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Investment Newsletter – September 2017

Normally in the September newsletter we update the performance for the Long Term Income strategy. It has returned close to 11% over the last year but we'll defer a detailed analysis to the December newsletter due to the length of our main topic here. This newsletter will expand on the June 2017 newsletter's analysis of the connection between savings and your retirement spending plan. Our analysis this time will focus on the impact of owning a home as compared to renting. We'll also examine the benefits of downsizing your housing later in life.

Linking Savings to Retirement Spending – Part 2

To review our motivation for this series of analyses, the link between savings and retirement spending provides answers to two key related questions:

A. How much savings do I need to fund my desired retirement spending budget?
B. How much can I afford to spend in retirement given my accumulated savings?

Answering these questions enables informed choices about important trade-offs and can motivate timely actions to achieve your goals. Therefore, in this series of newsletters we are analyzing the complex set of factors that influence how savings are managed to maximize spending over an extended retirement period. We will focus on the following variables which tend to be the most important for our clients in determining whether they outlive their money:

1. Spending in retirement - measured as a percentage of assets.
2. Asset allocation impact on risks and inflation adjusted returns on assets.
3. The taxation applicable to returns and retirement account withdrawals.
4. How long you will live.
5. Amount of social security, pensions, or other income unrelated to assets.
6. How much cushion you want to avoid running out of money – your risk tolerance.

In the June 2017 newsletter (Part 1), the analysis ignored the choice of owning or renting a home to focus on liquid asset portfolio allocation choices and the interaction of market risk and spending budgets. This time we will go the other direction by applying lessons from Part 1 to the choices for the liquid asset portfolio in order to focus our analysis on the impact of owning a home compared to renting. We continue to defer a more thorough exploration of the real world risks of running out of money because of cost inflation and asset return variability.

First I'll review and update the components of our retirement financing model and then we'll discuss key assumptions. After presenting results, I'll offer my analysis and conclusions.

Modeling Assets, Spending, and Housing Choice with Taxation

We are updating an excel spreadsheet which projects future investment balances, investment income, taxes, and spending for 35 years, starting on your 65th birthday. We will assume a particular set of starting circumstances. Previously we analyzed the choice of risk for the allocation of investment balances. This time we assume that we avoid the riskiest allocation and that our investments are determined by the choice of owning or renting as explained later. Elimination of the portfolio risk choices results in three choices under our control for this analysis. As before, the main choice variable is the initial level of spending as a percentage of the starting assets. We can also choose whether to reduce housing spending later by downsizing our residence. The third choice is whether we initially own our house or rent an equivalent one.

Once we choose the first year level of spending, we separate out the non-housing component of the budget by subtracting the rental cost of the house from the total budget. This non-housing budget is then assumed to rise with the inflation rate every year thereafter. Rent and home prices increase over time as discussed later. When the house is owned, the model uses actual cash costs (net of tax savings) each year while the house is owned. At a point when the house must be sold to fund spending, the housing component of the spending budget reverts to rental costs. This will be explained further with an example later.

As before, the output we use to judge the outcome of our choices is the resulting time series of investment balances and the age at which assets go to 0. Especially when it comes to housing choices, the possible permutations of starting situations are countless. Thus we must simplify by choosing a particular (hopefully representative) starting position so we can focus on just these three choice variables and their impact on the age at which we run out of money.

The starting situation at age 65 is $3,000,000 in net worth, with 89% in some combination of home equity and/or taxable accounts, 10% in a tax deferred account (an IRA) and 1% in a tax free Roth account. Whether owned or rented, the residence is a home worth $1,450,000 (which is roughly the median value in San Francisco). Based on an analysis of the relationship between house prices and rents, the rent for the house would be $5,000 per month. Note that the annual rent of $60,000 equals 2% of initial net worth so that we are fixing the housing portion of the budget at that level for purposes of this analysis. (Higher spending levels are assumed to go towards non-housing items).

In the situation where the home is owned, we need to assume some history of the home and its financing in order to properly account for costs and taxes going forward. The year purchased determines the income tax basis, the property tax basis, and the maximum mortgage amount for which interest is deductable from taxable income. We assume the house was purchased 25 years ago. Using data from an index of housing prices we calculate that the implied purchase price was $424,000. This is also the income tax basis. Property tax assessed value increases by 2% annually so that the current assessed value would be $695,617. Using this we can calculate property tax and how it increases through time. We assume that insurance repairs and maintenance increase according to general inflation.

