Wealth Accumulation in the U.S.: A Cohort-Based Analysis *

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WORK IN PROGRESS – COMMENTS WELCOME

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1 Introduction

Data from the Survey of Consumer Finances reveal that the ratio of wealth to income for U.S. households whose head was 25 year-old in 1980 grew by a factor of 1.2 by the time the household's head reached age 42. In contrast, more recent cohorts appear to have accumulated wealth at a different pace. A household whose head was 25 in 2000, for instance, experienced an increase in its wealth to income ratio by a factor of only 0.6 by the time the household's head reached age 42.

What explains the flattening of the wealth-to-income ratio over the life cycle of U.S. households? We evaluate the potential of a variety of factors. (i) The income, in particular labor income, grew at a different rate for recent cohorts relative to older cohorts. Kong, Ravikumar, and Vandenbroucke (EER, 2018) report that earnings profiles flattened for cohorts preceding the 1980 cohort (i.e., age 25 in 1980) but that there seems to be a steepening of earnings profiles for the post-1980 cohorts. (ii) Recent cohorts face different rates of return on their wealth compared with the rates experienced by older cohorts. There has been a secular decline in long-term interest rates that may have affected wealth accumulation for recent cohorts. Real returns on five-year Treasury securities, for instance, fell from around 8 percent in the 1980s to less than 1 percent around 2015. (iii) The starting wealth of the most recent cohort is higher than that of older cohorts. Would this affect the rate of wealth accumulation?

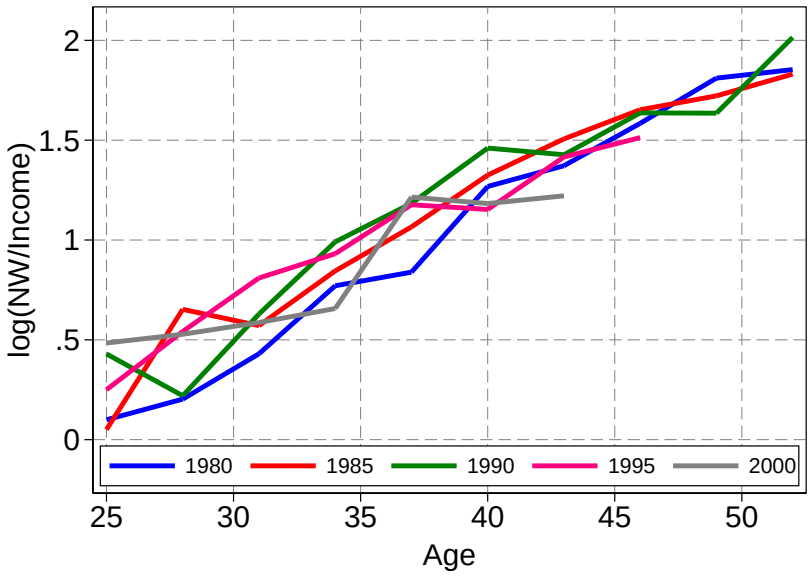
We construct a model of consumption and savings over the life cycle to evaluate the potentials of such factors.

2 Data

We use data from the Survey of Consumer Finances between 1983 and 2016 to study how wealth evolves over the life cycle for different cohorts. We construct a synthetic panel as in Kong, Ravikumar and Vandenbroucke (2018). Given that saving rates are not observable, Figure 1 shows how the ratio of net worth to income evolves with age for different cohorts. Cohort 1980 refers to households whose head was 25 years old between 1978 and 1982. Similarly, cohort 2000 refers to the households whose head was 25 between 1998 and 2002.

