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Comment Douglas W. Elmendorf

This chapter by Jim Poterba, Josh Rauh, Steve Venti, and David Wise considers an important practical issue that would be associated with the intro-

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duction of personal retirement accounts. Deciding that people should accumulate assets and use those assets to finance their retirements is just the starting point. Among the myriad further decisions is choosing which assets to hold—and that choice might ultimately matter a great deal. This chapter extends earlier work by these authors and others to investigate the implications of alternative portfolio allocations.

I enjoyed reading about this research and learned a lot from it. Detailed simulations of the sort undertaken here are crucial in evaluating the impact of alternative proposals for Social Security reform. The authors provide a clear description of the various choices they needed to make for these complex simulations, and those choices seem sensible to me. The authors also do an admirable job of testing the robustness of their findings to alternative assumptions, especially when one recognizes the thousands of iterations of multiperiod lifetimes that underlie each figure in the tables. Thus, I do not have much to say about the specifics of the calculations. Instead, I will use my limited time to discuss the interpretation of the results, making four points in declining order of importance.

The Equity Premium

The "equity premium puzzle" plays a critical role in interpreting the results in this chapter, as it does in so many analyses regarding equity investment of retirement funds. This point is not a surprise to the authors or to other participants in this conference. However, given its overriding importance here and in other research, tracing its effects through the chapter is worthwhile.

In tables 8.5 and 8.6, the authors present the mean and various percentiles of the distribution of retirement wealth under different portfolio choices and different assumptions about investment conditions. One problem in thinking about these tables is simply the number of numbers shown. Although the robustness checks are very important, it may be difficult to see the forest for the trees. Therefore, I use a diagram to summarize the information in the tables. Figure 8C.1 is a version of the familiar mean-variance diagram, with the vertical axis showing mean retirement wealth and the horizontal axis showing the difference in retirement wealth between the 90th and 10th percentiles (because the authors do not report standard deviations).

The solid diamonds plot the outcomes of alternative investment strategies for people with a high school education facing baseline expenses and empirical stock returns. Naturally, the line slopes upward, with the all-

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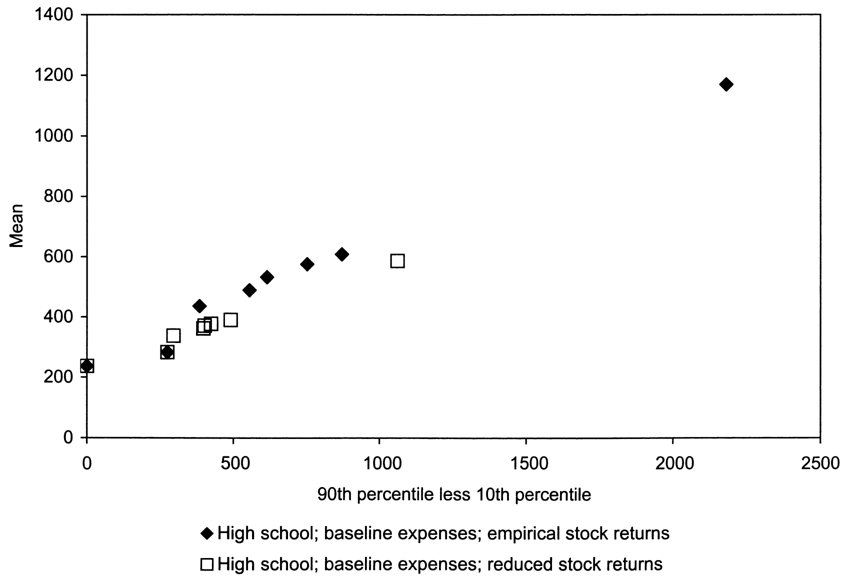

Fig. 8C.1 Retirement wealth with alternative investment strategies

Treasury inflation-protected securities (TIPS) strategy on the far left and the all-stock strategy on the far right.[1] The hollow squares plot the outcomes of alternative investment strategies for this same group facing baseline expenses but reduced stock returns. For any investment strategy that includes stocks, lower stock returns trim both the mean and range of retirement wealth.

I constructed similar diagrams to examine retirement wealth for people facing higher expenses and for the college-educated sample. The results were straightforward. Compared with the baseline shown with the solid diamonds, higher expenses reduce the mean and range of retirement wealth for all investment strategies. However, they have smaller effects than reduced stock returns for investment strategies that include stocks because annual returns are reduced by 60 to 80 basis points rather than 300 basis points. College-educated individuals accumulate more wealth than high school-educated individuals because they save more, but the picture is qualitatively very similar.

These calculations simply trace out the efficient frontier (after allowing for expenses). Tables 8.8 and 8.9 turn to the utility consequences. Once again, I have consolidated the large amount of information in the tables.

