SUMMARY

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ELSI: The Finnish pension microsimulation model

In this report we overview the structure and functionalities of the pension microsimulation model ELSI. Developed and maintained by the Finnish Centre for Pensions, ELSI is used to forecast the long-term development of Finnish earnings-related pensions and national and guarantee pensions, which are paid by the Social Insurance Institution.

The main role of ELSI is to supplement the semi-aggregated long-term planning (LTP) model, which is also maintained by the Finnish Centre for Pensions. The LTP model groups people by sex, age and population state and simulates these groups' mean characteristics (such as wage earnings and earnings-related pensions). In contrast, ELSI employs individual-level microdata to simulate the life course of each individual separately.

The population modeled by ELSI comprises all adults who are covered by the Finnish social security system and those who have previously accrued earnings-related pension under the Finnish pension system. The input data used in the model is based on administrative registers and it covers the entire population of interest.

The ELSI model consists of modules that are run in succession. The population module simulates new people entering the population, deaths and transitions between population states. These include transitions to retirement and labor market dynamics. The earnings module simulates annual wages and pension-accruing social security benefits. Pension accrual and earnings-related pension amounts are calculated in the

earnings-related pension module, whereas the national pension module simulates national and guarantee pensions. Income taxes and net earnings are handled in the income tax module.

The model produces an output dataset where each individual has a single row of simulated data for each simulated year. This dataset can then be analyzed either manually or by using ready-made functionalities in the ELSI results plotter. The individual-level output data produced by the model allows the user to study simulated pension distributions in detail and to analyze results in specific population subgroups. In addition to cross-sectional analysis, simulated life courses and earnings histories can be studied longitudinally.

Results calculated by the ELSI model are reported regularly as part of the Finnish Centre for Pensions' long-term projections. The model is also used to analyze the effects that various policy proposals would have on pension benefits. In the future the model will also be used to analyze the retirement incentives for those who have exceeded the earliest age of eligibility for old age pension.

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