Demography and Low-Frequency Capital Flows
Referee's Report

This skillfully executed paper extends previous evidence on demographics and international capital flows (Domej-Floden(2006)) to investigate the role of demography in a multi-country overlapping generations model in which saving decisions are tied to agents' life expectancy. Capital flows are driven by imbalances between saving and investment across countries. Demographic changes affect ect the aggregate accumulation of assets in two ways: by changing life expectancy, which changes individual household saving behavior, and by changing the age distribution of the population by which individual household decisions are aggregated. The most important drivers turn out to be increases in life expectancy caused by decreases in adult mortality.

The paper combines an overlapping generation model with heterogenous demographics across countries. Heterogeneity is relevant along two dimensions: age distribution and mortality rates. The main conclusion of the paper is that changes in life expectancy can explain much of the pattern of capital flows across countries.

This is an interesting paper that explores an under-researched topic. I believe that the results could be strengthened and made more interesting by a more extensive specification of the demographic part of the model.

The evolution of the population depends on fertility, mortality, and net migration. This paper takes net migration, mortality and fertility as fixed. In fact their parameterization of mortality can be interpreted as a restricted version of the mainstream stochastic mortality model due to Lee-Carter(1992). The Lee-Carter model consists of a system of equations for logarithms of mortality rates for age cohort x at time $t, \ln[m_{x,t}]$, and a time-series equation for an unobservable time-varying mortality index k_t:

$$\begin{aligned} \ln[m_{x,t}] &= a_x + b_x k_t + \epsilon_{x,t} \\ k_t &= c_0 + c_1 k_{t-1} + e_t \\ \epsilon_{x,t} &\sim NID\left(0, \sigma_\epsilon^2\right) \\ e_t &\sim NID\left(0, \sigma_e^2\right) \end{aligned} \tag{1}$$

where a_x and b_x are age-specific constants. The error term $\epsilon_{x,t}$ captures cross-sectional errors in the model based prediction for mortality of different cohorts, while the error term e_t captures random fluctuations in the time series of the common factor k_t driving mortality at all ages. This common factor, usually known as the unobservable mortality index, evolves over time as an autoregressive process and the favorite Carter-Lee specification makes is a unit-root process by setting $c_1 = 1$. Identification is achieved by imposing the restrictions $\sum_t k_t = 0$ and $\sum_x b_x = 1$, so that the unobserved mortality index k_t is estimated through Singular Value Decomposition.

The paper takes k_t as fixed and experiments with different scenarios for this parameter and imposes the restriction $b_x = 1/x$, where x is the number of cohorts.

The restriction that b_x is equal across cohorts is generally strongly rejected by the data for available estimates of the Lee-Carter model on different countries. I would argue that the results of this paper would become more convincing if a traditional specification of the Lee-Carter model were to be adopted, to then experiment with impulse responses to the well-defined shocks to the common mortality factor.

The adoption of this model would also allow for some out-of-sample forecasting exercise. In this case a short-forecasting horizon should be kept, in order to minimize the impact of the constant fixed fertility assumption.

All these extensions would keep intact the exogeneity of the demographic part of the model with respect to the economic bloc. A very interesting experiment, that probably goes beyond the scope of this paper, would be extending the simulation to take into account the effect of cross-country wage differentials on net migration.