On the sustainability of the Hungarian pension system –
the long-term effects of demographic trends

Attila Bajkó, Anita Maknics, Krisztián Tóth and Péter Vékás

Hungary, like several other developed countries, must face a typical spectrum of problems related to an ageing society, among others the sustainability of its pension system. The paper analyses the expected demographic indicators of coming decades on a statistical basis using the Lee–Carter mortality forecasting model, and present an overview of the likeliest trends and implied future problems. A pension model is set up based on the results of the demographic model, to obtain estimates of the future balance of the government pension system, under a given set of macroeconomic assumptions. The analysis elucidates the expected joint impact of the observed demographic trends and macroeconomic parameters, and more importantly, examines the foreseen consequences a set of possible economic-policy moves and changes in the economic environment will exert on the balance of the Hungarian pension system, beyond numerical results.

Mortality of old-age pensioners. Association among the amount of pension, age at retirement and mortality between 2004 and 2012 in Hungary

László D. Molnár and Judit Hollósné Marosi

Several Hungarian and international research projects have shown a relationship between social inequality and mortality. Here, probability of death and life expectancy are calculated in period mortality tables by amount of pension and retirement age. The effect of these on mortality is sought using Cox proportional-hazard regression models. Time dependence of the explanatory variables is examined with Aalen's additive-hazard models and graph methods if the proportional-hazard assumption is not met. According to the life table data, mortality of old-age pensioners was lower than that of the population in 2004, 2010 and 2012. Analysis of 2012 data proves a relation between hazard of death or life expectancy and amount of pension and retirement age. Cox regression analysis shows that a higher pension and higher retirement age in males associate with favourable life expectancy. In females the relations are less marked or appear only in certain life periods.

ESTIMATING INDIVIDUAL LABOR MARKET ACTIVITY IN HUNGARY IN A MICROSIMULATION FRAMEWORK

Péter Vékás

The paper presents the estimation of individual labour-market activity in Hungary that underpins the labor-market module of the MIDAS_HU pension microsimulation model. To estimate individual labour-market activity appropriately, the author applies multivariate statistical techniques (imputation, segmentation, regression) to a large-scale administrative data source. This complete data set contains demographic, employment and contribution payment data over more than four decades, on an individual basis. Though the estimation was made in a cross-sectional framework following the structure of MIDAS, it differed from the original Belgian model in including longitudinal information in the equations – due to the large quantity of available historical information, and to the significant structural break the Hungary labour market experienced in the early 1990s.

A COMPARATIVE SURVEY OF PENSION-CALCULATING SYSTEMS
THE PENSION MODEL OF THE MIDAS_HU FORECASTING SYSTEM

Ádám Rézmovits

Exact modelling of the pension system and the calculation formula for doing so forms a major part of all pension-forecast models, including the microsimulation types. The pension module of the MIDAS_HU microsimulation model can examine parametric changes in a pension system, while allowing comparative assessment of their structures. Its main methodological device is to divide the calculation process into five parts, by which the vast majority of pension-calculation systems can be described. This makes the modelling process more transparent, and the parametric and structural assessments and sensitivity tests much easier to perform.

MODEL-POINT GROUPING IN PENSION IMPACT STUDIES

Erzsébet Kovács, Orsolya Rétallér and Péter Vékás

The complete administrative database of the Central Administration of Pension Insurance of Hungary was available to construct a microsimulation pension model for Hungary. As pension modelling takes the entire population into account and is usually performed in a long-term perspective, it may be more efficient from a computational point of view to perform the calculations on so-called model-point groups: relatively homogenous groups of participating individuals. The article, having noted some methodological considerations, elaborates on the steps in creating the required grouping, the difficulties of comparing the groups with census data, and the main characteristics of the groups created in the process.

Household formation in the MIDAS-HU model

Iván Gál Róbert and Árpád Törzsök

The dynamic pension-microsimulation model MIDAS-HU includes a household module (the so-called marriage market) that matches individuals. This facilitates extensions to the model for capturing components of pay-as-you-go schemes, which make contributions or benefits dependent on household structure. Such components are survivors' benefits, child-related contributions or benefit formulae, and various other child-related preferences. Modelling the marriage market based on Hungarian data raises special challenges as there is no administrative or survey database available that covers retrospective information on household structure and pension-related information on the partner. Survey data include household and family information, but lack pension-related data, whereas administrative data cover contributory and recipient careers in detail, but do not link individuals to families or households. To overcome this deficiency, MIDAS-HU includes a specific retrospective household-reconstruction.