

Cost-of-Living-Adjusted Annuities vs. Fixed Income Alternatives

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Introduction

The potential advent of Private Retirement Accounts (PRA) has caused a number of both liberal and conservative Web sites to postulate annuities which would have cost-of-living-adjustments (COLA) so they could compare PRAs with Social Security benefits directly. Vanguard recently introduced an annuity with a COLA that has a fairly generous cap. We are going to compare this with some major alternatives using several different models. We will also see how these various investments fare using average historical returns for the alternatives as well as several key historical scenarios.

Description of the Alternatives

We used the following security descriptions:

- Current quotes for a single person fixed annuities from www.immediateannuity.com
- Current quotes for a single person cost-of-living-adjusted (COLA) annuity with 10% inflation cap from www.vanguard.com
- Current I Bond increments above inflation from www.savingsbonds.gov
- Historical inflation and returns for long-term corporate bonds from Global Financial Data less 0.5% costs to represent bond funds.

We used the following three scenarios, all of which started at age 67:

- Constant inflation and bond returns representing the numerical averages from 1926 through 2003.
- A scenario starting in 1948 with the inflation and returns of each subsequent year. This represents one of the best years someone could have retired in past history.
- A scenario starting in 1965 with the inflation and returns of each subsequent year. This represents one of the worst years someone could have retired in past history.

We did not account for taxes in any case. If these were all in deferred tax accounts, then the amounts of spending would have to be reduced by whatever the future tax rates would be. If these are in taxable accounts, the differences would be small for lower taxed people, but there could be some shifting for higher taxed people that could benefit from the dividends and capital gains tax reductions if they would still exist at points in the future. Higher taxed individuals considering taxable accounts might come to somewhat different conclusions and should use a program like the Dynamic Financial Planning Pro from www.analyzenow.com.

We used two different kinds of representations:

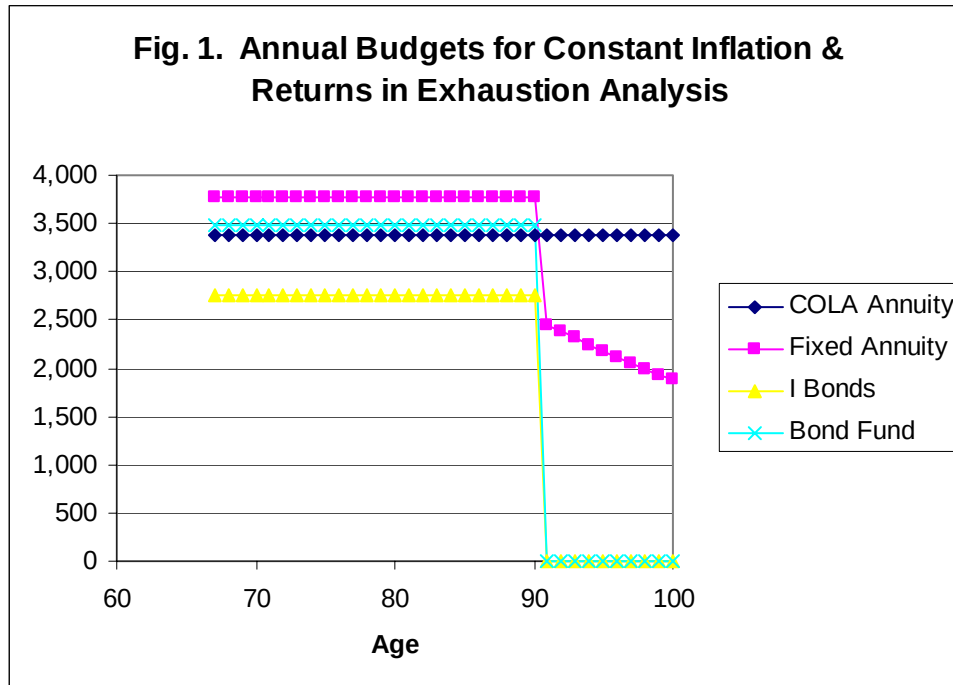
- Conventional analysis in which expenses rise each year in accordance with inflation. In this analysis, we look for the point where the investments are

exhausted. We used Microsoft's Goal Seek to find the spending level that would drive the investments to zero at the beginning of age 91. The one exception was the COLA annuity which would continue indefinitely and was based on the Vanguard quote and cap.

