

POSTGRADUATE FULLY MERIT-BASED AND FULLY CLOSED PAY-AS-YOU-GO PENSION SYSTEM

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Abstract

A transformation of the current social security and insurance systems in the Czech Republic into a fully merit-based and fully closed pension insurance system with a flat basic benefit can be done with minimum risks and in a smooth manner, by using a postgraduate superstructure of those systems and extending it gradually. A simple model illustrates the motivations. It also shows how resources are generated that can be used to fund the so-called productive services, i.e. services aimed at extending the productive life, including its income-generating aspect, of a person. It follows from the above that, among others, constituting an economy, in which the sector of productive services (services helping to acquire maintain and apply human capital) would be dominant, is feasible.

Key words: *pension, pay-as-you-go system, productive services, human capital*

1. INTRODUCTION

The introduction of a fully merit-based and fully closed pay-as-you-go insurance system with a flat basic benefit will create a real economic base to strengthen significantly the role of the industry of productive services, i.e. services through which human capital is acquired, maintained and utilised and that, among other, affects positively the extension of the time during which a man can engage in gainful activities on professional markets. At the same time, it is one of the pillars of complex reforms of social investment and social insurance systems (education, health care system, pension system, but also support of families).

A start without any risks so that each can experience that this type of pension type offers true safety, fairness and solidarity, can be done by what we call postgraduate superstructure of a fully merit-based and fully closed pay-as-you go system with a flat basic benefit. I.e. instead of a distortive solution for the calculation of an income of those who are productive in the retirement age, we have an option to apply a free adjustable concurrence of income and fully merit-based and fully closed pay-as-you-go pension system (The amount paid into the system after the retirement is paid out according to actuarial mathematics).

We base our assumption on the fact that the main purpose of the pension system is to provide insurance against the risk of losing the ability to succeed on professional markets due to changes arising from the process of ageing. Among others, this means that the solidarity among those who are affected by the insured event (i.e. those who lose in full or in part the ability to conduct gainful activities on professional markets) and those who, despite their old age, are able to succeed on professional markets is the primary type of solidarity.

We will show a simple model of a postgraduate superstructure of a fully merit-based and fully closed pay-as-you-go pension system that allows us to have a clear picture of the feasibility of changes we discuss. In addition, we will show concrete options how productive services may contribute to extend both the horizon and zenith of a productive life of men and women.

A by-product of our considerations is the finding that the issue of setting the retirement age cannot be addressed without answering the question what the pension system will look like, and where its reform will set off. Indeed, with a gradual transition to a fully merit-based and fully closed pay-as-you-go pension system, this question becomes irrelevant. The pension system can be reformed by allowing everyone, based on his/her situation in life, to independently decide when he/she will retire, and how he/she will gradually start drawing on resources accumulated by his/her pension insurance to finance his/her life.

We base our assumption on the ground breaking work of Vostatek (2016) which clearly describes different types of pension systems and proposes the most suitable model for the circumstances of the Czech Republic while specifying in more detail the work to demonstrate the feasibility of the implementation of this model which Vostatek considers the most appropriate in his work (i.e. NDC System).

2. SUBJECT AND METHODS

We focus on one of the key moments in the comprehensive reforms of the social investment and social insurance systems. We assume that the transition from the current distortive system of retirement concurrent with gainful activity to the system that we call a postgraduate superstructure of a fully merit-based one and fully closed pay-as-you-go system with a flat basic benefit is one of the first steps to allow a gradual implementation of a reform in this area. In addition, we will show how some productive services (services contributing to acquisition, maintenance and utilisation/deployment of human capital) may significantly contribute to extending the horizon of productive life of men and women.

The methodological basis of our approach is the precise definition of some terms, more specifically, the definition of the risks against which the pension system insures and of what an insured event in this regard is. If we cannot explicitly answer these questions, we may make some serious methodology-related/methodological mistakes, e.g. by considering that reaching old age is an insured event, or that the intergenerational solidarity is a fundamental type of solidarity in the pension system.

