

Tab. 1: Population structure of the Czech Republic by age group in years 2000 - 2065 (selected years in %)

Age	2000	2010	2015	2020	2025	2035	2045	2055	2065
0 – 14	16,4	14,2	15,1	15,6	14,9	13,0	13,3	13,9	13,2
15 – 64	59,8	70,6	67,2	64,3	63,4	62,5	57,1	53,7	54,6
65 +	13,8	15,2	17,7	20,1	21,7	24,5	29,6	32,4	32,2

Source: Czech Statistical Office 2020 and own processing

Tab. 2: Characteristics of age structure and load indices of the productive component of the Czech population between 2000-2065, selected years (in %)

Demographic indicator	2000	2010	2015	2020	2025	2035	2045	2055	2065
Average age	38,8	40,6	41,6	42,7	43,9	46,3	47,5	48,3	49,0
Age Index	83,1	107,0	117.1	128,7	145,6	187,8	222,5	232,7	243,6
Dependency Index I.	23,9	20,2	22,5	24,2	23,5	20,8	23,4	25,9	24,2
Dependency Index II.	19,8	21,6	26,3	31,2	34,2	39,1	52,0	60,2	58,9
Economic load index	59,3	54,6	59,0	66,9	72,0	74,0	89,7	103,3	100,8

Source**:** Czech Statistical Office 2020 and own processing

At the same time, according to the forecast (Population Projection of the Czech Statistical Office, 2020), the population of the 65+ age group in the Czech Republic should increase by more than half a million by 2100 (compared to 2020), ie by about 26%. At the same time, the working-age population is also expected to fall by almost 40% by 2100. This will mean a mismatch between consumer market demand and the productive capacity of the economy. A similar mismatch can also be expected in the labor market due to a reduction in the available number of human resources (Novotná & Volek, 2014).

2.3 Risks of instability of public finances

In the chain reaction of the expected macroeconomic effects of the unfavorable demographic development with the aging of the population, a significant reduction in public finance revenues (state budget, social and health insurance funds) cannot be neglected. This is logical, because the expected decline in the population of the Czech Republic in working age (by almost 40% by 2100) will undoubtedly be reflected in the tax revenues of the state budget. Primarily, lower levies can be expected due to the lower number of taxpayers of working age, whose income will be subject to taxation. Secondly, we also expect lower taxes on corporate income, where the lack of human resources in the work process is very likely to be reflected in lower prosperity and corporate profits, and subsequently in autonomous taxes (excise duty, value added tax). On the other hand, an increase in transfer payments can be expected, such as the current non-insurance social security benefits paid under state social support and social assistance for the senior segment (care allowance, mobility allowance, housing allowance..), as the representation of the post-productive age category will increase significantly in the population (Dugast & Foucault, 2018).

Not only the state budget depends on the levies of economically active persons, but also the entire system of insurance benefits based on selected social insurance. This should be affected by the expected demographic development to the same significant extent as the state budget. The social insurance system mainly finances old-age pensions, but also sickness benefits. In the case of sickness benefits, however, the impact should not be so significant, because along with the decline of the economically active population, the number and volume of sickness benefits paid should also decrease. It is logical that the situation will be completely worse in the case of old-age pensions, as the increase in the number of pension insurance benefits will be relatively significant and often accompanied by forced valorisation due to inflation. Expressed by the value of the old age dependency ratio discussed above, the degree of dependence of category 65+ on the productive age category will increase roughly twofold by 2100. While maintaining the parameters of the pension system, this would very simply mean that the contributions of the economically active would have to roughly double in order to maintain the current income standard of pensions (Prušvic & Pavloková, 2010).

2.4 Risks of instability of the health care system

Another economic risk can be identified as a significant decrease in funds in the health insurance system. It is obvious that similar effects as the state budget or the social insurance system will also be recorded by the public health insurance system, from which health care is financed (Egorov & Harstad, 2017). This system should also become a deficit, while maintaining the current parameters, with a significantly higher indicator of the old age dependency ratio. The reason is the expected reduced number of payers, ie economically active persons, on the one hand, and a significantly higher number of persons in the post-productive age (state insured persons) on the other (Džbánková & Sirůček, 2013).