For the history of the mortgage, we assume that the owner tries to maintain the mortgage balance at the highest level where interest is fully deductible but refinances the mortgage (at least twice) to take advantage of significant declines in mortgage rates. The net result is a mortgage of $330,000 at 4% with amortization over the 25 years remaining. Thus the current home equity of the owner would be $1,120,000 (1,450,000 – 330,000) and the monthly payment would be $1,728.

These starting assumptions are important for determining the taxes that will become due over the forecast period. Lower starting assets, a more recent home purchase, or a higher percentage in the Roth could significantly reduce tax rates applied to investment income.

In part 1 of this series we specified a set of 4 potential asset classes to represent the risk and return spectrum for the liquid investment portion of assets:

- Money market – cash reserves
- Long term California tax exempt bonds
- High yield corporate bonds
- Equities

We reduce asset allocation choices by assuming all money in the Roth account is allocated to high yield bonds, all money in the IRA is allocated to equities, and 2% of taxable assets are held in a money market account as reserves. In Part I we allowed for a high risk allocation and a moderate risk allocation in order to look at downside risks versus potential upside under differing scenarios for the path of equity returns. Given lessons of part 1, and that the focus of this Newsletter is on housing, we will eliminate the possibility of the high risk allocation here and use the moderate risk allocation from Part 1 in cases where the home is rented. Under this allocation the (non-money market) taxable liquid assets are invested 30% in tax exempt bonds, 48% in high yield bonds, and 20% in equity. Because mortgage interest deductions eliminate the return advantage of tax exempt bonds, this money is reallocated to high yield bonds when the house is owned. See **Exhibit A** for a summary of allocations along with return assumptions.

Tax Efficiency and Liquid Asset Returns

As in part 1 of this series, when setting allocations within the taxable portion of assets we want to allocate money to tax exempt bonds only to the extent that the return is relatively close to the after-tax returns from high yield bonds. In the model analysis here we again follow the strategy outlined in the first newsletter for optimizing allocation and withdrawals between taxable and tax exempt bonds. We will use the inflation and return assumptions detailed last newsletter except that in the current newsletter we'll use constant returns rather than varying the equity returns over time. This simplification helps illuminate the impact of the housing choices**.** **Exhibit A** summarizes the return assumptions. Note that the constant returns assumption favors higher spending rates as constant returns compound more favorably and eliminate the risks of running out of money due to an early period of low returns.

Estimating Housing Appreciation for San Francisco Area

In order to look at the impact of owning a house during retirement, we need to estimate the long run appreciation rate starting at retirement. Given the constraints on supply we'll focus on the demand side for our economic analysis: we'll assume that in the long run house prices can only move in line with the ability of the population to pay for them. Note that this assumption rules out a return to 2006 bank lending standards whereby borrowers could obtain loans which they could not repay from their income. Thus our forecast depends upon two factors which determine home purchasing power: growth in household incomes and how income translates into purchasing power via mortgage borrowing using current underwriting standards for 30 year fixed rate loans.

Because we are assuming banks won't lose their discipline on income to payment ratios, we can compute the change in the available mortgage amount per $1,000 in monthly payment directly from any change in the interest rate. For example the mortgage rate in 2000 was 7.88% and a $1,000 monthly payment would correspond to a mortgage of $137,852. In 2015 at a rate of 3.86% the same $1,000 payment would be enough to get a mortgage of $213,047. Thus the mortgage amount that a dollar of income qualified a buyer for increased by 55% over the period (an annualized increase of 2.9%). This increased purchasing power was not, however, fully reflected in house price appreciation: house prices increased at annual inflation adjusted rate of 1.7% over the period.

Looking at income growth, we can further break it down into the inflation component and the increased income over the inflation rate which we call real income growth. From 2000 to 2015 median real (inflation adjusted) income in San Francisco declined 1.8% - an annual rate of -.1%. On the other hand, from 1987 to 2015, San Francisco household median income rose .75% annually in real terms. Inflation averaged 2.6% from 1987 to 2015 and 1.7% per year from 2000 to 2015.