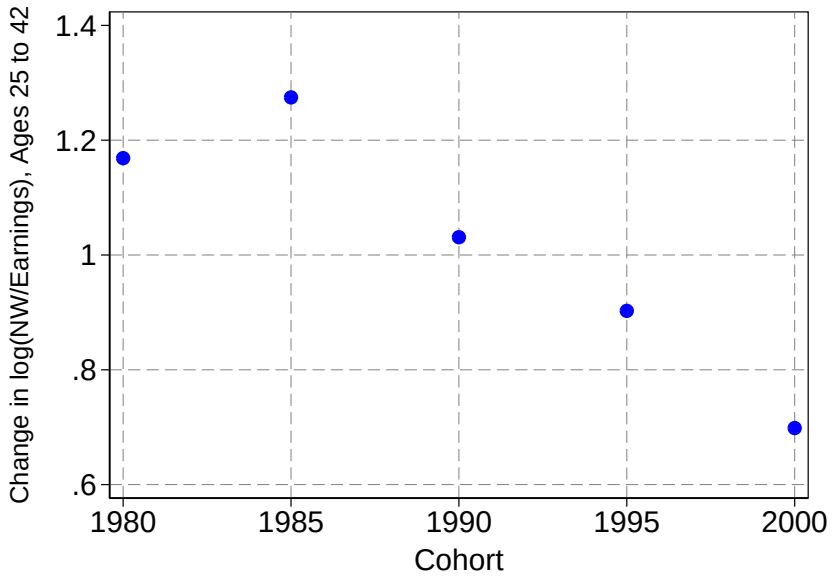
The net-worth-to-income ratio increases over the life cycle for all cohorts in our sample. The size of this increase, however, is smaller for more recent cohorts. Figure 2 shows that the log of the wealth-to-income ratio for the 1980 cohort grew by a factor of 1.2 by the time the household's head reached age 42. In contrast, the 2000 cohort experienced an increase in its wealth-to-income ratio by a factor only 0.6 by the time the household's head reached age 42.

Figure 1: Net-worth-to-income by cohort



Note: Cohorts are defined by year around which their household-head is 25 years old. For example, Cohort 1980 refers to households whose head was 25 years old between 1978 and 1982.
Source: Survey of Consumer Finances.

Figure 2: Change in the Net-Worth-to-income ratio by cohort



Note: The figure plots the change in the log of net-worth-to-income ratio between age 25 and age 42 for selected cohorts.
Source: Survey of Consumer Finances.

3 Model

Time is discrete. Households solve the same problem regardless of which cohort they belong to. Thus, below, we describe the problem of a typical household without reference to its cohort. A household lives for J periods. Retirement occurs at age $R < J$. During each period before retirement the households supplies one unit of labor inelastically. Preferences are represented by

$$\sum_{j=1}^{J} \beta^{j-1} U(c_j) \tag{1}$$

where $\beta > 0$ is the subjective discount factor, U is a concave, twice continuously differentiable function, and c_j is consumption at age j.

The household is endowed with an income profile $\{y_j\}_{j=1}^{R-1}$ and asset a_1 at the beginning of life. The household can borrow and lend freely at rate r. The lifetime budget constraint is

$$\sum_{j=1}^{J} \left(\frac{1}{1+r}\right)^{j-1} c_j = (1+r)a_1 + \sum_{j=1}^{R-1} \left(\frac{1}{1+r}\right)^{j-1} y_j. \tag{2}$$

The household maximizes (1) subject to (2). Weath at age j is determined by

$$a_{j+1} = (1+r)a_j + y_j \mathbb{I}(\{j < R\}) - c_j$$

where $\mathbb{I}$ is the indicator function.

4 The Exercise

We use the model to understand what forces can explain the flattening of the wealth-to-income ratio over the life cycle of U.S. households. We consider two cohorts $k = \{1980, 2000\}$. We model the earnings profile, y_j, in such a way as to reproduce the $\cap$-shape patterns observed in U.S. data. We let $J = 55$, $R = 40$ and $\beta = 0.98$. We use

$$U(c) = \frac{c^{1-\sigma}}{1-\sigma}$$

with $\sigma = 2.0$.

Given the income profile and initial assets as in Figure 1 for the 1980 cohort, the model requires a rate of return $r = 7.6\%$ to match the increase in the wealth-to-income ratio of the 1980 cohort, illustrated in Figure 2.

