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On the consequences of demographic change for rates of returns to capital, and the distribution of wealth and welfare ☆

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Abstract

This paper employs a multi-country large-scale Overlapping Generations model with uninsurable labor productivity and mortality risk to quantify the impact of the demographic transition towards an older population in industrialized countries on world-wide rates of return, international capital flows and the distribution of wealth and welfare in the OECD. We find that for the U.S. as an open economy, rates of return are predicted to decline by 86 basis points between 2005 and 2080 and wages increase by about 4.1%. If the U.S. were a closed economy, rates of return would decline and wages increase by less. This is due to the fact that other regions in the OECD will age even more rapidly; therefore the U.S. is "importing" the more severe demographic transition from the rest of the OECD in the form of larger factor price changes. In terms of welfare, our model suggests that young agents with little assets and currently low labor productivity gain, up to 1% in consumption, from higher wages associated with population aging. Older, asset-rich households tend to lose, because of the predicted decline in real returns to capital.

JEL classification: E17; E25; D33; C68

Keywords: Population aging; International capital flows; Distribution of welfare

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1. Introduction

In all major industrialized countries the population is aging, over time reducing the fraction of the population in working age. This process is driven by falling mortality rates followed by a decline in birth rates, which reduces population growth rates (and even turn them negative in some countries). While demographic change occurs in all countries in the world, extent and timing differ substantially. Europe and some Asian countries have almost passed the closing stages of the demographic transition process while Latin America and Africa are only at the beginning (Bloom and Williamson, 1998; United Nations, 2002).

Fig. 1, based on UN population projections, illustrates the differential impact of demographic change on population growth rates (defined here as the growth rate of the adult population) for the period 2000–2080 for four regions of the world that comprise the entire world: the United States (U.S.), the European Union (EU), the rest of the OECD (ROECD) and the rest of the world (ROW). Population growth rates are predicted to decline in all regions, but are positive in the U.S. and in the ROW region throughout the 21st century, whereas they fall below zero in the EU in about 2016 and in the ROECD in about 2042. As a consequence, the population in the EU (the ROECD) starts shrinking in about 2016 (2042), whereas the population in the other two regions continues to increase.

Fig. 2 shows the impact of demographic change on working-age population ratios—the ratio of the working-age population (of age 20–64) to the total adult population (of age 20–95). This indicator, which will turn out to be crucial in our analysis, illustrates that the EU is the oldest, whereas the ROW is the youngest region in terms of the relative size of

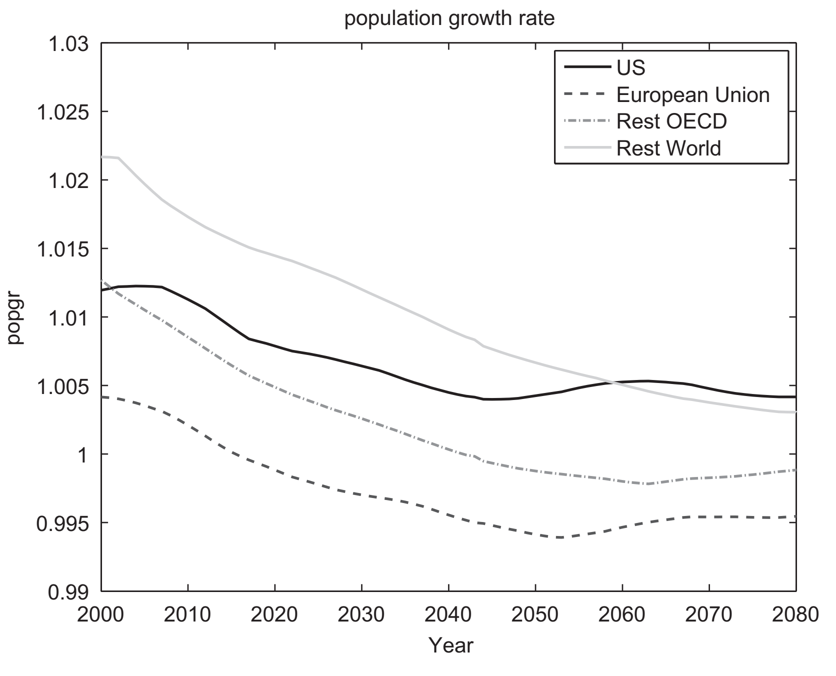

Fig. 1. Evolution of the population growth rate in four regions.