The sustainability of the public health insurance system and the related level and availability of health care is also a key issue. The public health insurance system works on a very similar principle as the pension system (ongoing financing), so the above-described effects of the unfavorable demographic development can be expected here as well. State insured persons, especially in the form of seniors, should increase significantly, while real "sponsors" in the form of economically active persons should decrease sharply. With a smaller volume of funds in the health insurance system, on the other hand, demand for health care services can be expected to grow with a higher number of people in the 65+ category. In comparison with the category of persons of productive age, the category of persons 65+ has long spent up to three times higher volume of funds (Czech Statistical Office, 2020).

However, the possibility of a significant increase in statutory health insurance contributions, which would at least partially reduce this risk, does not seem very realistic in this case either.

2.5 Risks of system instability in the provision of gerontological social services

Although the Czech Republic has a relatively sophisticated system for providing gerontological social services, this area is already facing a lack of qualified human resources due to its reluctance to work in this demanding field. Demand for gerontological social services can be expected to grow strongly. It is also possible to assume that it will be very difficult to saturate this form of care sufficiently financially and in terms of personnel (Wawrosz & Valenčik, 2014).

Currently used methods for estimating future needs depend mainly on the interpretation of linear calculations based on extrapolation of data stored in relational databases (Blaga & Jozsef, 2014). These practices do not affect the inherent characteristics of the "system" of human resources of social service providers in terms of delays due to decisions on staff policy changes, delays in decision-making due to inability to perceive labor market dynamics and limited substitutability of social services professions. The result of this practice is the "masking" of negative phenomena, especially in the personnel area, and the drainage of funds that may subsequently be missing for other key activities. Therefore, it is necessary to monitor economic efficiency in the management of public funds for staffing in the above-mentioned social services, when the aging of the population will increase their share in aggregate demand within the national economy.

2.6 Risk of insufficient saturation of labor market needs

The expected trend of the decline of the population of the Czech Republic in the productive age until the year 2100 (by 40%) will be significantly reflected in the available number of human resources (ie supply) on the labor market. Problems with meeting the needs of employers were evident even before 2020 (the beginning of the covid-19 pandemic), when many companies and industries showed a long-term shortage of workers in a relatively wide range of qualifications. At the same time, it must be borne in mind that a similar situation may arise after the end of economic measures in connection with the covid-19 pandemics in a number of other economies, including advanced ones. The shortage of labor force caused by demographic development can thus be exacerbated in real terms by unfavorable migration trends, ie the departure of the Czech labor force under better conditions abroad (Pavelka, 2017).

The risk of weakening economic growth is linked to the above-mentioned risk of labor shortages. In this context, it can be assumed that aggregate demand in the economy will tend to increase (mainly due to growing more consumer-intensive age groups, new technologies and extending life expectancy), but at the same time it will face a significant barrier to production capacity - especially lack of human resources (Šetek, 2015).

Conclusion

Economic and social policy in the Czech Republic has long struggled with the unsustainability of the current social and health care system. From 2010 to 2018, the mandatory length of pension insurance gradually increased from the original 25 years to 35 years. As pension levels depend on available public finances, which are scarce due to the growing number of seniors and the declining number of economically active population, a reform of the current system is needed (Wawrosz & Valenčik, 2014).

Economic growth, or indicators of the type of gross domestic product per capita, relates to the living standards of the population. The lack of human resources in the labor market will contribute to higher employment and wage growth. However, as a result of the established economic policy to reduce the aforementioned risks, the incomes of the economically active population will be far more burdened by the growth of taxes and legal contributions to social and health insurance. The reason is simple: the unfavorable development of the ratio of persons discharging funds into the system of public finances (ie: economically active) and persons dependent on these systems (especially the category of persons in the post-productive age). The purchasing power of disposable income may therefore weaken, as may social benefits paid by the state (Egorov & Harstad, 2017). In reality, there may also be a partial reduction in supply, and in a worse case, the availability of goods on the consumer market (limited production potential, the likelihood of higher dependence on imports...). From the above facts, potential macroeconomic risks with unfavorable demographic developments are clearly aimed at reducing the living standards of the population.

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