Portfolios of the Rich

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Abstract

Recent research has shown that 'rich' households save at much higher rates than others (see Carroll (2000); Dynan, Skinner, and Zeldes (1996); Gentry and Hubbard (1998); Huggett (1996); Quadrini (1997)). This paper documents another large difference between the rich and the rest of the population: portfolios of the rich are heavily skewed toward investments in their own privately held businesses. The paper explores three possible explanations. First, perhaps there is exogenous variation in risk tolerance which leads highly risk tolerant households to engage in high-risk, high-return activities, and the risk-lovers who are lucky end up rich. A second possibility is that capital market imperfections *a la* Gentry and Hubbard (1998) and Quadrini (1997) require entrepreneurial activities to be largely self-financed, and these same imperfections imply that entreprenurial investiment will yield high average returns. The final possibility is that wealth enters households' utility functions directly as a luxury good as in Carroll (2000) (one interpretation is that this reflects the utility of anticipated bequests). A consequence of that model which was not anticipated in the original paper is its implication that household preferences exhibit decreasing relative risk aversion, which could explain why rich households are much more likely to engage in high-risk high-return entrepreneurial activities even without capital market imperfections or taste differences. The paper concludes that the overall pattern of facts suggests both Carroll-style utility and Gentry/Hubbard-Quadrini style capital market imperfections are important.

Reporter, to bank robber Willie Sutton:

"Mr. Sutton, why do you rob banks?"

Willie Sutton:

"That's where the money is!"

1 Introduction

If Willie Sutton had been an economist interested in portfolio behavior, he would not have been very interested in the median household. Ever since the pathbreaking work of Pareto more than a century ago, economists have known that wealth is extremely unevenly distributed. And more recently, survey data have revealed that the portfolio of financial and real assets of the median household (at least in the U.S.) is rather simple: a checking/savings account plus a home and mortgage, and not much else.[1] Overwhelmingly, the data tell us that if we wish to understand aggregate portfolio behavior, it is critical to understand the behavior of the richest few percent of households, both because they control the bulk of aggregate wealth and because their portfolio behavior is much more complex than that of the typical household.

Despite the strength of these arguments, there seems to have been little recent academic work directed at understanding the portfolio behavior of wealthy households. The goal of this paper is to provide a summary of the basic facts (and how the facts have changed over time) in a form which allows comparison of the behavior of the rich both with the behavior of the rest of the population in the U.S. and with portfolio behavior among other groups and other countries surveyed in this volume, and to make a preliminary attempt to discern the characteristics that will be required of any model which hopes to be consistent with the full range of observed behavior.

The principal conclusion from the empirical work will be that the most important way in which the portfolios of the rich differ from those of the rest is that they are heavily weighted toward investments in privately held entrepreneurial ventures. This is particularly true of the rich who became rich without having inherited a substantial amount of wealth.

After the empirical conclusions are presented, the paper informally considers how these results related to the academic literature on theoretical models of portfolio be-

[1] Bertaut and Starr-McCluer (1999) find that the only kind of financial asset held by more than half of US households is a checking account.

havior. The starting point for the theoretical analysis will be a standard stochastic version of the Life Cycle/Permanent Income Hypothesis model. That model will prove inadequate, however, because it implies that the rich should look like scaled-up versions of everybody else. They should neither have disproportionate wealth-to-income ratios, nor have particularly unusual portfolio structures.

The gist of the theoretical discussion will be to consider whether any of three potential modifications to the standard model might explain the observed combination of facts. The first idea is that perhaps there is exogenous variation in risk aversion across households. In that case more risk-tolerant households would take greater risks and on average would earn higher returns. If owning a private business is the form of economic activity that offers the highest risk and highest return, the most risk tolerant households would gravitate toward entrepreneurship, and on average would end up richer. The paper will argue that a defect of this story is that, taken alone, it provides no explanation for the strong positive empirical relationship between *ex ante* wealth and the propensity to begin entrepreneurial ventures. Nor, in the absence of capital market imperfections, does it explain why the risk-lovers would feel the need to invest in *their own* entrepreneurial ventures.

The latter point leads to the second possibility: that the observed patterns are simply a consequence of capital market imperfections, as argued recently by Gentry and Hubbard (1998) and Quadrini (1997). Those authors argue that adverse selection and moral hazard problems require entrepreneurial enterprises to be largely self-financed. They further assume that there is a minimum efficient scale for private enterprises and that this minimum scale is large relative to the wealth of the typical household. The combination of these two assumptions can explain why households with low or moderate wealth do not often become entrepreneurs. Furthermore, this story requires no differences in tastes among members of the population, and in principle can explain both the high saving rates of the rich and the high portfolio shares they hold in their own entrepreneurial ventures. However, a problem with this story is that, if the standard model's assumption about household preferences is not changed, even the model with imperfect capital markets implies that as the rich get old, they eventually begin running down their wealth. In contrast, empirical data reveal no evidence that wealthy elderly households eventually begin to run down their wealth.

The final possibility considered is that the model's assumption about the household utility function needs to be changed in a manner similar to that proposed by

Carroll (2000), who simply assumes that wealth enters the utility function as a luxury good in a modified Stone-Geary form. Since Max Weber (1958) argued that a love of wealth for itself is the spirit of capitalism, Bakshi and Chen (1996) and Zou (1994) have dubbed models of this class 'capitalist spirit' models. Carroll (2000) proposed this modification to the standard model as a way to explain the high lifetime saving rates of the rich, and one interpretation of the utility of wealth was that it represented a 'joy of giving' bequest motive. It turns out, however, that an unanticipated consequence of the model is that it implies decreasing relative risk aversion, which in turn can explain why the rich hold riskier portfolios than the rest of the population.

The paper concludes that the main features of the data can probably be explained in a model which combines capital market imperfections of the kind emphasized by Gentry and Hubbard and Quadrini with a utility function like that postulated in Carroll (2000).

2 The Data

2.1 Portfolios of the Rich

U.S. survey data on the portfolios of the rich are the best in the world. The 1962-63 *Survey of Financial Characteristics of Consumers* (henceforth SFCC) was the first wealth survey to heavily oversample the richest households. The next comprehensive wealth survey was the 1983 *Survey of Consumer Finances*, which was followed by a 1989 SCF which consisted of a subsample of reinterviewed households from the 1983 survey along with a fresh batch of new households. Since 1989 the SCF has been performed triennially (though with no further panel elements), with the latest survey having been completed in 1998 (we hope to have data from the 1998 survey in time for the final draft of this paper).

The availability of data spanning such a long time period opens up the possibility of studing how portfolios change in response to changes in the economic enviornment. Before presenting the data on portfolio structure, therefore, we first present a summary of the taxation and legal changes that we might expect to have had a substantial impact on portfolio structure of the rich.

2.1.1 The Tax Environment

Table 1 summarizes the changes over time in the three aspects of taxes that are particularly important to the rich. (For information on broader changes in the tax code see

the paper in this volume by Poterba). The first two columns show the statutory top marginal federal tax rate, which declined from 91 percent in 1963 to 39.6 percent in 1993 and thereafter. The second column shows the actual proportion of their incomes that were paid in taxes by the richest one percent of households. In contrast to the dramatic decline in top marginal rates, the proportion of their incomes that the rich actually paid in taxes has been remarkably steady, varying between around 20 and 25 percent over the entire period. This reflects the fact that during the era of high top marginal rates, the tax code was riddled with tax shelters and loopholes that made it possible for almost all rich people to avoid paying the confiscatory top marginal rates that were on the statute books.