If we combined the change in real income with the impact of lower interest rates we can calculate the increase in the mortgage related purchasing power after inflation as 52%[1]. Adjusted for inflation, house prices rose just 29% over this period. This seems to imply that the lack of growth in real income constrained home buyer's ability to increase down payments in line with the increased mortgage purchasing power.

Given the very low current level of mortgage rates and the high likelihood of future mortgage rates going up rather than down, we cannot expect housing appreciation going forward to exceed growth in real median income. Rising interest rates in the years ahead will likely produce a drag on housing appreciations. We will assume rates gradually rise back to the 2007 level over the next 35 years. This will reduce the purchasing power of income by about .83% annually.

A proper forecast of growth in real median household over the next 35 years is beyond the scope of this paper. We will optimistically assume that it rises at .83%, above the 1987 -2015 average so that it conveniently just offset the reduction in purchasing power from higher rates. <u>Thus we will assume housing appreciation equals inflation going forward.</u>

[1] Calculated as (1+.55)*(1-.017) – 1 = .52

Housing Calculations and Spending Budgets

In order to focus on financial decisions rather than consumption decisions our analysis assumes the house you live in doesn't change between the owning and renting cases. The only divergence is where we allow for downsizing. In this case we assume that if the house is owned it is not downsized until the point where it must be sold to fund retirement spending. At that point, when the owner becomes a renter they are free to downsize the rental they choose. When starting as a renter we assume you downsize at age 80. This age is chosen to keep owning versus renting roughly comparable because this is roughly the point where you would downsize as an owner if you choose an initial spending rate between 5% and 5.5% of assets.

As mentioned in the modeling assumptions section, we have chosen to fix our housing cost budget at $60,000 in the first year, which is exactly 2% of starting assets. Therefore for the safe rule-of-thumb initial spending rate of 4% of assets, our budget is spent 50% on housing and 50% on other items. While the renter actually spends this $60,000 in cash on rent, and this rises each year with inflation, the owner's housing budget is not so straight forward. The actual after tax cash costs of housing will be lower for the owner and they will rise more slowly with a fixed mortgage payment and limited property tax increases. On the other hand, there is an opportunity cost to the large portion of assets tied up in home equity that is not available to generate income for spending.

Given that our goal is to disentangle the results of our 3 choice variables (level of consumption, own versus rent, and downsize or not) the owner of a house choosing a particular initial spending level is assumed to set the same non-housing budget as the renter choosing that initial spending level. Thus the owner's reduced cash outlays on housing can make up for his reduced returns from liquid asset investments and enable a better comparison to the rental case. In other words, we presume that owner's consumption cost of owning a home is equivalent to its rental value and the impact of owning versus renting is an investment decision that impacts wealth through after tax returns on the home equity investment decision.

The net result of the set up described above is that for both renter and home owner every increase in initial spending budget is assumed to be allocated completely to spending other than housing. Therefore spending rates have exactly the same lifestyle impact for renter or owner. In the case of renting we assume rents rise at the same rate as house prices. As discussed above, our forecast is the increase is equal to the inflation rate. This has no impact on the non-housing spending rate.

In the model we must calculate the net after tax cost of owning the house. The components are as follows:

1. Fixed mortgage payments with deductible interest calculated each year.
2. Property tax (also deductible) rising 2% each year as per state law.
3. Insurance, repairs, and maintenance costs: $4,568 in year 1 rising with inflation.
4. Reduced by the tax savings of interest and property tax deductions when the owner itemizes deductions.

