

# The impact of raising children on retirement security

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# THE IMPACT OF RAISING CHILDREN ON RETIREMENT SECURITY

BY ALICIA H. MUNNELL, WENLIANG HOU, AND GEOFFREY T. SANZENBACHER\*

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## Introduction

Children are expensive; they require food, clothing, childcare, and an education. So, one might think that households with children would end up less well prepared for retirement than those without. But raising children is temporary, and the lifecycle model used by economists suggests two ways that parents might not endanger their retirement. One option is for parents to keep *household* consumption steady over time, but sharply curtail spending *on themselves* when they have children at home. The other is to have households plan for higher consumption while the children are at home and lower consumption when the children leave and then in retirement. Either way households would accumulate enough wealth to maintain their standard of living in retirement. But households may not behave optimally; they may increase household spending when they have children and maintain spending at that elevated level even after the children leave home. In this case, households with children may be less prepared for retirement than those without.

This *brief* uses the National Retirement Risk Index (NRRI) to assess the impact of having children on the retirement security of today's older working house-

holds. The NRRI is calculated by comparing households' projected replacement rates – retirement income as a percentage of pre-retirement income – with target replacement rates that would allow them to maintain their standard of living. These calculations are based on the Federal Reserve's *Survey of Consumer Finances*, a triennial survey of a nationally representative sample of U.S. households. As of 2013, the NRRI showed that, even if households worked to age 65 and annuitized all their financial assets (including the receipts from reverse mortgages on their homes), more than half of households were at risk of falling short in retirement.

The discussion proceeds as follows. The first section briefly describes the nuts and bolts of the NRRI. The second section discusses the potential impact of children on income, wealth, and retirement preparedness. The third section uses regression analysis to explore the actual impacts. The final section concludes that, in terms of retirement preparedness, having children leads to a moderate increase in the likelihood of being at risk for households in their 50s. However, the influence of children is considerably smaller than other factors, such as having an employer retirement plan.

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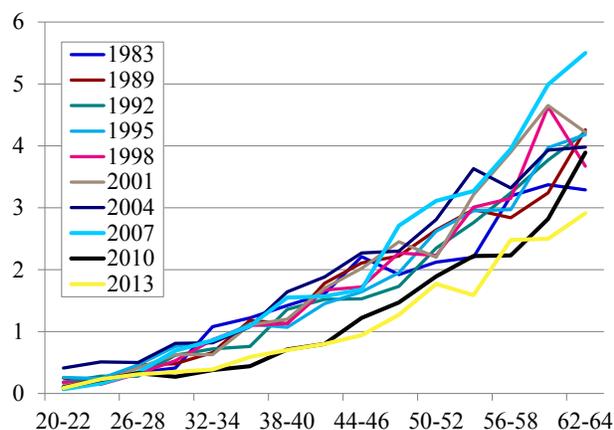
\* Alicia H. Munnell is director of the Center for Retirement Research at Boston College (CRR) and the Peter F. Drucker Professor of Management Sciences at Boston College's Carroll School of Management. Wenliang Hou is a senior research advisor at the CRR. Geoffrey T. Sanzenbacher is a research economist at the CRR. The CRR gratefully acknowledges Prudential Financial for its sponsorship of the National Retirement Risk Index.

## The Nuts & Bolts of the NRRI

Calculating the NRRI involves three steps: 1) projecting a replacement rate – retirement income as a share of pre-retirement income – for each household; 2) constructing a target replacement rate that would allow each household to maintain its pre-retirement standard of living in retirement; and 3) comparing the projected and target replacement rates to find the percentage of households “at risk.”

Retirement income at age 65, which is defined broadly to include all of the usual suspects plus housing, is derived by projecting the assets that households will hold at retirement, based on the stable relationship between wealth-to-income ratios and age evident in the 1983-2013 *Surveys of Consumer Finances* (SCFs). As shown in Figure 1, wealth-to-income lines from each survey rest virtually on top of one another, bracketed by 2007 values on the high side and 2013 values on the low side.

FIGURE 1. RATIO OF WEALTH TO INCOME BY AGE FROM THE SURVEY OF CONSUMER FINANCES, 1983-2013



Source: Authors' calculations based on U.S. Board of Governors of the Federal Reserve System, *Survey of Consumer Finances* (SCF) (1983-2013).