For the sake of comparison, we can show how the term “insured event“ is defined in the current regulation of pension insurance (Act 1995). Section 1 (1) stipulates: *“This Act regulates pension insurance (hereinafter the “Insurance”) for old-age, disability, and death of the provider [Section 4 (1) letter c) and d)].“* Section 4 then differentiates each type of insurance: *„a) old-age, b) disability, c) widow and widower, d) orphan.“* The moment when the insured event (within the meaning of old-age pension insurance) comes about is specified in Section 28: *“The insured is entitled to an old-age pension if he/she has accumulated the required period of insurance and attained the prescribed age, or he/she meets other conditions stipulated in this Act.“* This definition is also taken over by regulation of 2011 (Act of 2011).

However, it is not clear from the above why an insured event should come about only by attainment of a certain age. The very vague definition of the insured event has a significant impact on many problems during the stage of designing an insurance system: when solving the problem of how to extend the retirement age, how to combine the insurance against the risk of losing the ability to conduct gainful activities due to ageing with income solidarity, and, last but not least, when solving the issue of how to valorize pensions.

A monograph by Vostatek (2016) is a fundamental piece of work regarding the analysis of reform of pension system in the Czech Republic, being not only the latest but also the most comprehensive scientific work. It contains a well-arranged summary of all approaches and based on their comparison, it presents NDC System (pay-as-you-go, the so-called contribution-defined, i.e. significantly merit-based) as the most suitable system.

The majority of approaches here assumes an implied hypothesis included in our laws defining the pension insurance, i.e. that the insured event comes about as a result of passing of time and therefore it is an intergenerational solidarity rather than solidarity among those who lose ability to succeed on professional markets due to the passing of time and those who can maintain this ability even in their old age (Biskup, Voříšek 2005), (Čejková, Řezáč, Šedová 2006), (Daňhel & al. 2005), (Ducháčková, Daňhel 2010), (Slaný, Krebs 2004).

Similarly, Šimková, Sixta, Langhamrová (2016) emphasise that the financial transfer only plays a role of an intermediary of the real transfer. Although a man attempts to hold the consumption on the same level as it is argued in the life – cycle hypothesis (whose authors are F. Modigliani, R. Brumberg and A. Ando), intergenerational transfer have always a nature of flow of goods and services, i.e. real

consumption is given up by the productive people for the benefit of the non-productive. This fact, among other, proves that some assumptions of the life – cycle hypothesis are out of touch with the reality. By the way, Modigliani and the other co-authors themselves were aware of the drawbacks of their hypothesis: of course, nobody can know for how long he will live and what his disposable income will be during this period. Moreover, people wish to leave an inheritance to their children, in this sense the assumption of the life cycle hypothesis is unrealistic as it is supposed that all disposable income is consumed. The assumption of the equal consumption during the life can be challenged too: the young people usually must tighten belt being limited by their budget line (being “risky assets” for the financial institutions, a loan is out of their reach). Lastly, the factors as the demographic age structure, the socio – cultural character of the environment or the parameters of the pension system must be taken into consideration.

On the other side, the model illustrates a basic pattern of the consumption during the human life appropriately: young people usually earn lower incomes and are forced take out a loan or borrow money from their parents. Next, during the productive activity they earn more than they consume; the savings are generated. A part of savings is used for paying back the debts (done in the youth), the other part of savings is put aside for the retirement age. The life – cycle theory reflects hypothesis that a man during the life has at his dispose such an income to pay back not only money borrowed in the youth (a mortgage, loans on cars, housing etc.), but also to save means for their retirement age. The model also takes into consideration the state social policy which affects the level of savings and consumption of pensioners. If the government pays out the pensions, the people are not obliged to save so much for the retirement age. The later people retire, the less they save

In the connection with the life – cycle theory nobody is likely to doubt that the living style of the pensioners has been significantly changed since the formulation of the life – cycle hypothesis (more than half century). Many people, passing from the productive life to the post – productive one, link the retirement age to the personal development and fulfilment..