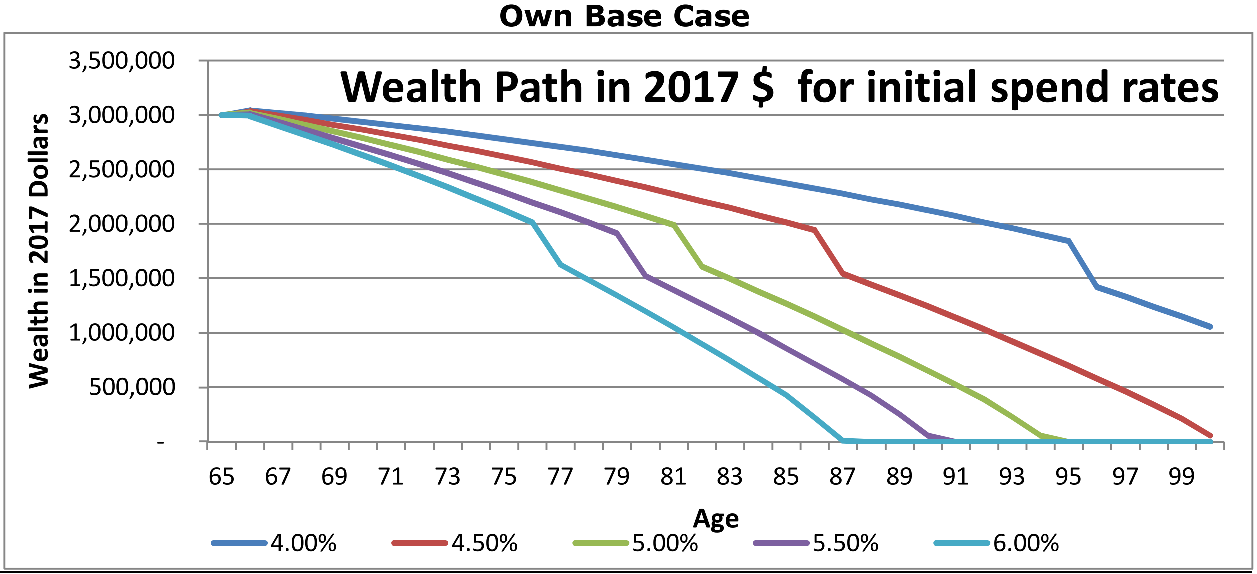
Note that the above includes principal pay downs. The net total of these is added to the non-housing spending and uses up investment earnings and principal of liquid asset investments. When the house is sold, the former home owner rents an equivalent value house. At that point their housing cost equals that of the renter.

Analyzing Four Housing Choice Cases

Now we are ready to look at the results for each possible combination of our housing choices: rent versus own and maintaining the current residence or downsizing it. Therefore our analysis will look at four cases: each possible combination of rent or own and downsize or maintain. For each of these cases – combining the different choices, we use the model to forecast asset balances to see when we would run out of money depending on the rate of initial spending that we choose. A typical rule of thumb for the sustainable initial withdrawal rate is 4%. We use this as our lowest possible initial spending rate and look at additional .5% increments – up to a maximum of 6%. Note that these percentages determine the consumption spending budget; taxes are an additional cost that also reduces account balances. So in that way our 4% is a bit higher than the rule of thumb 4% which refers to the withdrawal rate. Asset returns, house appreciation, and inflation are assumed constant in all cases.

Our first case, which we call Own Base Case, is home ownership with no downsizing of the residence. Note that the home owner may still end up renting later if investment balances run low and the house must be sold to fund spending. Here is a graph of asset balances (measured in current dollars) for each of the 5 initial spending rates:

Own Base Case

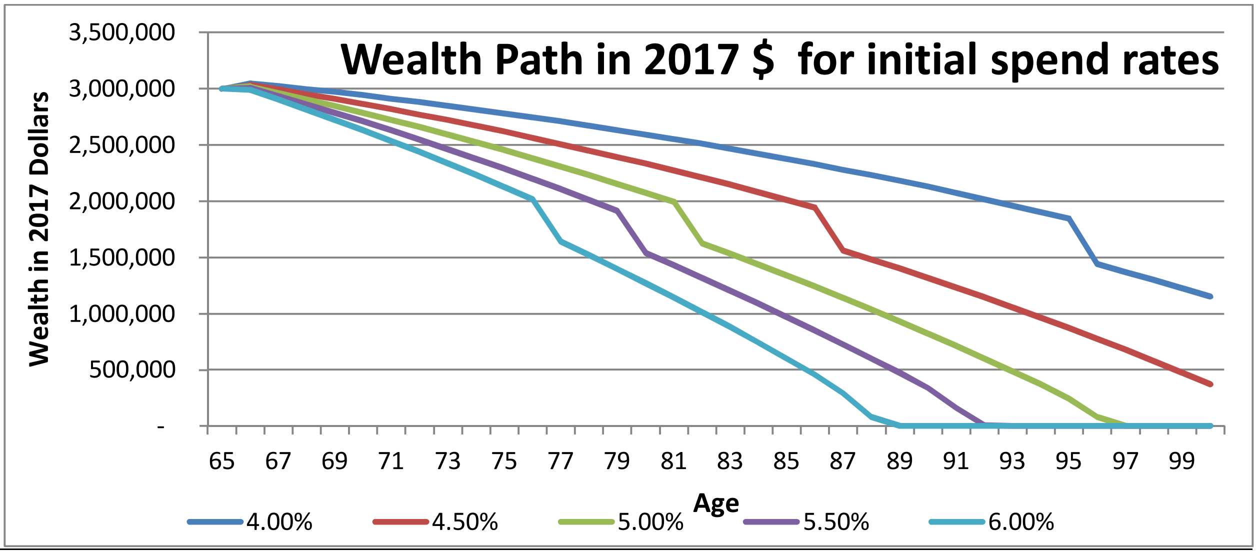


For the 4% or 4.5% initial spending rates, there is money left over at age 100. Each higher spending level above 4.5% lowers the age at which money runs out - to 95, 91, and 88. The downward kinks in the wealth paths show the reduction in wealth that happens when taxes and sales commissions are paid at the house sale.

Next is the Own Downsize Case in which the home owner moves to a less expensive house than was sold when the house must be sold to move to a rental.

This case differs from the Own Base Case only in that here the rents are 70% of the level required to rent the same value house that was sold. Here is the graph:

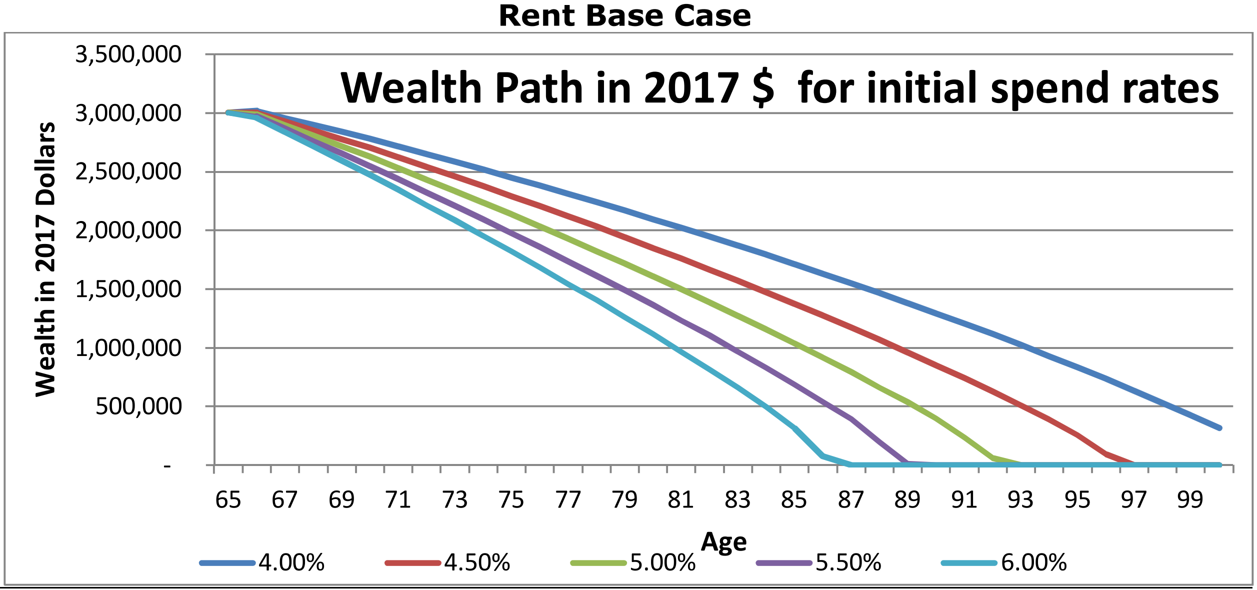
Own Downsize Case



In this case the age of running out of money has been postponed for the 3 higher spending choices to 97, 93, and 89 for 5%, 5.5% and 6% respectively. So we see that downsizing late in life after selling a house can allow wealth to last an extra 2 years or so.