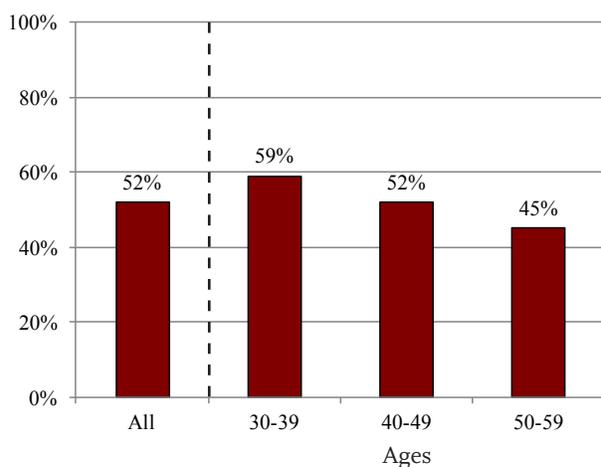
Sources of retirement income that are not derived from SCF-reported wealth are estimated directly. For defined benefit pension income, the projections are based on the amounts reported by survey respondents who have already retired. For Social Security, benefits are calculated directly based on estimated earnings histories for each member of the household.

A calculation of projected replacement rates also requires income *prior to* retirement. The items that comprise pre-retirement income include earnings, the return on 401(k) plans and other financial assets, and imputed rent from housing. In essence, with regard to wealth, income in retirement equals the annuitized value of all financial and housing assets; income before retirement is simply the return on those same assets.<sup>1</sup> Average lifetime income then serves as the denominator for each household's replacement rate.

Determining the share of the population at risk requires comparing projected replacement rates with the appropriate target rates. Target replacement rates are estimated for different types of households assuming that households spread their income so as to have the same level of consumption in retirement as they had before they retired. Households whose projected replacement rates fall more than 10 percent below the target are deemed to be at risk of having insufficient income to maintain their pre-retirement standard of living. The NRRI is simply the percentage of *all* households that fall more than 10 percent short of their target.

In 2013, the year of the most recent SCF, the overall share at risk was 52 percent – ranging from 59 percent for households in their 30s to 45 percent for households in their 50s (see Figure 2).

FIGURE 2. PERCENTAGE OF NRRI HOUSEHOLDS “AT RISK” BY AGE GROUP, 2013



Source: Munnell, Rutledge, and Webb (2014).

## Potential Impact of Children on Income, Wealth, & Retirement

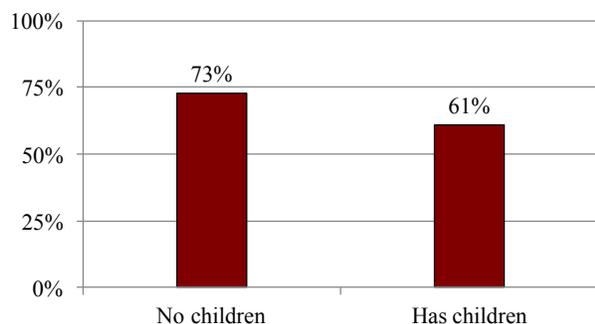
Children can affect a household’s well-being in retirement both by their direct effects on income and wealth and by the pattern of consumption over the household’s lifecycle.<sup>2</sup>

### *Income and Wealth*

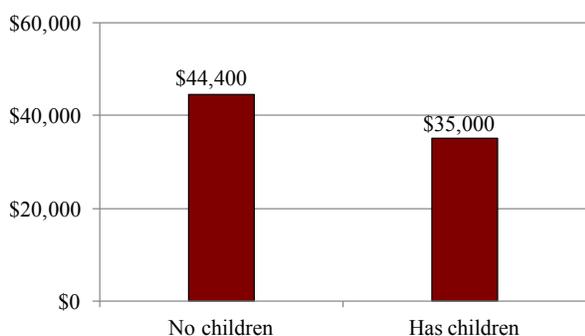
Researchers agree that parents divert considerable resources to their children when the children are young. These resources involve time out of the labor force – usually, for the mother – and direct expenditures on children. Even today the labor force participation rate of women with children is substantially below that of childless women. Similarly, when women with children work, they earn lower wages (see Figure 3).

FIGURE 3. WORKFORCE STATUS AND EARNINGS FOR WOMEN AGES 25-64 WITH AND WITHOUT CHILDREN, 2013

a. Percentage of Women Working for Pay



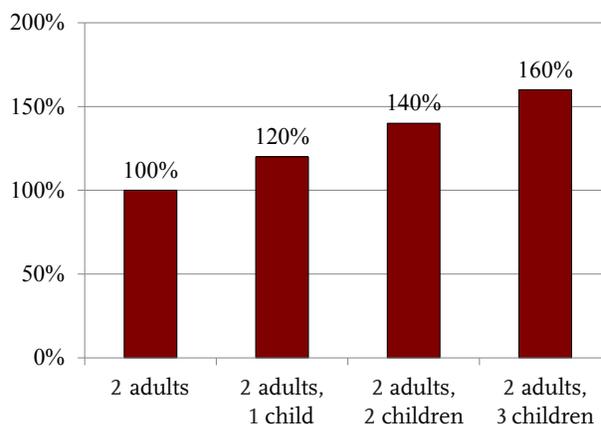
b. Women’s Median Earnings



Source: Authors’ calculations from the 2013 SCF.