Unfortunately, a typical pensioner in the Czech Republic (older than 65) doesn't cover his consumption with the salary because he already doesn't work; in the comparison with the West just a fraction of retired people in the Czech Republic work. Relatively good labour conditions for the work of pensioners are formed in big cities (Kořátková 2016). In the future the situation could be solved by a system of the part – time contracts which supports the employment of older people, pensioners including (Kořátková 2016).

A lot of Czech pensioners must make do with the transfer payments provided them by the government; the households of the Czech pensioners obtain 93% of their income from the government. As it can be seen the Czech pensioners are immensely dependent on the government (Zajíčková – Zajíček 2016). Nevertheless, the governmental pension is not sufficient: many Czech pensioners are not capable to maintain the living standard and are forced to decrease the consumption (Pernes 2014). The situation could have been even worse in the future because many households of young and working people generate no savings for the retirement (Bedřichová 2016). That can presents a big, future problem for the Czech government.

On the basis of the above, the design models of pension schemes that do not take into account that the insured event appears at different age with different people (Šimková, Sixta, Langhamrová 2016, pp. 596-598). They arrive at a sceptical conclusion that the problem of demographic ageing consists in the ever decreasing ratio of economically active and inactive population and options of the economy to provide sufficient resources for economically inactive population in future (Šimková, Sixta, Langhamrová 2016, pp. 605).

As opposed to this, Vavrejnová et al. (2004) state that the issue of a pension reform is not limited to the ageing and financial problem. According to them, it is a combination of different types of pension benefits and other types of savings, and what is particularly important, with extended economic activity. In addition, Fiala, Langhamrová (2014) make model calculations of incomes and expenditures of the pension system in the Czech Republic on the basis of the last demographic projections and taking into account an anticipated continuous raising of the retirement age, i.e. the

period of productive life of men and women and arrive at the logical conclusion that the increased share of people in higher age will not result in such dramatic increase of the share of old-age pensioners, i.e. the increased life expectancy will not automatically mean the increased time of drawing old-age pension (Fiala, Langhamrová 2014, p. 233). However, they do not realize that it opens up a fundamental question of is an insured event in the pension insurance system and what type of solidarity this is in this system.

Using a model, Janičko, Tsharkyan (2013) show a crucial meaning of the extension of productive life and on the basis of that they formulate economic and political recommendations directed at different groups of citizens — mostly to women, citizens in higher productive age (55–64 years). According to them, the relevant measures should include retraining programmes, training programmes, active support in job searching, or an effort to align the family and professional life, proper setting of motivations to extend the period of productive life (Janičko, Tsharkyan 2013, pp. 335-6. They conclude that by using these options, the stability of the pay-as-you-go pension system can be sustained.

Loužek (2014) sees the problem as "providing oneself for the old-age" when he considers three methods: savings, children, participation in the social insurance programme (Loužek 2014, p. 26). In the end of his contemplations he concludes that the elderly must be convinced to continue to perform economic activities at higher age, because they are capable of it. His overview of professions that are performed at higher age, or for one's lifetime is an interesting one (Loužek 2014, pp. 94-95).

One of the few dealing with internal motivations for extending the productive life and their effect from the perspective of life-long costs of "impatience", preference of current consumption as opposed to investing into human capital (Cadena, Kays 2015) is also worth mentioning.

If we are to summarize current approaches, we may say that only a fraction of them takes into account economic reserves that are included in the option to extend the productive (gainful) life of men and women on professional markets. But not even these approaches, albeit heading generally in the right direction, cannot pinpoint the very essence of what insured events are insured by the pension insurance system and what kind of solidarity is created by this. Subsequently, they do not fully realize the merit-based element (on the basis of economic equivalence) as a parameter of the system that may create additional motivations to choose a professional career allowing to extend the productive (gainful) life of men and women on professional markets.