Our third case, which I'll call Rent Base Case, is where the house is rented rather than owned and there is no downsizing. This case is equivalent to the Constant Base Case in part 1 of this series. Here is the graph:

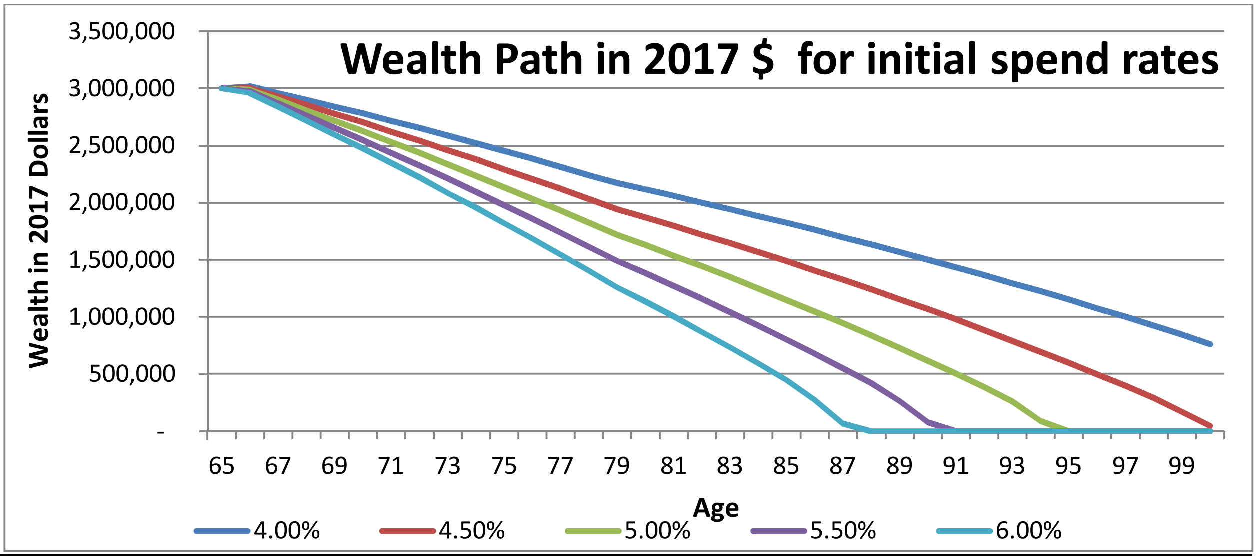
Rent Base Case



Here we see that renting results in earlier depletion of assets compared to owning the house for initial spending rates above 4%. Money runs out at 97, 93, 90, and 87 as we increase the spending rate from 4.5% up to 6%.

Our final case, called Rent Downsize Case examines what happens when we initially rent the house and then downsize to a less expensive house at age 80. Here is the graph:

Rent Downsize Case



In this case wealth lasts just as long as in the Own Base Case but a couple of years less than the Own Downsize Case. Below 5% spending, money lasts to 100. At successively higher spending levels, money runs out at 95, 91, and 88.

Comparing the Impact of Spending Choices for the Different Cases

We have the following cases to analyze:

Scenario Name	Own or Rent at Start	Downsize to 70% of house value?	Starting Liquid Assets	% of Taxable acct. in Tax Exempt
Own Base Case	Own	No	1,880,000	0%
Own Downsize Case	Own	Yes	1,880,000	0%
Rent Base Case	Rent	No	3,000,000	30%
Rent Downsize Case	Rent	Yes	3,000,000	30%

The table below summarizes for each case the year that money runs out for each of the choices of initial spending rate and provides a summary of tax rates. Below that it shows the age at which the house must be sold to fund spending if it is owned:

	Initial Spending Rate as % of assets:					PV of all tax as
	4.00%	4.50%	5.00%	5.50%	6.00%	% of all Income
Scenario Name	Age when run out of funds by withdrawal rate:					at 4.5% spend rate
Own Base Case			95	91	88	19.0%
Own Downsize Case			97	93	89	17.9%
Rent Base Case		97	93	90	87	11.8%
Rent Downsize Case			95	91	88	11.0%
	Age when must sell house if own at start:					
	95	86	81	79	76	

If we look across the row of results for each case we see that each incremental increase in the spending rate above 4% cuts a significant number of years off the period over which savings will last; going from a 4% spending rate to 4.5% cuts off 4 to 6 years. Each incremental .5% of spending above that cuts a further 3 to 4 years. As mentioned last time, for a couple at age 65, there is an 18% chance that at least one of them lives to age 95.

