Stochastic infinite horizon forecasts for Social Security and related studies

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This research was supported by the U.S. Social Security Administration through grant #10-P-98363-1 to the National Bureau of Economic Research as part of the SSA Retirement Research Consortium. The opinions and conclusions expressed are solely those of the authors and do not represent the opinions or policy of SSA, any agency of the Federal Government, or the NBER. The authors also acknowledge support from Berkeley’s NIA-funded Center for the Economics and Demography of Aging. The research funded here builds on basic research funded by NIA grant R37-AG11761.
Abstract

This paper consists of three reports on stochastic forecasting for Social Security, on infinite horizons, immigration, and structural time series models. 1) In our preferred stochastic immigration forecast, total net immigration drops from current levels down to about one million by 2020, then slowly rises to 1.2 million at the end of the century, with 95% probability bounds of 800,000 to 1.8 million at the century’s end. Adding stochastic immigration makes little difference to the probability distribution of the old age dependency ratio. 2) We incorporate parameter uncertainty, stochastic trends, and uncertain ultimate levels in stochastic models of wage growth and fertility. These changes sometimes substantially affect the probability distributions of the individual input forecasts, but they make relatively little difference when embedded in the more fully stochastic Social Security projection. 3) Using a 500-year stochastic projection, we estimate an infinite horizon balance of -5.15% of payroll, compared to the -3.5% of the 2004 Trustees Report, probably reflecting different mortality projections. Our 95% probability interval bounds are -10.5 and -1.3%. Such forecasts, which reflect only “routine” uncertainty, have many problems but nonetheless seem worthwhile.

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