In addition to the mother’s foregone earnings, families spend money on food, clothing, childcare, and education for their children. Studies by the Organization for Economic Cooperation and Development (OECD) show that the cost for a family of four is 140 percent of that of two adults (see Figure 4).

FIGURE 4. HOUSEHOLD COSTS OF CHILDREN



Source: Organization for Economic Cooperation and Development (2012).

The bottom line is that households with children would be expected at the end of their work-lives to have less income and lower wealth. However, neither of these outcomes is necessarily related to their retirement preparedness, measured by their ability to maintain their pre-retirement standard of living.

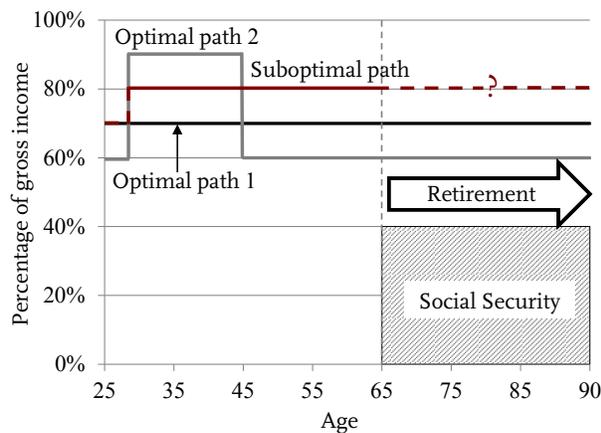
### *Retirement Preparedness*

Analyses of retirement preparedness are typically based on the lifecycle model in which households maximize the expected utility of consumption over their lifetime. This approach means saving when young and living off those savings when old. Some researchers assume that the marginal utility of consumption – the enjoyment that people derive from each additional dollar of spending – does not vary with the number of children, so the household would choose a savings plan that provides level consumption over the lifecycle. On the other hand, if the marginal utility of consumption is higher when children are present, then households will optimally plan for

higher consumption when the children are at home and lower consumption after the children have left home and during retirement.

Level consumption means that a household with constant earnings would save at a constant rate over its lifetime. This saving and the interest on accumulated assets allow households to maintain their high level of consumption in retirement (see “optimal path 1” in Figure 5). In contrast, the assumption that households vary their consumption across the lifespan shows relatively low consumption before the children are born, high consumption when the children are at home, and low consumption before retirement when the children are gone (“optimal path 2”).<sup>3</sup>

FIGURE 5. VARIOUS CONSUMPTION PATHS HOUSEHOLDS WITH CHILDREN COULD TAKE



Source: Authors' illustration.

The NRRI targets are based on the assumption that households optimally follow a path of level consumption (optimal path 1). This assumption seems valid given that recent studies show that households do not increase their contributions to 401(k)s – the main vehicle through which people accumulate wealth for retirement – in a meaningful way when the children leave home.<sup>4</sup>

However, the reality is that people may not behave optimally. They may start out as if they are going to keep consumption steady, then increase their spending from that high level when they have children and never cut back when the children leave home (the “suboptimal path” in Figure 5). These households will not meet their target wealth accumulation.

## Actual Impact of Children on Income, Wealth, & the NRRI

The data for this analysis come from the 2013 SCF. The equation is run with three separate dependent variables: income, wealth, and percentage at risk (NRRI). The main independent variable of interest is the number of children.<sup>5</sup> The control variables consist of whether the household has two earners, education level (less than high school, high school, some college, or college graduate), whether the household head is covered by a defined benefit (DB) or defined contribution (DC) plan, and whether the household is saving for children’s educational expenses.<sup>6</sup>

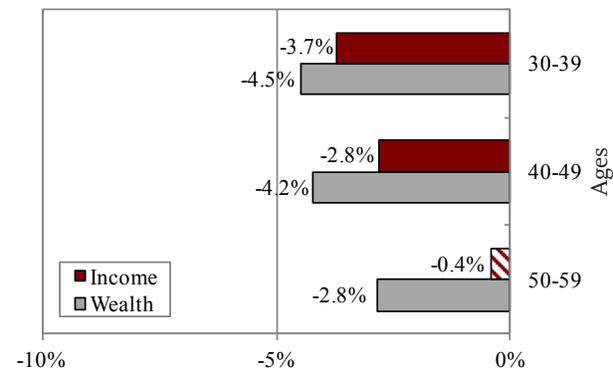
Thus, the equation is as follows:

$$\text{Income, wealth, or percentage at risk} = f(\# \text{ children, two-earner household, education group, DB or DC coverage, saving for education})$$

Income and the household’s NRRI status are well defined, but the options for measuring wealth are numerous. We defined wealth comprehensively to include financial wealth, assets in DC plans, net housing wealth, and the pro-rated value of DB and Social Security wealth.