1. One strategy seems to be dominated in the sense of being off the efficient frontier—holding long-term bonds. That result is not surprising given the model of asset returns used in the chapter, as I discuss later.

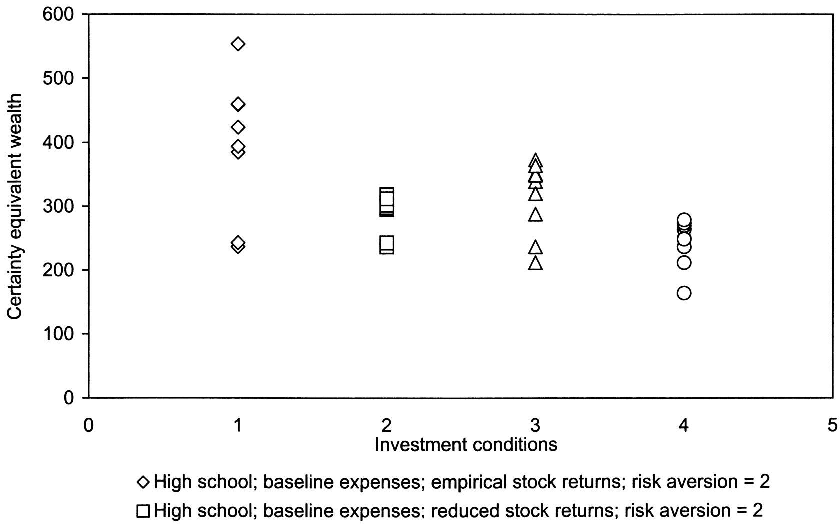

Fig. 8C.2 Retirement wealth with alternative strategies and investment conditions

Figure 8C.2 shows the dispersion of certainty equivalent wealth across alternative strategies and investment conditions. The first vertical column shows the range of wealth outcomes for the baseline case, the second column shows the same for reduced stock returns, the third for higher risk aversion, and the fourth for the combination of reduced returns and higher risk aversion.

The sizes of the ranges are strikingly different for different assumptions. At the far left, the best portfolio choice produces almost 2.5 times the certainty equivalent wealth of the worst portfolio choice; in the other three columns, the best choice is only about 1.5 times as good as the worst choice. That is, under the baseline assumptions, one's portfolio choice matters a lot, but under other assumptions, it matters much less.

Why? One more type of picture is helpful. The solid diamonds in figure 8C.3 plot, for the baseline case, certainly equivalent wealth against the average share of the portfolio in stocks during a lifetime. I had to guess some of the stock shares based on information in the chapter, and I skipped the No Lose plan because I did not know how to make an educated guess. With that caveat in mind, the figure shows that portfolios invested more heavily in stocks appear to have a higher risk-adjusted return.

This result should not surprise us: it is just the equity premium puzzle. We know that if one applies a fairly low degree of risk aversion to historical equity returns, it appears that people should hold more stock than they do. Indeed, the authors find that the optimal fixed portfolio share is 100 percent in this case. However, unless one decides that the resolution of the equity premium puzzle is that people have just been wrong about their in-

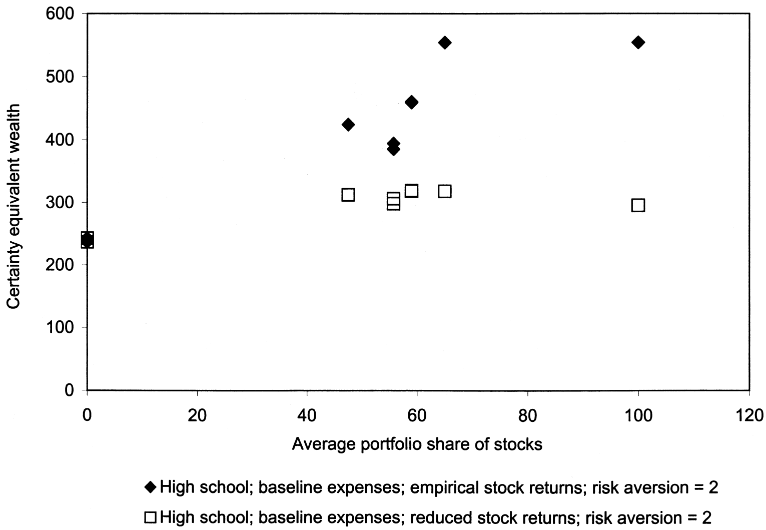

Fig. 8C.3 Stockholding and utility

vestment choices over the past century, I do not know what one can take from this finding.