The estate tax is also highly relevant for the rich. The structure of the estate tax is rather complex, but that structure remained largely the same over the period in question. The structure is as follows. The first \$x of an estate is free from estate taxation altogether, where \$x is indicated by the column of the table labelled 'exemption.' Above \$x, the tax rate begins at a marginal rate of y percent and peaks at a top marginal rate of z percent, where y and z are the first and second numbers in the column labelled 'tax range.' The exclusion for closely held businesses is essentially a mechanism that reduces the amount of the value of a closely-held business that is taxable, under the condition that the heir plans to 'actively mange' the business rather than sell it. The marital deduction indicates how much of the estate is taxed when it is transferred to a spouse. The 100 percent deduction since 1985 essentially means that estates are taxed only when both members of a married couple have died.

The final kind of tax that is relevant to the rich is the gift tax exclusion amount \$g, whose value is reported in the last column of the table. This is the amount that each member of the household (husband and wife) can give to any individual (son, daughter, son-in-law, daughter-in-law, grandchildren, etc) annually without incurring any additional taxes for the recipient or donor.

The table shows that there have been two big changes in the taxes specifically relevant for the rich over the period in question: the large increase exemption levels for the estate tax in the early 1980s, and the more gradual, but cumulatively very large, decline in top marginal rates.

2.1.2 Detailed Portfolio Structure

Our statistical summary of the portfolio structure of the rich begins with Table 2, which provides data on the proportion of the rich (defined here and henceforth as the top one percent of households by net worth) who own any amount of various kinds of assets.

Perhaps the most dramatic change over time in the table is the sharp increase in the proportion of households with defined contribution pension plans. In the 1962-63 SFCC, only 12.5 percent of the rich had any such account, but by 1983 the fraction had already jumped to 65.6, while by 1995 the fraction had reached 78.6 percent. The low percentage in 1962-63 is attributable to the fact that there was little tax advantage to such plans until the early 1980s, when 401(k)s and IRAs suddenly were made available in principle to the whole population. What is interesting is the speed with which rich households availed themselves of these new options. Bertaut and Starr-McCluer (1999) show (Table 3) that only 31 percent of all households had acquired such accounts by the time of the 1983 survey.

Another notable change is that the proportion holding individual stock shares directly has fallen from 83.2 percent in 1962 to 65.0 percent in 1995, while the proportion holding mutual funds has risen from about 25 percent to about 45 percent. This likely reflects a broad pattern in which households have increasingly decided to hold shares in the form of mutual funds rather than individual stocks. This pattern has not been much studied by economists, although it is interesting because it reflects a convergence of actual behavior toward the recommendation of portfolio theory for diversification.

Among the other categories of assets, the largest changes are seen in the holdings of 'other bonds' (primarily corporate bonds), which declined very sharply between 1962 and 1983 and fluctuated substantially between 1983 and 1995. There is no obvious tax reason for these fluctuations.

The proportion of the richest households who have equity in a privately held business has fluctuated substantially over the years, from a low of 66.5 percent in 1962-63 to a high of 88.0 percent in 1983.

With respect to debt holdings, the proportion of rich households with any debt jumped sharply between the SFCC, when it was 52.4 percent, and the 1983 SCF, when it was 77.9 percent, but exhibited no clear trend thereafter. Among debt categories, the most striking change is the increase in the proportion of households with mortgage debt, from 31.9 percent in 1962 to 52.5 percent in 1995. This likely reflects the fact

that mortgage interest remained tax deductible while other forms of debt lost their deductible status in the 1986 tax reform.

On the whole, the striking feature of this table is that the proportion of rich households owning various categories of assets has not changed greatly for most categories of assets - particularly considering that small sample sizes mean that there is inevitably some measurement error in the statistics for any particular year.[2]

Another useful comparison is of the rich to the rest of the population. Average values for ownership shares for the nonrich over the five survey years are presented in the last column of the table. The broadest observation that can be made here is that rich households are more likely to own virtually every kind of asset in every time period. Particularly striking is the discrepancy in the proportion owning equity in a privately held business, which averages about 75 percent for the rich but only 13 percent for the rest of the population. The contrast in ownership of shares in publicly traded companies is only slightly less dramatic: 74 percent versus 16 percent.

Table 3 examines the relative weight of various kinds of assets in the net worth of the richest households. The table shows that the shift from stocks to mutual funds was substantial, but even at the end of the sample in 1995, total net worth in individual shares remained substantially greater than that in mutual funds. One of the largest shifts over time is in the role of investment real estate, which jumps from 7.4 percent of net worth in 1962-63 to over 20 percent in 1983. Investment real estate continues to constitute more than 20 percent of the portfolio until 1995, when its share drops to 13.1 percent. The jump in investment real estate between the early 1960s and the early 1980s may reflect the prominent role of real estate in tax shelters until the tax reform act of 1986. One would have expected a decline in investment real estate following the repeal of many of these tax shelters in the 1986 tax act, so it is surprising that no decline is manifest until 1995.

Another interesting observations from the table is the small size of mortgage debt (only 1.1 percent of net worth on average) despite the fact that more than half of the rich have positive amounts of mortgage debt.

Comparing the rich to the rest of the population, again perhaps the most important difference is the importance of business equity for the rich. Such wealth accounts for

[2]One exception is 'other financial assets,' which had an 88.8 percent owernship rate in the 1962-63 SFCC but much lower rates in the later surveys. This is almost certainly because holdings of cash were included in this grab-bag category in the SFCC but not in the SCF's. In any case, the next table shows that 'other finanical assets' constitute a trivial proportion of net worth in all surveys.

about 40 percent of total net worth of the rich in 1983 and thereafter, vastly more than its share in the net worth of the typical household. Other differences include the lower total indebtedness of the rich and the much smaller proportion of total wealth tied up in home equity.

2.1.3 Portfolio Structure And Portfolio Theory

The usual theoretical analysis of portfolio allocation considers the optimal proportion of net worth to invest in 'risky' versus 'safe' assets. This stylized theoretical treatment is conceptually useful but difficult to bring to data, because it is hard to allocate every asset to one of these two categories. Table 4 reflects an effort to find a compromise between the complexity of actual portfolios and the simplicity of theory.

Among financial assets, there are some that are clearly safe (like checking, saving, and money-market accounts) and some that are clearly risky (like stock shares). But other assets are harder to allocate, either because the item itself has an ambiguous status (like long-term government bonds, which are subject to inflation risk but not repayment risk (we hope!)) or because the asset is a composite with unknown proportions of risky and safe assets (like mutual funds which hold both stocks and government bonds). We have therefore allocated all financial assets to one of four categories: Clearly safe, probably safe, clearly risky, and probably risky, which can of course be further aggregated into broad measures of safe and risky assets. Finally, we report unsecured debt separately because theory does not give much guidance about whether to subtract it from the 'safe' or 'risky' category.