Figure 6, which is based on data directly from the SCF rather than estimates from the NRRI, shows that households with children generally have lower wealth

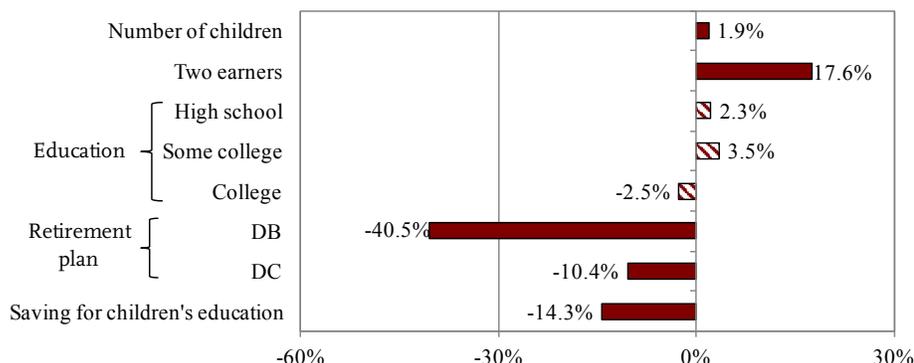
FIGURE 6. PERCENTAGE REDUCTION IN HOUSEHOLD INCOME AND WEALTH ASSOCIATED WITH EACH CHILD BY AGE GROUP



Note: Solid bars are statistically significant.

Source: Authors' calculations.

FIGURE 7. ESTIMATED EFFECT OF SELECTED FACTORS ON RETIREMENT RISK, HOUSEHOLDS AGES 50-59



Note: Solid bars are statistically significant.

Source: Authors' calculations.

and income, with some differences by age. Each child reduces household income by about 4 percent for households in their 30s, but the percentage reduction declines to virtually zero for older households and is not statistically significant. This pattern is consistent with the notion that mothers of young children reduce their labor force effort for a time and then return.<sup>7</sup> In terms of wealth, each child is associated with roughly 3-4 percent less wealth.<sup>8</sup>

Given that more children means less wealth, one would expect that, for households in their 50s, having children would make them more likely to be at risk. The regression results show that, by the time households are in their 50s, each child increases the share of households at risk by 2 percentage points. This finding means that the NRR for households with two children should be 4 percentage points higher than for a household with no children. To put the size of this effect in context, it is helpful to compare it to the effects of the control variables (see Figure 7, with full results in Appendix Table A-1).

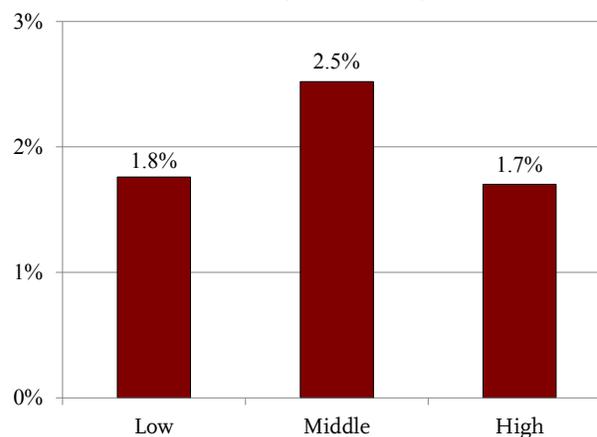
Children have a considerably smaller impact on a household's retirement risk than several of the controls. Having an employer retirement plan is very important, particularly a DB plan, which reduces the likelihood of being at risk by about 40 percentage points.<sup>9</sup> Interestingly, being a two-earner couple also has a substantial impact in the opposite direction – it increases the likelihood of being at risk by about 18 percentage points. This result may reflect, in part lower Social Security replacement rates for two-earner couples, but the topic deserves further exploration. Saving for a child's education – which adds to a household's wealth – reduces the likelihood of being

at risk by 14 percentage points. However, any such saving is earmarked for the children's needs rather than for retirement, so it makes households look more prepared for retirement than they actually are.<sup>10</sup>

Overall, then, the comparison of the regression results suggests that children moderately increase a household's prospects of being at risk. In other words, households with children are somewhat more likely to behave suboptimally by increasing their spending when the children are at home and keeping their spending higher even after the children are gone.

