

ISOM Proposal: Demography & International Capital Flows

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Abstract

We use an overlapping generations model to explore the interaction of demography and international capital flows. Demography isn't the only source of variation in net capital flows, but it holds promise for one striking feature of them: their persistence. The combination of slow-moving demographic change and life-cycle agents naturally delivers low-frequency movements in capital flows.

We develop this line of thought in an OG model whose features are based on specific countries, among them China, Germany, Japan, and the United States. Parameters are chosen to reproduce country-specific mortality rates, wage profiles, aggregate growth rates, and salient features of countries' pension and social security systems. Preliminary results suggest: (i) capital outflows from Japan mirror the aging of its population and reverse themselves over the next twenty years as the population grows older; (ii) Germany is similar in this respect; (iii) the enormously high saving rate in China is more difficult to account for than the investment rate, which reflects (in the model) the high growth rate of productivity and output; and (iv) inflows to the US are sensitive to how we model the social security system.

Detailed outline

We have functioning versions of Matlab and R programs for Sections 2, 3, and 4, Section 5 is in the pipeline. All of them need work to be ready for prime time.

1. *Introduction.* Describe what we do, mention the extensive literature; see partial list below.
2. *Facts about capital flows.* We have both 19th century data and more recent data, not sure how much of it fits here. The point is to show that capital flows are a fact of life and are typically very persistent. It's not unusual, for example, to see that the US has been experiencing capital inflows for close to 30 years — and Japan outflows over the same period.
3. *Facts about demography.* Demography, of course, is naturally persistent: it's taken decades for the baby boom to work its way through the system. It's also very different across countries: Japan is aging more rapidly than Germany, which is aging more rapidly than the US. These differences open up the possibility of intertemporal trade.
4. *An overlapping generations model.* Describe the model's structure and parameter values. The major differences from earlier work include an annual time period, differences in country growth rates, and detailed specifications of pension and social security systems.

Before turning to simulations, we do some representative calculations for steady states, which are significantly simpler to define and compute. We use the steady state to show how lower mortality changes the age distribution and raises the aggregate saving rate. In a closed economy, this leads to an increase in the capital-output ratio and a decrease in the interest rate. In an open economy facing a fixed interest rate, it leads to a capital outflow. In a steady state, the net foreign asset position in this case is constant and positive.

5. *Case studies.* We consider small open economy versions of the model in which countries face a given interest rate path. Given this path, firms choose capital stocks to maximize profit and households choose paths for consumption and wealth to maximize utility. Net foreign assets is the difference between aggregate household wealth and capital used by firms.

Given this structure, and retirement/pension schemes like those we observe, we examine the model's paths of net foreign assets for China, Japan, and the US. Paths for the last twenty years provide some check on the model's relevance, and those for the future are suggestive of the role of future demographics.

Selected references

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