We have divided nonfinancial assets into the primary residence, investment real estate, vehicles, and 'other.' Because equity in privately held business is substantially different from other kinds of investments, it merits its own category.

With these definitions, we can construct three definitions of risky assets: A 'narrow' definition, which includes only financial assets which are rated as clearly risky; a 'broad' definition, which includes clearly and probably risky financial assets, business equity, and investment real estate; and a 'broadest' definition which adds even the 'probably safe' assets.

It is apparent from the table that the rich bear dramatically more risk than the rest of the population. In all five surveys the proportion of their portfolios that consisted of broadly risky assets was about 75 percent or greater, compared with an average percentage of only 40 for the nonrich households. Examining the data in more detail

reveals two key differences between the rich and the rest: the rich hold a much smaller proportion of their wealth in home equity (6 percent versus 34 percent) and a much larger proportion in business equity and investment real estate (the sum of these two categories is 52.1 percent for the rich versus 26.2 percent for the rest).

Another perspective on the portfolios of the rich is presented in Table 5, which provides a census of the portfolio structure of the rich along the four dimensions corresponding to ownership or non-ownership of clearly safe, probably safe, clearly risky, and probably risky assets, a total of $4^2 = 16$ different possibilities. In all five survey years, a majority or nearly a majority of the rich held some assets in each of these four categories. This is a sharp contrast to the behavior of the rest of the population, which is much more evenly distributed among the 16 categories but is most heavily concentrated in the region with only safe assets. (See Bertaut and Starr-McCluer for the data on the rest of the population.)

Finally, Table 6 presents data on ownership rates for risky assets by age of the household head for each of the survey years.[3] Interestingly, the patterns for ownership rates and for portfolio shares are different: The probability of owning at least some amount of risky assets is monotonically increasing in age, but the *proportion* of the portfolio composed of 'broad risky' assets rises through the first three age categories (up to age 49) but falls for the 50-59 age group. Ownership rates of 'risky' assets show a similar monotonic increase (at least until age 70+), while the portfolio share shows no clear rise with age but again does display a decline in the 50-59 age group. As King and Leape (1984) argue, the monotonic increase in ownership rates may reflect the accumulation of experience with different assets as the household ages. The reduction in the risky share of the portfolio is interesting because it corresponds roughly to the common financial advice to shift assets away from risky forms as retirement approaches.[4]

[3]The high ownership rates for risky assets in the 1962 SFCC are an error; we accidentally included 'other financial assets' in the risky category, which is inappropriate because we believe that most of the content of 'other financial assets' is holdings of cash. This will be fixed in a future version of the paper.

[4]It is important to recall, however, that these figures may reflect the effects of both cohort and time effects as well as age effects, so the true age effects may differ.

3 Analysis

Thus far we have presented data with little effort to understand the underlying behavior which gives rise to these data. It is now time to begin trying to understand these underlying behavioral patterns.

We start by presenting a baseline formal model of saving over the life cycle.

3.1 The Basic Stochastic Life Cycle Model

The following model is what I will characterize as the basic stochastic life cycle model. The consumer's goal is to solve the problem

$$\max \quad \sum_{s=t}^{T} \beta^{s-t} \mathcal{D}_{t,s} u(C_t)$$

where $u(C)$ is a constant relative risk aversion utility function $u(C) = c^{1-\rho}/(1-\rho)$, β is the (constant) geometric discount factor, and $\mathcal{D}_{t,s} = \prod_{h=t}^{s-1}(1-d_h)$ is the probability that the consumer will not die between periods t and s ($\mathcal{D}_{t,t}$ is defined to be 1; d_t is the probability of death between period t and $t+1$).

The maximization is of course subject to constraints. In particular, if, following Deaton (1991), we define X_t as 'cash-on-hand' at time t, the sum of wealth and current income, then the consumer faces a budget constraint of the form

$$X_{t+1} \quad = \quad R_{t+1} S_t + Y_{t+1}$$

where $S_t = X_t - C_t$ is the portion of last period's resources the consumer did not spend, R_{t+1} is the gross rate of return earned between t and $t+1$, and Y_{t+1} is the noncapital income the consumer earns in period $t+1$.

Assume that the consumer's noncapital income in each period is given by their permanent income P_t mutiplied by a mean-one transitory shock, $E_t[\epsilon_{t+1}] = 1$, and assume that permanent income grows at rate G_t between periods, but is also buffeted by a mean-one shock, $P_{t+1} = G_{t+1} P_t \eta_{t+1}$ such that $E_t[\eta_{t+1}] = 1$.

Given these assumptions, the consumer's choices are influenced by only two state variables at a given point in time: the level of the consumer's assets X_t and the level of permanent income, P_t. As usual, the problem can be rewritten in recursive form with a value function $V_t(X_t, P_t)$. Written out fully in this form, the consumer's problem is

$$
\begin{aligned}
V_t(X_t, P_t) &= \max_{\{C_t, w_{s,t}\}} u(C_t) + \beta \mathcal{D}_{t,t+1} E_t \left[V_{t+1}(X_{t+1}, P_{t+1}) \right] \\
&\text{such that} \qquad (1) \\
S_t &= X_t - C_t \\
X_{t+1} &= R_{t+1} S_t + Y_{t+1} \\
Y_{t+1} &= P_{t+1} \epsilon_{t+1} \\
P_{t+1} &= G_t P_t \eta_{t+1} \qquad (2)
\end{aligned}
$$

3.2 The Saving Behavior of the Rich

Within the last decade, advances in computer speed and numerical methods have finally allowed economists to solve life cycle consumption/saving problems like that presented above with serious uncertainty and realistic utility (see, in particular, Hubbard, Skinner, and Zeldes (1994); Huggett (1996); Carroll (1997); and the references therein). I have argued elsewhere (Carroll (1997)) that the implications of these models fit the available evidence on the consumption/saving behavior of the typical household reasonably well, certainly much better than the old Certainty Equivalent (CEQ) models did.

However, another finding from this line of research has been that the model is unable to account for the very high concentrations of wealth at the top of the distribution.

3.2.1 How Rich Are They?

Very.

Figure 1 shows the ratio of wealth to 'permanent' income[5] by age for the population as a whole and for the households in the richest one percent by age category from the 1992 and 1995 SCFs. Also plotted for comparison is the level of the wealth to income ratio at the top 1 percent implied by a standard life cycle model of saving similar to that in Carroll (1997) or Hubbard, Skinner, and Zeldes (1994). (Specifically, it is the Carroll model with HSZ 'baseline' parameter values). The richest one percent are much

[5]SCF respondents are asked whether their total income this year was above normal, about normal, or below normal. Following Friedman (1957), I define permanent income as the level of income the household would normally receive.

richer than implied by the life cycle model. In addition, the figure plots the age profile of the 99th percentile that would be implied by the HSZ model if it were assumed that consumers do not discount future utility at all. The figure shows that even with such patient consumers, the model remains far short of predicting the observed wealth to income ratios at the 99th percentile.[6]

This finding is reconfirmed in a recent paper by Engen, Gale, and Uccello (1999:2), who do a very careful job of modelling pension arrangements, tax issues, and other institutional details neglected in the exercise above and also find that the wealth-to-income ratios at the top part of the income distribution are much greater than predicted by a life cycle dynamic stochastic optimization model, even with a time preference rate of zero.