This table makes it clear that the rent savings of owning the home rather than renting allows your assets to last longer in retirement for a chosen level of housing consumption (house value). Because the rental value of a home you own and live in is not taxed, the after-tax returns on this asset are significantly higher than returns currently available from the other asset classes analyzed here.

Taxes are much higher when owning because in our initial conditions there is a large deferred tax liability included with the house. This is mitigated by the fact that after-tax returns on housing are so much higher than other assets (when you include the value of the rent saved). If we included the untaxed rent savings value in our calculation of total income, the taxed percentage of income would be much closer to that of renting.

A Tax Strategy Worth Considering

Unlike many items in the tax code, the home sale gain exclusion is not indexed for inflation. It is currently $500,000 for married couples and just $250,000 if your spouse dies. It will remain so unless congress decides to provide an additional break for us fat cats in California. I wouldn't count on it. This will almost surely impact Californians counting on home equity to fund part of their retirement. You can reduce this tax hit by selling and buying a new house right before your gain exceeds the exclusion. By doing so, you eliminate future taxes on your home sale if you need the equity to fund retirement spending. In addition you can increase your mortgage in the process to maximize the tax benefits of mortgage deductions. The savings could be hundreds of thousands of dollars. Of course, this is not costless. You have to pay real estate commissions and your property taxes will go up substantially, not to mention the hassle of the selling and moving.

Summary and Conclusions

In this second installment of our series exploring the linkage between savings and the capacity for retirement spending, we compared results between owning and renting a home for a retiree with $3 million in net worth. We layered on top of that the possibility of downsizing the residence to make the money last a bit longer. We assumed constant returns on all assets to focus our attention on the impact of the housing choices.

The results show that retirement money goes further if we own our residence. In that case we increase our initial spending budget to 4.5% of assets – meaning our non-housing budget can rise from 2% of assets to 2.5% of assets. If we are willing to downsize once the house is sold we can push our initial non-housing budget spending up another .5% - so long as we're confident we won't live to age 97.

These results are very much dependent on the current set of expected market returns as well as the current tax laws. Also this part of our series is ignoring the impact of the variability in long run returns. As before, by simplifying the analysis to focus on the housing choice aspects, we eliminated a good deal of real world dynamics. In particular the currently depressed level of returns available in financial markets could revert to more normal levels in a few years or there could be major changes in tax laws. In future newsletters we will explore the dynamic relationships between changing market conditions, asset allocations, spending levels, and the risk of outliving your assets.

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Exhibit A

Own Base Case + Own Downsize Case			dollars allocated by Tax Status			Allocation % by Tax Status			Forecast returns	
Asset Class:	% of total	Total $ by Asset Class	Taxable accounts	Tax Derred accounts	Tax Free Accounts	Taxable accounts	Tax Derred accounts	Tax Free Accounts	years 1-10	> 10 years
Money market - reserves	2%	31,000	31,000	-	-	2%			2.50%	2.50%
CA Tax Exempt Bonds	0%	-	-	-	-	0%			3.50%	3.50%
High Yield Bonds	66%	1,239,000	1,209,000	-	30,000	78%		100%	5.25%	5.25%
Equities	32%	610,000	310,000	300,000	-	20%	100%		6.50%	6.50%
Total or weighted averge		1,880,000	1,550,000	300,000	30,000	100%	100%	100%	5.61%	5.61%
Home Investment		1,120,000						Appreciation Rate:	2.50%	2.50%
Total Net Worth		3,000,000								

Rent Base Case + Rent Downsize Case			dollars allocated by Tax Status			Allocation % by Tax Status			Forecast returns	
Asset Class:	% of total	Total $ by Asset Class	Taxable accounts	Tax Derred accounts	Tax Free Accounts	Taxable accounts	Tax Derred accounts	Tax Free Accounts	years 1-10	> 10 years
Money market - reserves	2%	53,400	53,400	-	-	2%			2.50%	2.50%
CA Tax Exempt Bonds	27%	801,000	801,000	-	-	30%			3.50%	3.50%
High Yield Bonds	44%	1,311,600	1,281,600	-	30,000	48%		100%	5.25%	5.25%
Equities	28%	834,000	534,000	300,000	-	20%	100%		6.50%	6.50%
Total or weighted averge		3,000,000	2,670,000	300,000	30,000	100%	100%	100%	5.08%	5.08%