In addition to the definition of key terms above we will introduce a simple (intentionally simplified) mathematical model of the postgraduate superstructure of a fully merit-based and fully closed pay-as-you-go system with flat basic benefit, on which we can demonstrate a real economic base for a significant increase of the role of productive components, more specifically, the services that contribute to extending the horizon (zenith) of conducting gainful activities of men and women on professional markets through a pension system reform indicated by us. (The given model can be tested with different parameters and different options for transition from the current system to the proposed system can be analysed which is the subject of research activities that we perform in connection with the preparation of another output.)

The main attention will be paid to the description of some selected specific option of a significant extension of the productive life of men and women using the productive services the effect of which is most apparent in the given context.

3. MODEL OF POSTGRADUATE SUPERSTRUCTURE OF A FULLY MERIT-BASED AND FULLY CLOSED PAY-AS-YOU-GO SYSTEM

In order to introduce an exclusively postgraduate fully merit-based and fully closed superstructure of the current pay-as-you-go pension system (i.e. only for those who may already retire in the existing pension system), a simple (even simplified) calculation can show that e.g. if CZK 15,000 is an old-age pension, CZK 50,000 is his/her income from gainful activities, of this CZK 15,000 is a payment to the pension system and the person is 65 years old. Then, if he/she retires at 70 years of age, his/her

pension (in real values) will increase by CZK 16,675 monthly, i.e. to the total of CZK 31, 675. And if he/she retires at 75 years of age, it will increase by CZK 43,500, i.e. to the unbelievable total of CZK 58, 500. This shows feasibility of financing the industry of productive services from what will allows a man/woman to lead a full life. However, if he/she chose an appropriate and will continuously update his/her professional career, improves and increase his/her qualification, takes care of his/her health and so on. Now, in more detail:

Model assumptions:

The figures are intentionally approximate to make the calculations easier

The values are given in thousands of crowns

In the model, the system includes 100 persons

All have the same income

CZK 15,000 constitute their old-age pension

CZK 50,000 is their income from gainful activities, of this CZK 15,000 is a payment to the pension system

All are 65 years old, their life expectancy is 15 years

50 persons decides to retire from postgraduate system at 70, their life expectancy at this age is 13 years

50 persons decide to retire from postgraduate system at 75, their life expectancy at this age is 10 years

Constant number – how many will enter the system, how many will leave the system

Constant prices (zero inflation)

According to the actuarial mathematics, everyone will get back what he/she has given (merit-based on the equivalence principle)

Principle of the model:

The amount received by a person from the funds that enter the system every month is based on how much he/she has paid into the system divided by the expected number of monthly payments (according to the statistically determined average life expectancy).

Calculation:

Each will give monthly $15+15 = \text{CZK } 30,000$

The total in the system in every month $30*100 = \text{CZK } 3000$ thousand

How will it be distributed? By the entitlement

% entitlement (share from 3000) = the amount given in the system divided by number of payments

Those who work until 70 years:

$$12*5*30 = 1800 \qquad 1800/12*13 = 11,5 \text{ "points"}$$

Those who work until 75 years:

$$12*10*30 = 3600 \qquad 3600/12*10 = 30 \text{ "points" (naturally more than 2x due to the shorter life expectancy)}$$

$$\text{Price of the point: } 3000/50*(11.5+30) = 60/41.5 = 1.45$$

$$\text{Retirement at 70: } 11,5*1,45 = \text{extra CZK } 16,675 \text{ monthly (in excess of the considered CZK } 15,000)$$

$$\text{Retirement at 75: } 30*1,45 = \text{extra CZK } 43,500 \text{ monthly (in excess of the considered CZK } 15,000)$$

In reality, the increase of the pension would be even bigger, as it would be fair to include an increase of the pension from the postgraduate system as a contribution into the system every month.