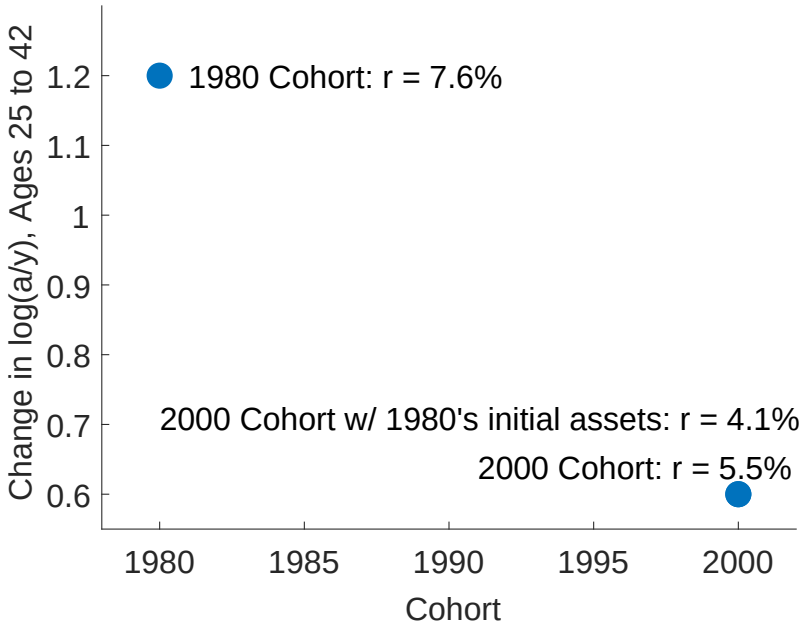
Using the model, we focus on two alternatives that may explain the flattening of wealth-to-income ratio over the life cycle of U.S. households.

First, there has been a long-lasting decline in long-term interest rates that may have affected wealth accumulation for recent cohorts. How much does the interest rate need to change in order to explain the flattening of the wealth-to-income ratio between the 1980 and 2000 cohort? Keeping the income profile and initial assets of the 1980 cohort, the model suggests that the rate of return needs to be reduced to $r = 4.1\%$ (from $r = 7.6\%$).

Second, Figure 1 shows that average net worth at age 25 is higher for the 2000 cohort than for the 1980 cohort. If we introduce this additional difference between cohorts, the reduction in the interest rate needed to explain the flattening of the wealth-to-income ratio is smaller. The model suggests that the rate of return needs to be reduced to $r = 5.5\%$ instead of $r = 4.1\%$.

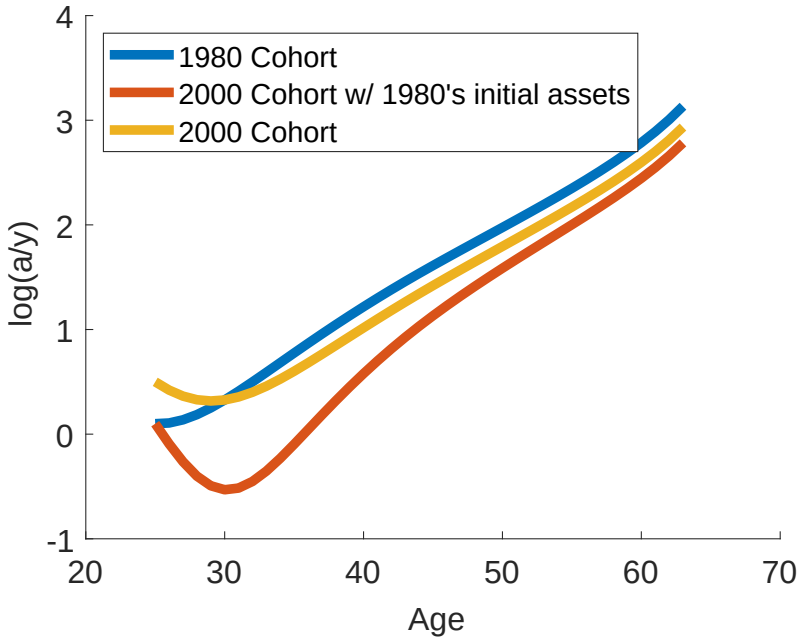
Figure 4 shows the life cycle profile of the net-worth-to-income ratio in three simulated cohorts. The amount of assets accumulation is similar to the one found in the data and reported in Figure 1. For example, the net-worth-to-income ratio is close to 2 by age 50 both in the model and in the data.

Figure 3: Change in Net-Worth-to-income ratio by cohort



Note: The figure plots the change in the log of the net-worth-to-income ratio for alternative cohorts simulated to match the values observed in the data.

Figure 4: Net-Worth-to-income ratio by cohort



Note: The figure plots the log of the net-worth-to-income ratio for alternative cohorts simulated to match the growth rate of the ratio of net-worth-to-income observed in the data.