One final question is the extent to which the impact of children on retirement risk varies by income group. The coefficients of the children's variable in Figure 8 indicate that the middle-income group

FIGURE 8. INCREASE IN RETIREMENT RISK WITH EACH CHILD BY INCOME GROUP, AGES 50-59, 2013



Source: Authors' calculations.

is affected more than the others. This finding is consistent with the notion that most of the retirement wealth for low-income households is Social Security, which is not directly affected by the number of children, and that the retirement wealth of higher income households may be overstated by educational saving, despite the attempt to control for such saving.

## Conclusion

Children are expensive, but that does not mean that parents will end up less well prepared for retirement. For example, if households cover the costs of child-rearing by spending less on themselves, they can remain on track for retirement. However, households may not behave in this optimal way, instead raising their total spending when they have children and then trying to maintain this higher spending path even after the children are gone. These households may be headed for trouble in retirement, because they have not saved enough to maintain the standard of living to which they have grown accustomed.

## Endnotes

1 For the measures of retirement income and pre-retirement income, both mortgage debt and non-mortgage debt are subtracted from the appropriate income components.

2 See, for example, Browning (1992).

3 The optimal path 2 approach is used in Scholz and Seshadri (2008, 2007); and Scholz, Seshadri, and Khitatrakun (2006).

The difference in the levels of consumption in retirement between the two optimal paths is due to the timing of saving. Level consumption (optimal path 1) produces more saving earlier in the life cycle with more time to earn interest than when saving is deferred until after the children are gone. (In terms of lifetime utility of consumption, the two paths are equivalent because a household that chooses to follow optimal path 2 receives higher utility from consumption when the children are at home, which makes up for the lower level of consumption the household experiences in retirement.) For this analysis, the important point is that – under either type of optimal savings behavior – children should not affect retirement preparedness.

4 Dushi et al. (2015) find that U.S. households increase their saving by only a very small amount when children leave. Klos and Rottke (2013) show roughly similar results for German households. Coe and Webb (2010) look at the flip side – consumption rather than saving – for U.S. households and find that parents increase spending on themselves after their children leave.

5 In terms of the explanatory variables, a key issue is how to measure children. We chose the number of children for two reasons. First, the OECD data suggest that the burden of the second child is the same as the burden of the first child. Second, estimates using a quadratic form for children yielded inconsistent results across income groups.

6 The variable for educational saving was constructed by combining responses to three separate SCF questions: 1) in the next 5-10 years, do you have any foreseeable major expenses for education?; 2) are the education expenses for your child?; and 3) are you currently saving for these expenses or have you previously saved for them?

7 U.S. Bureau of Labor Statistics (2014) shows that women with young children have less labor force activity than women with older children.

8 In a study of married households, Plotnick (2009) found a similar pattern: households with children tended to have slightly more income and about 5 percent more wealth than those without children.

9 One might have thought that compensating differentials would have led to a negative relationship between pension coverage and income. That is, the employer decides on a compensation package and then divides that package between wages and fringe benefits. In actuality, research has shown that “good jobs” pay both higher wages and fringe benefits, so simple correlations between wages and pension coverage are always positive (see Gustman, Mitchell, and Steinmeier 1994).

10 Souleles (2000) found that households that save for college tend to start well in advance of when their childrens’ college expenditures occur.

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# APPENDIX

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APPENDIX TABLE A-1. ESTIMATED EFFECT OF SELECTED FACTORS ON RETIREMENT RISK, HOUSEHOLDS AGES 50-59

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|                                 | Coefficient          |
|---------------------------------|----------------------|
| Number of children              | 1.9%***<br>(0.003)   |
| Two earners                     | 17.6%***<br>(.012)   |
| Education                       |                      |
| High school                     | 2.3%<br>(0.020)      |
| Some college                    | 3.5%<br>(0.021)      |
| College                         | -2.5%<br>(0.021)     |
| Retirement plan                 |                      |
| DB                              | -40.5%***<br>(0.013) |
| DC                              | -10.4%***<br>(0.012) |
| Saving for children's education | -14.3%***<br>(0.017) |
| Observations                    | 6148                 |
| R-squared                       | 0.19                 |

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Note: Statistically significant at the 1-percent level (\*\*\*).  
*Source:* Authors' calculations.

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