Today, there is much talk how to provide oneself for old age through different form of additional insurance or saving, as they say the old-age pensions will not suffice. The calculation that we published shows that the best form of savings for the old-age pension would be investment into the ability to succeed on the professional market in the long term (into health, education, social contacts) in a rational pension system.

For the purposes of our paper, the illustrative calculation above is sufficient. When the proposal of the reform is elaborated in more detail, it will be necessary to test the model above for sensitivity to change of individual parameters. However, this would require a separate paper oriented at this problem.

4. THE OPTIONS AVAILABLE IN THE AREA OF THE EXTENSION OF THE HORIZON OF THE PRODUCTIVE LIFE OF A PERSON ON PROFESSIONAL MARKETS

Bearing in our minds the commitment from the introduction, the main aim of our paper is to show what concrete options regarding the productive life of a person on professional markets are available.

4.1. Improvement of competencies in the area of projection of a life-long professional career

From the first grade and for the whole time of studies, to teach people to be aware of a life-long career path:

- to support this idea by high-quality education,
- people must learn to make it more specific from time to time,
- to have good consulting services after studies that will help a person in situation when he/she may lose an ability to succeed,
- a good forecast regarding the development on individual professional markets (including a timely identification of the emergence of new segment of the professional market) must exist,
- critical situations when the success is at risk are identified and analysed in the society-wide context (as a standard situation when a person must be assisted in retaining his/her ability to succeed in the market,
- professional organisations (including trade unions) engage in in activities regarding the problem of projection of a life-long career path,
- there is an option of gradual reduction of working hours or generally of the work load at higher age categories.

4.2. Change of the roles of universities

Increasing the role of universities is not the issue. In particularly not with regard the massification that results in a dramatic drop in its quality. Not a human capital, i.e. an individual equipped with certain abilities), but social capital in the form of a network of graduates will be a product of universities.

The university degree will primarily serve to the following:

1. To "attach" a person to the network of graduates, to unlock fully his ability of teamwork and succeed through those who, as graduates of the given university, have already succeeded, on the market
2. To "attach" a person to the flow of information and findings from the field of his career path to have available the latest knowledge (including the original knowledge regenerated by the university itself giving him/her a competitive edge) to permanently upgrade his/her skills.

To connect most citizens of the majority (i.e. productively active and productively living) society to the university (or several universities) as a support for establishing social contact, obtaining information, brokering of the best jobs, permanent upgrade of skills, intergenerational transfer of experience (among other, retrospectively from practice to the university); this will lead to a richer life, much better performance, and also significant extension of the gradually impaired success of a person on the market.

4.3. Education to team work and teamwork

The best gaps in the educational system can be probably seen in the area of education to team work. To develop prerequisites to be universally ready to function effectively on a team in line with his/her individual abilities in a person is not just a matter of education. Therefore we should – and the tertiary education is no exception – speak not only of education but a system for education and training.

When we look at the entire education system, perhaps the most effective education to team work happens only in the nursery and gradually disappears from the education process. At the same time, not individual but the team is the basis for the success of both a private company and state institution. Without the team, even the most capable individual becomes a victim of mutual rivalry.

One can easily imagine how to foster team work at universities:

- From the beginning, the education is oriented at the preparation of the final thesis that deals with a specific problem, or more specifically, it is a partial contribution in the solution of a complex problem, participation in the solution of a complex problem.
- When solving this problem the student will split the complex problem to partial problems and each of them is responsible for his/her own part of the problem solution; and for ever challenging performance in the course of studies (from yearly essays, through bachelor's thesis to master's thesis).
- When solving the problem, the students cooperate across different fields of expertise and years (older and more experienced with the fresh students).
- The instruction of individual subjects is oriented at the ability to solve a specific and complex problem.
- Assignment and definition of the problem may be based from the cooperation of the university with the practice (practice of the firm, institution etc.), among other, with the utilisation of the graduates from the university that already work in the field and have an idea what assignments should be assigned.
- An experienced instructor is responsible for the work of the team who is able to resolve conflicts, identify deficiencies in individual profiles of each student and contribute sensitively to remedy individual deficiencies.