3.2.2 How Do They Spend It All?

They don't.

In the 1989, 1992, and 1995 SCFs, households were asked whether their spending usually exceeds their income, and whether their spending exceeded their income in the previous year. In order to run down their wealth, obviously households obviously must spend more than their income. Yet only five percent of the rich elderly households in the SCF answered that their spending usually exceeded their income.

More evidence is presented in Figure 2, which shows the levels of wealth by age for the elderly in the 1992 and 1995 SCFs. There is no evidence in this figure that wealth is declining for this population; indeed, if anything it seems to be increasing.[7] This is consistent with the answers that the rich elderly give to such questions as whether they have spent more than their income in the previous year or whether they usually spend more than their incomes. Virtually none of the rich report spending more than their incomes, either in the previous year or on a regular basis.

The implication is that most of the wealth which we observe them holding will still be around at death. This is obviously a problem for any model in which the only purpose in saving is to provide for one's own future consumption.

This crude evidence is backed up by a study by Auten and Joulfaian (1996) which finds that the elasticity of bequests with respect to lifetime resources is well in excess of

[6]This figure is reproduced from Carroll (2000).

[7]This is in effect a smoothed profile of wealth by age adjusted for cohort effects; see Carroll (2000) for methodological details.

one (their point estimate is 1.3). See Carroll (2000) for a summary of further evidence that, far from spending their wealth down, the rich elderly continue to save.

3.3 Adding Portfolio Choice

Recently, a wave of papers (Haliassos and Bertaut (1995), Fratantoni (1998),Gakidis (1998); Cocco, Gomes, and Maenhout (1998); and Hochgurtel (1998)) has examined the predictions of these kinds of models when consumers facing labor income risk are allowed to choose freely between investing in a low-return safe asset like the one considered in the earlier models and investing in risky assets parameterized to resemble the returns yielded by equity investments in the past.

The only modification to the formal optimization problem presented above necessary to allow portfolio choice is to designate R_{t+1} as the portfolio-weighted return, which will depend on the proportion of the portfolio that is allocated to the safe and the risky assets, and on the rate of return on the risky asset between t and $t+1$. Call the proportion of the portfolio invested in the risky asset ('stocks') $w_{s,t}$ (where w is mnemonic for the portfolio 'weight'), and $(1 - w_{s,t})$ is the portion invested in the safe asset. If the return on stocks between t and $t+1$ is $R_{s,t+1}$, the portfolio-weighted return on the consumer's savings will be $R(1 - w_{s,t}) + R_{s,t}w_{s,t}$.

However, even without solving a model of this type formally, it is clear that such models will not be able to explain the empirical differences between the portfolio behavior of the rich and the behavior of the rest of the population, because when the utility function is in the CRRA class problems of this type are homothetic. That is, there is no systematic difference in the behavior of consumers at different levels of lifetime permanent income. Hence, such models provide no means to explain the very large differences in saving and portfolio behavior documented above.

3.4 Three Possible Modifications

There are at least three ways one might consider modifying the model in hopes that the modified model might be able to explain the nonhomotheticity of behavior.

3.4.1 Heterogeneity in Risk Tolerance

The first is simply to allow for heterogeneity in risk tolerance across members of the population. Formally, rather than assuming that all consumers have the same value of

ρ, the coefficient of relative risk aversion, we can assume that each consumer has an idiosyncratic, specific ρ_i.

The effect of this would be to allow consumers with low values of ρ (high risk tolerance) to choose highly risky but high-return portfolios. On average, the risk-tolerant consumers would be rewarded with higher returns and would therefore end up richer than the rest of the population. Thus, the rich would be disproportionately rich-lovers, and would therefore have riskier portfolios than the rest. As shorthand, I will call this the 'preference heterogeneity' story henceforth.

3.4.2 Capital Market Imperfections

A second possibility is to follow Gentry and Hubbard (1998) and Quadrini (1997) in assuming that there are important imperfections in capital markets which 1) require entrepreneurial investment to be largely self-financed; 2) imply that entrepreneurial investment has a higher return than investments made on open capital markets; and 3) require a large minimum scale of investment. As those authors show, the combination of these three assumptions can yield an implication that portfolios of higher wealth or higher income consumers will be much more heavily weighted toward entrepreneurial investments, and that rich consumers with business equity have higher than average saving rates (because of the high returns that are available to them). I will refer to this theory as the 'capital market imperfections' story.

3.4.3 Bequests as a Luxury Good

A final possibility is to change the assumption about the lifetime utility function. Carroll (2000) proposes adding a bequest motive of the form $B(S)$ takes a modified Stone-Geary form,

$$B(S) \quad = \quad \frac{(S+\gamma)^{1-\alpha}}{1-\alpha}.$$

Carroll (2000) shows that if one assumes that $\alpha < \rho$ then wealth will be a 'luxury good' in the sense that as lifetime resources rise, a larger proportion of those resources is devoted to S_T. In the limit as lifetime resources approach infinity, the proportion of resources devoted to the bequest approaches 1. The other salient feature of the model is that if $\lambda > 0$ there will be a 'cutoff' level of lifetime resources such that consumers poorer than the cutoff will leave no bequest at all. Thus the model is capable of

matching the crude stylized fact that low-income people tend to leave little or no bequests, and also captures the fact (from Auten and Joulfaian (1996)) that among those who leave bequests, the elasticity of lifetime bequests with respect to lifetime income is greater than one.

In this paper the assumption is that one receives utility from the contemplation of the potential bequest in proportion to the probability that death (and the bequest) will occur. Thus Bellman's equation would be modified to:

$$V_t(X_t, P_t) = \max_{\{C_t, w_{s,t}\}} u(C_t) + \beta(1 - d_t)E_t\left[V_{t+1}(X_{t+1}, P_{t+1})\right] + d_t B(S_t) \tag{3}$$

and the transition equations for the state variables are unchanged.

While it is obvious how this model might help to explain the high saving rates of the rich, it is not so obvious why it might help explain the high degree of riskiness of their portfolios. It turns out, however, that precisely the same assumption which implies that bequests are a luxury good *also implies that people are less risk-averse with respect to gambles over bequests than with respect to gambles over consumption.* That assumption is that the exponent on the utility from bequests function α must be less than the exponent on the utility from consumption ρ. This implies that the marginal utility from bequests declines more slowly than the marginal utility from consumption and thus as wealth rises more and more of it is devoted to bequests rather than consumption. However, the traditional interpretation of exponents like ρ and α in utility functions of this class is as coefficients of relative risk aversion, so the implication of less risk aversion with respect to bequest gambles than consumption gambles is an immediate implication of the assumption that bequests are a luxury good!

Max Weber (1958) argued that the 'spirit of capitalism' was the pursuit of wealth for its own sake. Following Max Weber (1958) as interpreted by Zou (1994) and Bakshi and Chen (1996), I call this the "Capitalist Spirit" model.

3.5 Distinguishing the Three Models

The princial unfinished empirical work of this paper is to provide empirical evidence which can distinguish between the three theories outlined above, all of which can explain the basic facts that the portfolios of the rich are riskier than those of the

rest and that investment in closely-held businesses are a disproportionate share of the portfolios of the rich.

