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# Explaining the wealth holdings of different cohorts: Productivity growth and Social Security

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## Abstract

In this paper, we explore the reasons why different generations accumulate different amounts of wealth. We use basic economic theory to propose two indicators of the economic conditions under which households accumulate wealth. The first one represents productivity differences across cohorts: The aggregate level of gross national product per capita around the time the head of the household entered the labor market. The second measure summarizes the changes in Social Security during the head of household's working life. Using panel data from the Dutch Socio-Economic Panel, we show that productivity growth can explain all the cohort effects present in income data, while productivity growth and the generosity of Social Security can explain all the cohort effects present in household net worth. We also find a limited offset of Social Security on wealth holdings.

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## 1. Introduction

There exists an important debate in the literature on the determinants of saving and wealth accumulation and on how one can explain, for example, the sharp decline in saving that many developed countries witnessed during the 1980s. Some researchers have argued that it is simply the aging of the population that has caused the change in saving. These might be called *age effects*. Others have argued that people coming of age

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in different times have different preferences. They argue, for example, that generations born after the Great Depression are less thrifty or less alert to risk than previous generations. An alternative view is that preferences may be identical across cohorts, but that the economic conditions of the past are very different from the present. Whether it is preferences or economic conditions, these considerations lead to the supposition of *cohort or generation effects*. Yet another group of researchers have argued that it is the capital gains in the stock market and the housing market that explain the movement in saving. These might be called *time effects*. While all these theories have strengths and weaknesses, the critical issue is: How can we distinguish among age, cohort, and time effects in saving?<sup>1</sup>

Empirically, one cannot disentangle age and cohort effects in wealth data in a single cross-section. Shorrocks (1975) was the first to point out that productivity growth creates differences in household wealth holdings across generations and one cannot simply assume that the elderly provide a good representation of the current young generation when they get older. Thus, solely on the basis of cross-sectional data, one cannot study issues such as whether the elderly decumulate wealth after retirement.

A few authors have used time series of cross sections to study the behavior of wealth or saving.<sup>2</sup> They estimate a wealth or saving equation as a function of age dummies (or a polynomial in age) and cohort dummies. Additionally, one would like to include time dummies, for example to allow for macro shocks. However, this introduces the identification problem mentioned above: Calendar time is simply equal to year of birth (cohort) plus age. Some authors, such as Attanasio (1998), simply acknowledge this identification problem and show that one can only identify the age profile of the *changes* in saving but not the age profile of saving itself. Others impose restrictions on the time dummies. The leading approach is the one of Deaton and Paxson (1994a, b) in the context of the life-cycle permanent income hypothesis (LC-PIH) for consumption. They assume that the coefficients corresponding to the time dummies add up to zero and are orthogonal to a time trend. One possible justification for this assumption is that time effects are only due to macroshocks and average out over time. This assumption might be reasonable if the LC-PIH provides a good characterization of household behavior and one has panel data or a time series of cross-sections available with many waves. In our dataset, as is generally the case in existing empirical studies, the number of waves is modest ( $T = 12$ ). Furthermore, our sample period is characterized by dramatic changes in house and stock prices. Since net worth obviously depends on these prices, we have to rely on other identifying assumptions than the one suggested by Deaton and Paxson.

We address the identification problem by exploiting the predictions of a fairly standard version of the LC-PIH to explicitly model the cohort effect.<sup>3</sup> We show that productivity growth and changes in Social Security (SS) together can explain the differences in wealth across cohorts. Productivity differences generate differences in

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<sup>1</sup> See Heckman and Robb (1985) for a detailed analysis of this issue with respect to earnings.

<sup>2</sup> See Attanasio (1998), Deaton and Paxson (1994a), Venti and Wise (1997), and Jappelli (1999).

<sup>3</sup> There are several earlier papers that model cohort effects as a function of underlying explanatory variables. Important precursors to our approach are Jonsson and Klevmarken (1978), Weiss and Lillard (1978), Heckman and Robb (1985), and MaCurdy and Mroz (1995).

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