The hollow squares represent the corresponding points assuming reduced equity returns. This bit of revisionist history diminishes the equity premium puzzle—and it also eliminates the upward-sloping relationship of the solid diamonds, suggesting that one's portfolio choice does not matter much. This result also should not surprise us: if we have done the certainty equivalence calculation correctly, risk should play no systematic role in the outcomes. Indeed, because risk is the main difference across these strategies, there is now very little difference of any sort. The corresponding figure assuming higher risk aversion rather than lower stock returns looks quite similar.

In sum, we know that economists cannot rationalize the observed distribution of asset returns using a standard utility function with values of risk aversion that seem plausible. Therefore, using such a utility function to compare wealth outcomes generated with the observed distribution of asset returns is problematic at best. Put differently, making utility comparisons for different investment strategies using a utility function and a distribution of historical asset returns that are not consistent with each other will produce results whose interpretation is very unclear.

Time Varying Equity Shares

One motivation for the chapter is the traditional piece of financial advice that investors should reduce their equity exposure as they get older. The simulation results are consistent with this advice, but that appears to be a matter of happenstance rather than a reflection of the fundamental economics underlying the simulations. Let me explain.

The authors note that simple economic models do not justify this traditional advice, but that more complicated models do. These complications generally offer ways to rebalance portfolios in the event of financial shocks or ways to adjust labor supply and labor income to compensate for financial shocks. However, the simulations in this chapter include neither of these features and thus appear to provide no rationale for a downward profile of stock holding over a lifetime.

Why, then, do the so-called optimal linear life-cycle asset allocations reported in table 8.7 involve such a downward tilt? One clue is the authors' statement that the optimal strategy "is in many cases the one with the flattest profile." Yet the analysis does not allow for completely flat or upward-sloping profiles, so the results reveal only the optimal *downward-sloping* linear strategy. Whether a flat or upward-sloping profile would generate higher certainty equivalent wealth is not apparent.

However, the full story is more complicated, because the authors also report some cases where the optimal stock holding profile is not the flattest available profile. These results seem to arise because all of the portfolios are constrained to *average* a 50 percent equity share over the life cycle. Because the total size of a portfolio increases with age, less wealth is subjected to the equity return with a downward tilt in the equity share than with a flat equity share at the same average level. The results in question do not reveal a preference for a downward slope per se but rather a preference for a smaller *effective* equity share on average over a lifetime. In the conditions under which investors would prefer a larger share of equities—like the baseline case—the preferred slope of equity holding is flat because that maximizes the amount of wealth receiving the equity return. In the conditions under which investors would prefer a smaller share of equities—like reduced equity returns—the preferred slope is a steep one.

In sum, the simulation results pointing to a downward tilt in stock holding reflect limitations on the portfolio allocations considered rather than underlying economic factors. Incorporating the factors that would generate a preferred downward profile would represent a very interesting—but very complex—extension to this chapter.

Time Variation in Asset Returns

The model used in the chapter does not allow for time variation in the distribution of asset returns. This restriction is quite understandable in terms of computational feasibility, but it matters for some of the results.

We know that portfolios should not be efficient simply in a static, mean-variance sense, but should hedge against future changes in investment opportunities. Of course, such dynamic hedging arises only because of time variation in expected returns or volatilities. Because this chapter assumes that the TIPS yield and the distributions of returns on other assets are fixed over time, dynamic hedging is not a consideration in the simulations or in the optimal portfolio allocations derived from those simulations.

One effect of the lack of dynamic hedging is a missing motivation for holding long-term bonds. In the real world, long-term bonds can provide an intertemporal hedge against variation in short-term interest rates because their prices rise when (expected) short-term rates fall. This role for long-term bonds does not appear in the sort of diagram I drew earlier and does not appear in the model and simulations in this chapter. Those simulations seem to imply that people should never hold long-term bonds—but that conclusion would be inappropriate, and the authors carefully do not draw it. More broadly, the optimal portfolio shares of stocks and TIPS can look quite different in models that incorporate time varying returns and dynamic hedging than in models like the one in this chapter.

Mutual Fund Expenses

The authors show a significant effect on retirement wealth of the level of expenses, as we would expect. This effect would be even larger if the simulations showed investments cumulating for longer—for example, if the analysis included the draw-down period of retirement accounts.

The chapter also raises the concern that so-called life-cycle funds may have higher expenses. However, I see little reason to believe that a life-cycle feature substantially increases the true costs of running a mutual fund, which suggests that competition is likely to whittle away at the expenses charged. Even today, the expense ratios at Vanguard for their total stock index fund, long-term Treasury bond index fund, and "target retirement" funds are 0.19 percent, 0.26 percent, and 0.21 percent, respectively. Thus, Vanguard is charging essentially nothing for the life-cycle approach. For analysis of the sort done in this chapter, I would look beyond the current, higher expenses of such funds and focus on the possible desirability of automatic portfolio reallocation over time.