Beginning with the heterogeneous preferences theory, it is useful to flesh out some of its implicit assumptions. In order to explain the disproportionate share of business equity in the portfolios of the richest households, it is necessary to assume that business investments bear the highest risk and the highest return among the categories of assets summarized in the tables. This assumption is plausible and therefore not problematic. What *is* problematic for a theory based purely on preference heterogeneity is the tendency of the rich to invest mainly in *their own* entrepreneurial ventures. We do not have a table demonstrating this point yet (there will be one in the next version), but from examining the raw data it is clear that the great majority of the wealth in closely-held businesses is in businesses in which the household has an 'active management role' to use the terms of the survey.

This may not be surprising intuitively either, but upon reflection it is clear that it implies some form of capital market imperfection. If there were no such imperfections, the optimal strategy would be to hold only a tiny share in one's own entrepreneurial venture and similarly small shares in everyone else's entrepreneurial ventures in order to diversify the idiosyncratic risk. Thus the preference heterogeneity story alone cannot explain the pattern of facts.

A further problem with the preference heterogeneity story is that it cannot explain the positive relationship between the level of labor income and the propensity to start entrepreneurial ventures. Table 7 shows that entry into entrepreneurship is strongly correlated with the initial level of labor income. This is also true for young consumers who have not accumulated much net worth (not shown). Unless there is some compelling reason to assume that people who are more risk tolerant also earn higher labor income, the pure preference heterogeneity story cannot explain this correlation. (In fact, one might suppose that *ceteris paribus*, people who are more risk averse would have higher labor income because the level and the log standard deviation of permanent labor income are negatively related (Carroll and Samwick (1997)). In particular, people with higher levels of education have higher and less variable incomes, so people who are highly risk averse should choose to get more education, which would induce a negative, not a positive, correlation between the level of labor income and risk tolerance.

A final problem with the preference heterogeneity story is that it provides no explanation for the failure of the elderly rich to spend down their assets. Indeed, because

risk tolerance is positively correlated with the intertemporal elasticity of substitution in models with time-separable preferences, we should actually expect the rich to be running down their wealth *faster* than the non-rich if the only differences between the rich and non-rich is in their degree of risk tolerance.

Given that the preference heterogeneity story implicitly also requires some form of capital market imperfections in order to explain the data, it is interesting to examine whether capital market imperfections alone might work.

The central requirement of any story based on capital market imperfections is that business ownership must yield higher-than-market rates of return. We have done considerable research in the economic and business literatures to attempt to find a credible estimate of the rate of return on closely-held business ventures, but have found nothing usable for our purposes. We intend in the next draft of the paper to examine this by checking whether wealth accumulation is greater on average over the 1983-89 panel for households who are business owners in 1983.

Suppose for the moment that we accept on faith the proposition that closely-held business ventures earn higher rates of return (in exchange for higher risk) than is available on open capital markets, and that such ventures must be self-financed for moral hazard or adverse selection reasons. By themselves, and in the absence of preference heterogeneity, these assumptions cannot explain the correlation between the level of initial labor income or initial wealth and the propensity to start businesses documented in table 7. As anyone who has read the fine novel *A Confederacy of Dunces* knows, there are principal/agent and moral hazard problems even for a hot dog stand vendor, so the same logic that leads to the conclusion that other entrepreneurial ventures should yield a high rate of return should apply in this context as well. Gentry and Hubbard (1998) address this problem by simply assuming that there is a minimum efficient scale for business enterprises which is large relative to the resources of the median household, but this approah is unsatisfactory because the richest households would have wealth vastly greater than the minimum efficient scale and therefore would have no need to tie up more than a trivial fraction of their total net worth in the business enterprise. Quadrini (1997) deals with this problem by postulating a complicated 'ladder' of business opportunities at rising minimum efficient scales.

Even if we were to accept the story that there is a complicated ladder of minimum efficient scales of business operation *a la* Quadrini, the capital market imperfections story still has a big problem: once again, it provides no explanation for the failure of

the rich elderly to begin running down their wealth. Again, if we accept the standard model's assumption that the only purpose of saving is to finance one's own future consumption, there is simply no way to explain the failure of the elderly to eventually spend.

An alternative explanation for the observation that entry rates into entrepreneurship are strongly related to *ex ante* wealth is the possibility that the rich are less risk averse than the rest of us. Some evidence on this is presented in Table 8. The table shows that occupants of the highest 'permanent' income and net worth brackets are notably more likely to express a great willingness to accept above-average risk in exchange for above-average returns. Even more dramatic is the difference between the proportion of the rich and of the rest who express themselves as 'not willing to take any financial risks.' Among the richest 1 percent by wealth, less than ten percent express such extreme risk aversion; among the bottom 80 percent, nearly half express this sentiment.

The simplest interpretation of this table, of course, would be in terms of the heterogeneous preferences story outlined above. But, as we have already noted, that story has several problems of its own. Note, however, that the results in this table are precisely what would be expected if the 'capitalist spirit' model is correct: because the rich have sufficient wealth that they plan to leave a large proportion as a bequest, their risk aversion is lower than that of others, just as indicated in this table. We intend in the revised version of this test to use the 83-89 panel data to attempt to provide some direct evidence on the direction of the causality between the level of wealth or income and risk preferences.

4 Conclusions

[To be completed].

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Table 1: Major Features of the Tax Code Relevant for the Rich

Year	Top 1% by income		Estate tax				Gift tax
	Marginal rate	Effective rate[1]	Tax range	Exemption	Exclusion for closely held business	Marital deduction	Annual exclusion[2]
1963	91%	24.6%	3-77%	$60,000	NA	50%	$3,000[3]
1977	70%	27.8%	18-70%	$120,667	$500,000	50% or $250,000	$3,000
1980	70%	23.9%	18-70%	$161,563	$500,000	50% or $250,000	$3,000
1985	50%	19.2%	18-55%	$400,000	$750,000	100%	$10,000
1989	28%	20.4%	18-55%	$600,000	$750,000	100%	$10,000
1993	39.6%	21.9%	18-55%	$600,000	$750,000	100%	$10,000
1995	39.6%	23.8%	18-55%	$600,000	$750,000	100%	$10,000
1998	39.6%	NA	18-55%	$625,000	$750,000[4]	100%	$10,000[5]

[1]The effective tax rate is the effective individual income tax rate. This is calculated by dividing individual income tax by total income.

[2]The annual exclusion is per donee.

[3]Since 1977 the gift tax range has been the same as the estate tax range. Prior to 1977 the gift tax range was 2.25-57.75%.

[4]Starting in 1998 the estate tax exemption increases yearly to 1 million dollars in 2006 and the exclusion for closely held business is indexed for inflation.

[5]Starting in 1998 the annual exclusion is indexed for inflation.