It is important that a practical problem to be solved is chosen suitably. The problem should not be an "artificial" one just for training purposes, but a real one. Its solution should have a tangible and real benefit to motivate students sufficiently.

The innovative performance of man (ability to come up with innovations, new ideas), who knows something and works to improve himself/herself, peaks at around 80 years of age. At this time, also his/her ability to share experience peaks. This great wealth is usually exploited minimally due to the fact the team work is overshadowed by rivalry. The problem of an active productive life of a person at higher age is not a physiological one (that a person would be driven out of active life by age-related handicaps), but a relationship one. Among other, because the education to team work fails.

One of the reason of failures of the education to work is the fact that by their method of financing, universities are not currently forced to try to ensure the best and longest success of their graduates on the market. When the system does not work in the environment of good motivations, bad, parasitic motivation will come forward.

5. RESULTS AND DISCUSSION

As opposed to the current approaches to the problem of the reform of the pension system we have made progress in the following directions:

1. We defined the basic type of solidarity in the pension insurance system when the lost ability to succeed gainfully on professional markets as a result of ageing is an insured event and therefore, the solidarity among those who wish and may find gainful activity on professional markets and those who lose such ability in full or in part is the basic type of solidarity in the system. (The income type of the solidarity will be solved on the system by flat basic benefit.)
2. Based on this, we defined parameters of a fully closed and fully merit-based pay-as-you-go system of pension insurance (with a flat social benefit), which is kind of limiting (within the meaning of the merit-based and closed nature above) form of the pay-as-you-go NDC system and subsequently also postgraduate superstructures of this system, by the introduction that may start the reform of the current pay-as-you-go pension insurance system, or (today only partially) the insurance.
3. Using a simple (not yet calibrated and tested for changes of the parameters) model we illustrated an option to create a real economic base for the rise of the industry of productive services.
4. By this, we created condition to achieve the main objective of our paper – to show several options how to attain a significant extension of productive life of a person and performance of his gainful activities on professional markets through the improvement of effectiveness of some productive services.

The main directions of our work are:

- The description of the method of gradual extension of postgraduate superstructure of the fully merit-based and fully closed pay-as-you-go pension system with flat basic benefit to achieve a smooth transformation of the whole pay-as-you-go pension insurance system. Here, a wide range of options are available; we prefer those that smoothly follow up on the current situation, involve the least risks and give the most room for individual choice.
- The calibrating and testing of the model of postgraduate superstructure of a fully merit-based and fully closed system with flat basic benefit to identify critical points of the transformation of the pension system and to ensure the best system stability.
- To show the follow-up of the pension system reform to reforms in other areas of social investment and social insurance, particularly in the field of health care system, life-long learning system (including universities), but also in the area of state support of families.
- To show a connection between the role of productive services in the area of acquisition, maintenance and application of human capital and requirements put Industry 4.0 to both quantitative and qualitative characteristics of this capital.

6. CONCLUSION

To transform the current social security and insurance system in the Czech Republic into a fully merit-based and fully closed pension insurance system with flat basic benefit can be done with minimum risks and smoothly through postgraduate superstructure of this system and its gradual extension. Not only a simple model gives an illustrative idea of what motivations are created by this systems, but also what resources for financing of productive services working to extend the productive gainful life of a person are created by this system. Among other, it follows from the above that constituting an economy, in which the sector of productive services (services helping to acquire maintain and apply human capital) would be a dominant one is feasible. It is our opinion, such is an economy that we will try to demonstrate and introduce in a more detailed perspective, where conditions for the making use of the opportunities offered by Industry 4.0 and other related perspective technology changes emerge.

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