Higher labour participation or more disability benefits – the results of the agent-based simulation of the retirement age increase in Poland

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Abstract:

The increasing life expectancy force governments to adjust pension systems by increase of the limits of official retirement age. However the projection of the labour market effects of such changes on the basis of past data is usually difficult because of the lack of data about the behavior of persons in the situation of increased retirement age.

The aim of this paper is an attempt to project the consequences of the increase of retirement age to 67 by the year 2040 in Poland. The use of the agent-based simulations allows to simulate individual decisions of persons in pre-retirement age about their labour force participation that takes into account individual information on future pension entitlements, health status, expected probability of finding job, possible wage level, expected pension level etc. Agent based model allows also different assumption about possible behavioral mechanisms. It can be assumed that persons will use all possible opportunities to obtain pre-retirement benefits and became inactive, but on the other hand the simulation of different life-course strategies of income optimization can be also applied. Simulation model can be also used to show to what extend the probable positive labour market effects of increasing life expectancy in good health can overcome the longer period of exposure to disability due to longer working life.

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1. Introduction

The increasing life expectancy creates a pressure for pension system to adjust expenditures to the increasing number of persons with pension entitlements. One of the sollutions is the increase of the official retirement age. It should lead to the decrease of the number of persons that receive benefits financed from the budget and proportional increase of labour supply. However the effcts of the changes in the regulation of the retirement age are not obvious and easy to calculate in practice.

First, the effects of the changes can be diminished by the growing with age number of persons that are not able to work because of their health status. If there is an opportunity to recive disability benefit instead of pension benefit this effect can reverse the influnace of the pension reform even if the health is improving.

Second, the situation of different cathegories of persons on the labour market can depend on their human capital and type of the skills. According to empirical data persosn with better skills and who are not engaged in physical work tend to have longer work careers and earn more at the end of working life.

Third, the decision about retirement can be inflyanced by other family members and their decisions.

The aim of this paper is an attempt to project the consequences of the increase of retirement age to 67 by the year 2040 in Poland. This reform was introduced in 2012 in Poland. It should be mentioned here that in the defined contribution system that exist in Poland such a reform was not required for log term sustainability of the pension system. The aim was rather to force people to consider the decision to leave the labour market later with higher accumulated pension etitlements.

The use of the agent-based simulations allows to simulate individual decisions of persons in pre-retirement age about their labour force participation that takes into account individual information on future pension entitlements, health status, expected probability of finding job, possible wage level, expected pension level etc. Agent based model allows also different assumption about possible behavioral mechanisms.

2. Data and method

In this paper we use microsimulation model of the Polish population that allows to include (agent-based) behavioral module.

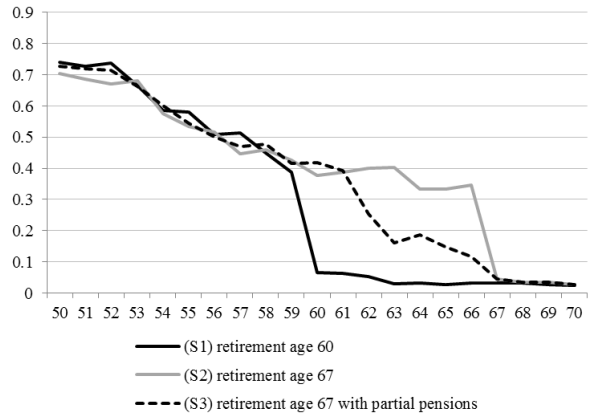
3. Draft results

The additional module of the microsimulation model allows to use agent-based simulation instead of pure probabilistic microsimulation to determine the decision regarding labour market status of persons just before retirement. It is particularly useful if the official retirement age is going to change, which was not observed in the past. For example, the

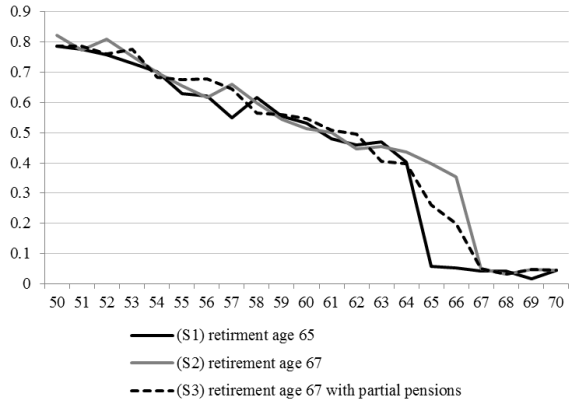
retirement age in Poland will gradually increase by the year 2040 from 60 for women and 65 for man to 67 for men and women. In pure micro simulation model the probabilities of the change in labour market status due to retirement are determined on the basis of the past observations. This approach is difficult to intro-duce because the change of the retirement age has not been observed in the past. Here instead of extrapolation of the probabilities from the past the decisions of individuals were simulated for each person of population separately taking into consideration possible range of options available for each person in each year. Those options depend on the health status of the person (disable, not disable), age, sex, accumulated work tenure and pension capital (that determine the opportunity to receive 'partial' pension). The results of the simulation represents the predictions regarding future that takes into account the decisions of the sample of individuals representative for the whole population under the assumption that they will take the opportunity to receive pensions and outflow from the labour market as soon as it is possible (figure 1). The first scenario represents the situation without increase of the retirement. age The second scenario represent the situation which would have happen if the retirement age increase to 67 without any additional rules. The third scenario represents the realistic situation of the increase in retirement age to 67 but with the additional introduction of "partial" pensions that can be received before official retirement age.

Fig. 1. Changes of the labour force participation rates of the cohorts that will retire after 2040 as a result of introduction of the increase of retirement age

Females



Males



4. Conclusions

To be added