Sources:

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Table 2: Ownership Rates of Assets and Liabilities

	Top 1 Percent of Households By Net Worth					Averages	
	1962	1983	1989	1992	1995	Top 1% 1962-95	0-98.9% 1962-95
Financial Assets	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*91.7*
Transaction and savings accts	96.9	99.6	100.0	100.0	99.9	99.3	84.6
Certificates of deposit	na	38.7	32.7	31.5	24.6	31.9	14.0
US Savings bonds	32.8	23.2	18.1	18.9	28.0	24.2	23.4
Federal, state and local bonds	33.2	45.1	41.2	38.3	29.9	37.5	2.4
Other bonds	32.8	9.6	16.2	21.2	12.8	18.5	1.7
Stocks	83.2	79.9	72.5	69.7	65.0	74.1	16.4
Mutual funds	24.9	33.8	39.1	46.0	45.0	37.7	7.5
Defined contribution pensions	12.5	65.6	71.3	76.1	78.6	60.8	28.7
Defined benefit pensions	na	24.3	13.7	20.1	10.6	17.2	20.3
Cash value of life insurance	63.3	71.6	64.5	57.8	60.0	63.4	37.0
Other managed assets	14.0	24.9	27.5	17.4	17.7	20.3	3.4
Other financial assets	88.8	10.1	31.9	31.1	25.2	37.4	27.2
Non-financial Assets	*95.3*	*100.0*	*99.3*	*100.0*	*99.8*	*98.9*	*89.1*
Primary residence	78.5	96.6	86.0	93.5	96.0	90.1	62.2
Investment real estate	55.4	78.2	81.2	82.1	69.0	73.2	17.8
Vehicles	76.5	91.4	90.6	97.8	89.5	89.2	82.5
Other non-financial assets	36.1	21.0	41.3	36.0	28.4	32.6	9.2
Business	*66.5*	*88.0*	*73.4*	*69.7*	*74.3*	*74.4*	*12.8*
Debt	*52.4*	*77.9*	*77.3*	*80.3*	*70.5*	*71.7*	*71.5*
Mortgage	31.9	54.5	35.8	53.4	52.5	45.6	37.6
Other real estate debt	13.1	45.2	48.3	53.6	35.1	39.1	6.6
Student loans	na	na	0.7	0.1	0.9	0.6	6.3
Other installment loans	21.3	35.0	19.5	21.9	12.6	22.1	46.9
Credit cards	na	9.6	14.8	17.0	12.2	13.4	33.8
Other debt	18.1	15.2	20.2	30.8	17.2	20.3	9.4

Source: Survey of Financial Characteristics of Consumers and Surveys of Cosumer Finances
Note: Cells with an "na" indicate asset or debt categories not disaggregated in a particular survey year

Definitions of assets and debts
Transaction and savings accounts include checking, saving, money market, and call accounts.
Federal, state, and local bonds include government bonds (not US Savings bonds) and municipal bonds.
Other bonds include mortgage, corporate, foreign, and other types of bonds.
Defined contribution pensions include employer-sponsored plans and personal retirement accounts.
Cash value of life insurance refers to the cash value of whole life policies.
Other managed assets consists of trusts, annuities and managed investment accounts.
Other financial assets consist royalties, future proceeds from lawsuits, oil, gas, and mineral leases, etc.
Other non-financial assets include such items as artwork, jewelry, etc.
Businesses include those in which the household has an active and/or passive interest.
Mortgage debt includes any borrowing on home equity lines of credit.
Installment loans consists of vehicle loans, home improvement loans (not home equity loans), and other loans.
Other debt includes other lines of credit, loans against pensions, loans against life insurance policies, margin loans, etc.

Table 3: Composition of Net Worth

	Top 1 Percent of Households By Net Worth					Averages	
	1962	1983	1989	1992	1995	Top 1% 1962-95	0-98.9% 1962-95
Financial Assets	*61.5*	*36.6*	*32.0*	*32.0*	*40.8*	*40.6*	*36.3*
Transaction and savings accts	3.6	2.8	5.9	4.7	5.9	4.6	8.0
Certificates of deposit	na	0.9	1.2	0.8	1.1	1.0	3.3
US Savings bonds	0.4	0.1	0.1	0.1	0.1	0.2	1.0
Federal, state and local bonds	4.0	4.5	4.1	4.3	4.7	4.3	1.3
Other bonds	0.7	0.2	1.3	1.0	0.9	0.8	0.4
Stocks	29.0	14.6	7.4	9.8	10.8	14.3	5.4
Mutual funds	1.8	1.1	2.2	2.4	6.4	2.8	2.5
Defined contribution pensions	7.7	2.1	2.9	4.2	5.2	4.4	7.4
Cash value of life insurance	2.7	1.1	1.1	0.6	1.5	1.4	4.2
Other managed assets	11.6	9.0	4.0	2.6	3.2	6.1	1.8
Other financial assets	0.0	0.2	1.6	1.6	0.9	0.9	1.0
Non-financial Assets	*14.9*	*30.1*	*38.3*	*35.9*	*22.9*	*28.4*	*71.8*
Primary residence	4.9	7.8	7.8	8.9	7.1	7.3	49.5
Investment real estate	7.4	21.4	26.7	24.9	13.1	18.7	14.4
Vehicles	0.4	0.3	0.8	0.7	0.7	0.6	6.3
Other non-financial assets	2.2	0.5	2.9	1.4	2.1	1.8	1.7
Business	*27.3*	*39.3*	*38.5*	*39.0*	*41.4*	*37.1*	*15.0*
Debt	*3.7*	*6.0*	*8.7*	*6.9*	*5.1*	*6.1*	*23.1*
Mortgage	0.5	0.8	0.9	1.6	1.6	1.1	15.5
Other real estate debt	1.4	3.1	6.7	4.4	2.6	3.7	3.2
Student loans	na	na	0.0	0.0	0.0	0.0	0.3
Other installment loans	0.6	0.8	0.3	0.2	0.1	0.4	3.1
Credit cards	na	0.0	0.0	0.0	0.0	0.0	0.6
Other debt	1.2	1.3	0.8	0.7	0.7	0.9	0.5
Memo items							
Median net worth (th '98 $)	1,887	4,291	4,720	4,138	4,748	3,957	51
Avg net worth (th '98 $)	3,393	7,156	2,185	6,399	7,854	5,397	133
Median wealth to income ratio	16.6	14.9	18.8	20.8	20.0	18.2	1.5
Avg wealth to income ratio	23.2	27.4	33.0	35.7	38.6	31.6	8.7

Source: Survey of Financial Characteristics of Consumers and Surveys of Consumer Finances
Note: Cells with an "na" indicate asset or debt categories not disaggregated in a particular survey year

Table 4: Composition of Net Worth by Risk Category

	Top 1 Percent of Households By Net Worth					Averages	
	1962	1983	1989	1992	1995	Top 1% 1962-95	0-98.9% 1962-95
Net Financial Assets	*59.8*	*34.5*	*31.0*	*31.2*	*40.0*	*39.3*	*33.6*
Safe	16.8	11.0	14.0	12.6	17.5	14.4	22.2
Clearly safe	4.0	3.7	7.2	5.6	7.1	5.5	12.4
Probably safe	12.9	7.3	6.8	7.0	10.4	8.9	9.9
Risky	43.5	25.6	17.8	19.2	23.0	25.8	13.8
Clearly risky	28.1	14.6	7.3	9.7	10.6	14.1	5.3
Probably risky	15.4	11.0	10.5	9.5	12.4	11.8	8.5
Unsecured debt	0.6	2.1	0.9	0.6	0.5	1.0	2.5
Net Nonfinancial Assets	*12.9*	*26.2*	*30.6*	*29.9*	*18.6*	*23.6*	*51.5*
Primary residence	4.3	7.0	6.9	7.3	5.5	6.2	34.1
Investment real estate	6.0	18.3	20.0	20.4	10.5	15.0	11.2
Vehicles	0.4	0.3	0.7	0.7	0.7	0.5	4.5
Other non-financial assets	2.2	0.5	2.9	1.4	2.1	1.8	1.7
Business	*27.3*	*39.3*	*38.5*	*39.0*	*41.4*	*37.1*	*15.0*
Memo:							
Risky assets – narrow	29.0	14.6	7.4	9.8	10.8	14.3	5.4
Risky assets – broad	76.8	83.2	76.3	78.6	74.9	78.0	40.0
Risky assets – broadest	89.7	90.5	83.0	85.6	85.2	86.8	49.9
Mortgage debt / total debt	14.1	12.8	10.6	22.6	31.8	18.4	66.6

