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CENTER FOR RETIREMENT RESEARCH AT BOSTON COLLEGE

Large, Small, International: Equity Portfolio Choices in a Large 401(k) Plan

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Several recent papers have examined the choice of holding equity *vs* cash and bonds, both from a normative and a positive perspective. On the other hand, only few papers have looked at the optimal composition of the equity portfolio of a long-lived investor, and, to our knowledge, no existing paper has studied the *actual* composition of equity portfolios held by investors.

This paper aims at filling the gap. The results of this paper should be relevant for academics, in their effort to produce models that may explain and guide portfolio behavior. The results of this paper should also be useful to policymakers, who may be concerned with the impact of Social Security reform on households' finances and on financial markets.

This paper investigates the determinants of holding different types of equities in the context of a 401(k) retirement plan. The decision of holding a given type of equity fund is related to investor characteristics and common time effects.

Our initial data set is a panel of nearly seven thousand 401(k) accounts from a single plan for a period of over four years, from April 1994 through August 1998. The plan data include detailed information on participants' asset allocations. The data also include demographic and employment information such as gender, age, marital status, salary, and tenure on the job. Out of all the participants in the plan, we select those that, at least in one year, had equity holdings. Each investor has the option to hold a Large U.S. Equities fund, a Small/Medium U.S. Equity fund, and an International Equities fund.

We find that, on average, Large Equities account for the largest share of the equity portfolio, 45 percent, and that most observations are in the 40 percent - 60 percent range. End-of-year holdings of Large Equities significantly increase over the sample period; males tend to hold somewhat less Large Equities than their female counterparts, and there is a tendency for holdings of Large Equities to decrease with salary, but to increase with age. Also, investors who entered the plan before 94 hold less Large Equities than later entries. Finally, a longer tenure on the job has some positive effect on Large Equities investment. When all the explanatory variables above are used in a multi-variate regression, the following patterns remain significant: the positive time trend in allocations, the negative effect of salary and early entry, and the positive effect of age.

Holdings of Small/Medium Equities are mainly in the 20 percent - 40 percent range, and the overall average is 32 percent. Allocations increase over the first three years of the sample period and then decrease during the last two years. Gender and marital status do not seem to matter, while salary and early entry in the plan have a positive effect; and there is also some positive association with seniority on the job. In a multi-variate regression, the time effect is still significant, although the other effects are not consistently significant.

Holdings of International Equities are mainly in the 20 percent - 40 percent range, with an overall average of 22 percent. Allocations steadily decrease over the five years of the sample. Males allocate to International Equities slightly more than their female counterparts, while married investors allocate less. Patterns by salary and time of entry in the plan are insignificant. On the other hand, the association between International Equities allocation and age is negative. Similarly, the association between seniority on the job and International Equities investment is steadily negative. The multivariate analysis confirms two of the patterns above: the negative time trend and the negative effect of age.

We also study the decision to diversify across different types of equities. We measure diversification by the number of equity funds held by an investor at the end of the year. Interestingly, we find that the majority of those who do hold equities, hold all three equity funds: in 74 percent of the participant/year observations, all three equity funds are held; and the average number of funds held overall is 2.7. When we model the number of funds held as a function of the investors' characteristics, we find an overall negative trend in diversification, and we also find that the number of funds held tends to fall as the investor ages.

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