Definitions of asset classifications:
Clearly safe includes transaction accounts (checking, saving, money market, and call accounts), certificates of deposit, and US Savings bonds
Probably safe includes state/local bonds, probably safe mutual funds, probably safe defined contribution pensions minus any loans against those pensions, and the cash value of life insurance policies minus any loans against those policies
Clearly risky includes stocks minus any call account debt
Probably risky includes bonds (all types but state/local and US Savings), other managed assets, other financial assets, probably risky mutual funds, and probably risky defined contribution pensions minus any loans against those pensions
Risky assets - narrow consists of direct stock holdings
Risky assets - broad consists of clearly risky and probably risky assets, plus businesses and investment real estate
Risky assets - broadest consists of all assets in the broad definition and probably safe assets
Definitions of probably risky and probably safe mutual funds and defined contribution pensions are in the notes.

Sources: Survey of Financial Characteristics of Consumers and Surveys of Consumer Finances

Table 5: Degree of Diversification of Portfolio Structure

Asset Combinations				**1962**	**1983**	**1989**	**1992**	**1995**
PS	CS	CR	PR					
0	0	0	0	0.0	0.0	0.0	0.0	0.0
0	0	0	1	1.0	0.0	0.0	0.0	0.0
0	0	1	0	0.0	0.0	0.0	0.0	0.0
0	0	1	1	0.0	0.0	0.0	0.0	0.0
0	1	0	0	0.0	2.5	1.6	6.5	2.4
0	1	0	1	6.8	0.4	1.8	1.4	3.8
0	1	1	0	0.0	0.3	2.7	0.6	1.7
0	1	1	1	15.5	1.5	9.9	5.6	7.9
1	0	0	0	0.0	0.0	0.0	0.0	0.1
1	0	0	1	0.2	0.0	0.0	0.0	0.0
1	0	1	0	0.0	0.0	0.0	0.0	0.0
1	0	1	1	1.9	0.0	0.0	0.0	0.0
1	1	0	0	0.0	12.8	3.8	7.1	6.2
1	1	0	1	9.8	4.4	20.3	15.3	22.8
1	1	1	0	4.0	26.6	9.7	4.8	7.4
1	1	1	1	60.9	51.6	50.2	58.7	47.7

PS denotes probably safe financial assets
CS denotes clearly safe financial assets
CR denotes clearly risky financial assets
PR denotes probably risky financial assets

0 denotes no ownership of assets in the specified category; 1 denotes ownership.

Note: A description of the asset classifications appears in the notes at the end of Table 4.
Source: Survey of Financial Characteristics of Consumers and Surveys of Consumer Finances

Table 6: Risk Bearing By Age

Age	< 30	30-39	40-49	50-59	60-69	> 70
1962 SFCC						
Risky fin asset ownership	100.0	95.5	99.8	99.9	100.0	100.0
Risky fin asset / fin assets	83.7	96.1	73.0	46.3	72.9	76.8
Broad risky asset ownership	100.0	100.0	100.0	99.9	100.0	100.0
Broad risky asset / total assets	76.7	90.4	79.6	61.9	75.7	74.0
1983 SCF						
Risky fin asset ownership	47.4	72.6	65.3	96.9	100.0	84.0
Risky fin asset / fin assets	74.2	57.6	86.9	78.3	68.0	65.8
Broad risky asset ownership	100.0	100.0	100.0	100.0	100.0	100.0
Broad risky asset / total assets	62.1	72.8	79.6	84.7	84.4	73.6
1989 SCF						
Risky fin asset ownership	60.1	77.2	94.7	98.1	99.0	96.6
Risky fin asset / fin assets	93.8	75.5	63.5	54.3	53.9	55.6
Broad risky asset ownership	100.0	100.0	100.0	100.0	100.0	99.3
Broad risky asset / total assets	89.7	63.3	72.7	69.9	73.6	73.0
1992 SCF						
Risky fin asset ownership	70.9	90.4	78.5	89.6	88.8	85.7
Risky fin asset / fin assets	66.5	54.7	55.1	64.6	65.0	58.9
Broad risky asset ownership	92.0	100.0	100.0	100.0	100.0	100.0
Broad risky asset / total assets	72.1	68.1	76.0	73.5	77.7	72.3
1995 SCF						
Risky fin asset ownership	88.2	77.0	92.8	85.8	93.7	95.9
Risky fin asset / fin assets	33.7	69.1	59.6	53.1	52.4	59.5
Broad risky asset ownership	91.3	99.0	100.0	100.0	100.0	100.0
Broad risky asset / total assets	43.9	67.7	78.8	73.7	67.7	69.6
1962-1995						
Risky fin asset ownership	73.3	82.5	86.2	94.0	96.3	92.4
Risky fin asset / fin assets	70.4	70.6	67.6	59.3	62.4	63.3
Broad risky asset ownership	96.7	99.8	100.0	100.0	100.0	99.9
Broad risky asset / total assets	68.9	72.5	77.3	72.7	75.8	72.5

Notes: The definition of risky financial assets corresponds to the sum of clearly risky and probably risky assets defined in Table 4. The definition of broad risky assets corresponds to the 'risky assets - broad' classification in Table 4.

Source: Survey of Financial Characteristics of Consumers and Surveys of Consumer Finances

Table 7: Exit and Entry Rates for Business Ownership with HH Head Age 30-60

1983 Quintile	Entry	Exit	Bus Owner in 1983
Net Worth			
0-19.9	0.01	0.00	0.0003
20-39.9	0.08	0.88	0.07
40-59.9	0.04	0.86	0.05
60-79.9	0.06	0.48	0.11
80-98.9	0.17	0.37	0.42
99-100	0.07	0.48	0.94
0-98.9	0.06	0.48	0.13
Labor Income			
0-19.9	0.03	0.41	0.31
20-39.9	0.01	0.00	0.00
40-59.9	0.11	0.41	0.07
60-79.9	0.06	0.59	0.14
80-98.9	0.04	0.45	0.03
99-100	0.12	0.46	0.26
0-98.9	0.06	0.47	0.13

Age restriction uses 1983 age for lower bound and 1989 age for upper bound.

Calculation of entry and exit rates:

entry = new bus started between 1983 and 1989 / population not owning a business in 1983

exit = bus ending between 1983 and 1989 / population owning a business in 1983

bus owner = bus owner in 1983 / population in 1983

Table 8: Risk Aversion By Income and Net Worth, 1992 and 95 SCFs

Survey Year	**1992**		**1995**	
	mean	% no risk	mean	% no risk
Income Percentiles				
99-100	2.5	3.8	2.6	6.2
80-98.9	2.8	16.9	2.8	16.1
0-79.9	3.3	48.7	3.2	40.1
Net Worth Percentiles				
99-100	2.6	11.5	2.5	6.5
80-98.9	2.9	21.6	2.8	17.6
0-79.9	3.3	48.4	3.2	43.8

Notes: The table summarizes answers to the following question: "Which of the statements on this page comes closest to the amount of financial risk that you (and your spouse/partner) are willing to take when you save or make investments? 1. Take sustantial financial risks expecting to earn substantial returns; 2. Take above average financial risks expecting to earn above average returns; 3. Take average financial risks expecting to earn average returns; 4. Not willing to take any financial risks

Detailed Definitions and Notes for Tables

Table 4

Calculations of probably risky and probably safe mutual funds and defined contribution pensions are as follows.

1962 SFCC Due to the lack of information on mutual fund investment strategies, all mutual funds are classified as risky and all defined contribution pensions are classified as safe.

1983 SCF Probably safe mutual funds include tax-free mutual funds, while probably risky mutual funds include taxable mutual funds. The calculation of probably risky and probably safe defined contribution pensions uses the institution that held the IRA/Keogh accounts as a proxy for investment direction. If a real estate investment company held the accounts, then those defined contribution pensions were considered probably risky. If a commercial bank, savings and loan, or credit union held the accounts, then those assets were considered probably safe. The defined contribution pensions were split between the two categories if a brokerage, insurance company, employer, school/college/university, investment management company, or the AARP held the accounts. In the case that the household had no IRA/Keogh accounts, but had a thrift pension account, the assets were considered probably safe.

1989-1995 SCF Probably safe mutual funds include tax-free bond mutual funds, plus government bond mutual funds, plus other bond mutual funds, plus half of the combination mutual funds. While probably risky mutual funds include stock mutual funds, plus half of the combination mutual funds. The calculation of probably risky and probably safe defined contribution pensions used the question about the investment direction of IRA/Keogh and thrift-type pension accounts. Defined contribution pensions were considered probably risky if IRA/Keogh and thrift accounts were invested in stock, mutual funds, commodities, real estate, or limited partnerships. Defined contribution pensions were considered probably safe if IRA/Keogh and thrift accounts were invested in certificates of deposit, bank accounts, bonds, annuities, or insurance products. When the investment direction consisted of combinations of the above categories, half of the values of the IRA/Keogh and thrift accounts were allotted to each type of defined contribution pension.

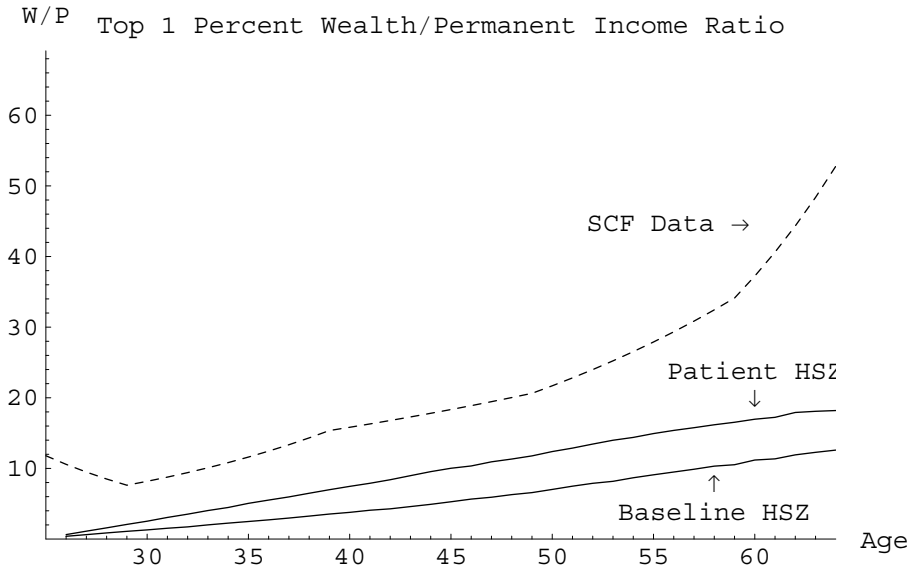

Figure 1: Wealth Profiles for Baseline and More Patient Consumers

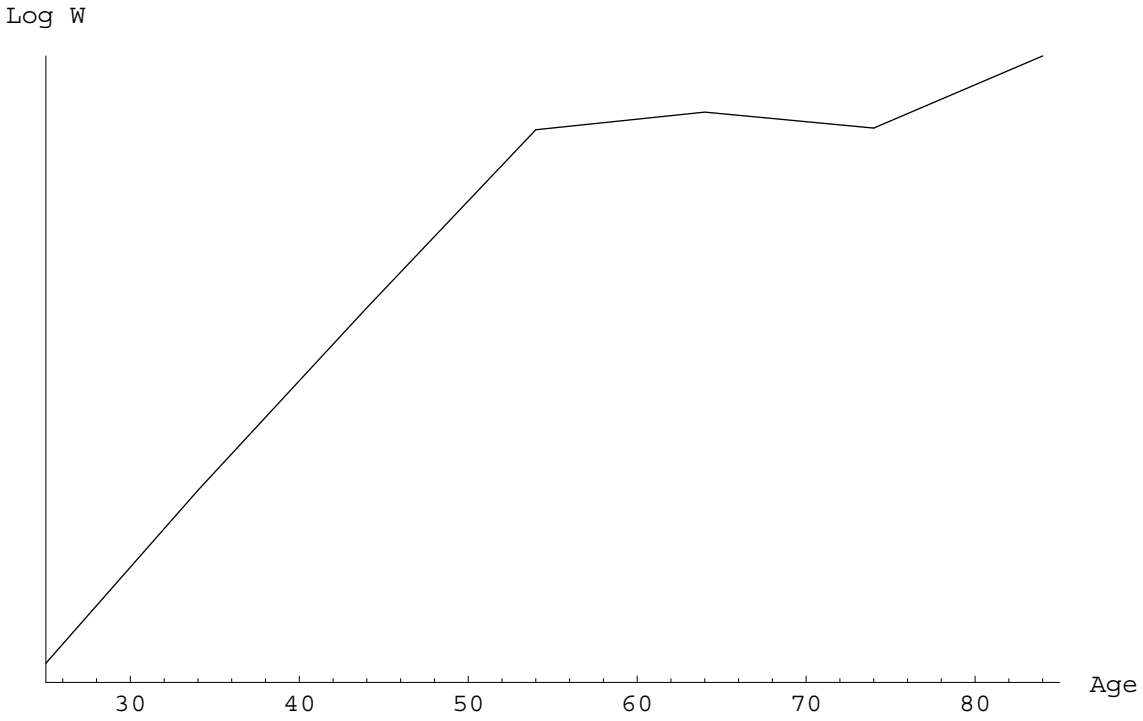

Figure 2: Age Profile of Log Wealth for the 99th Percentile, SCF Data