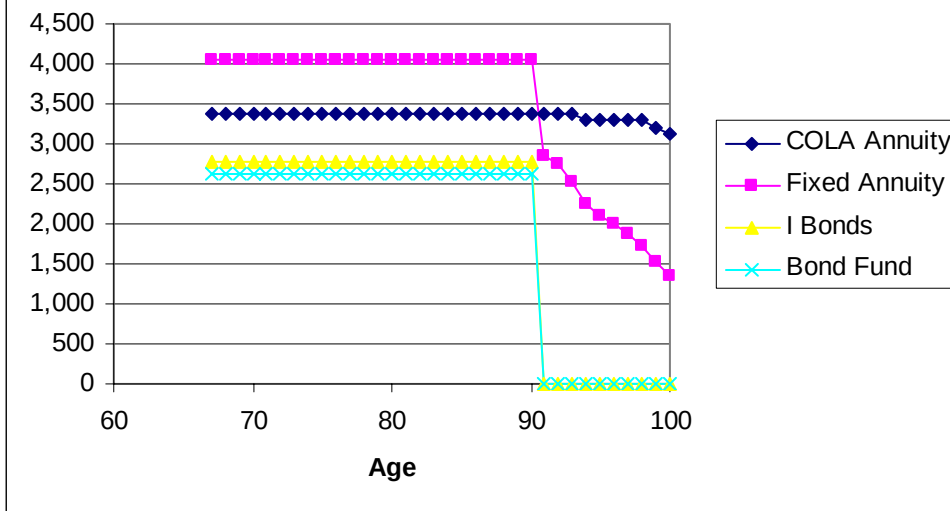
- Recalculation analysis in which we have the client come back to the professional financial advisor to make a new calculation starting from scratch each year. In this kind of analysis, the recommended spending level changes each year and is not constant in real terms. Investments are never exhausted because there is a new life-expectancy each year.

Part I. Conventional Exhaustion Analysis

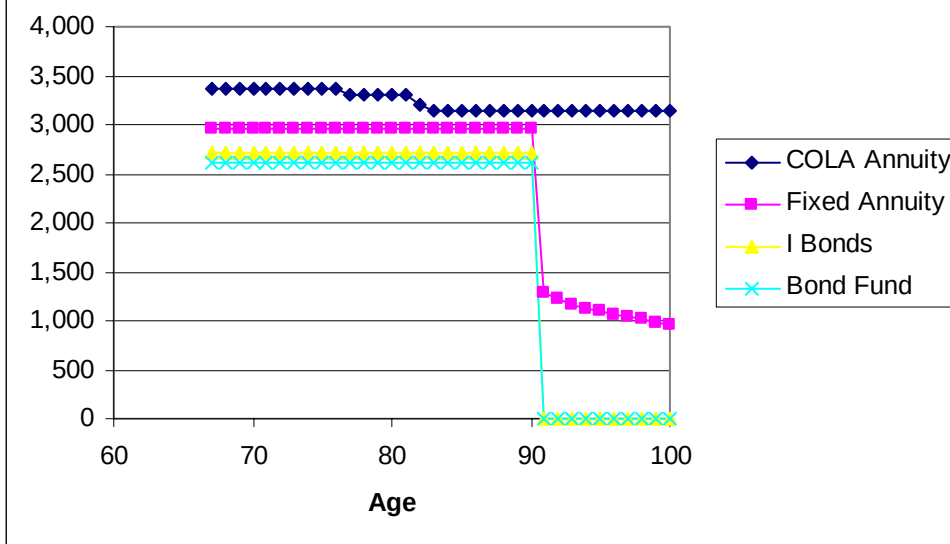
Figures 1, 2, and 3 represent the cases for constant returns, the 1948 retirement scenario, and the 1965 retirement scenario, respectively. It is apparent that annuities are the better choice in this situation. Note particularly that affordable annual budgets are widely different, not only in the same scenario, but also between different scenarios.



**Fig. 2. Annual Budgets for 1948 Start Scenario
in Exhaustion Analysis**



**Fig. 3. Annual Budgets for 1965 Start Scenario
in Exhaustion Analysis**



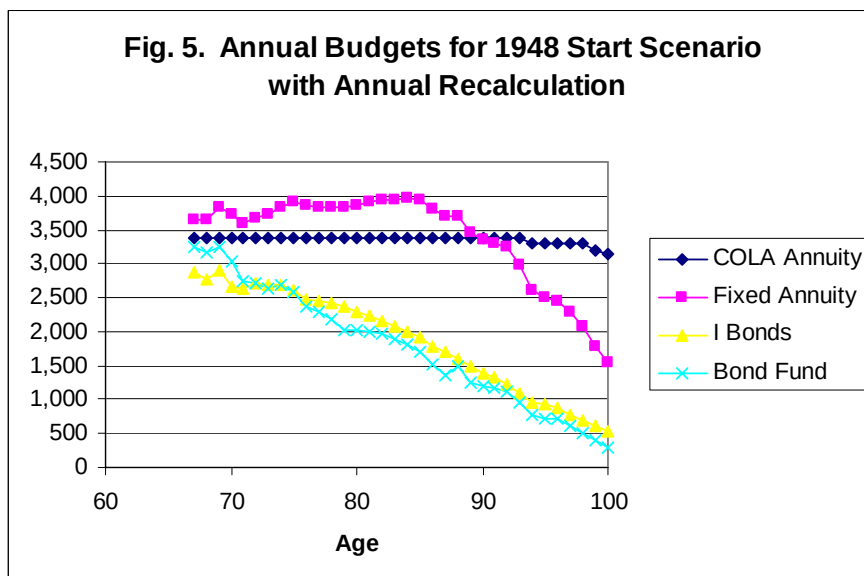
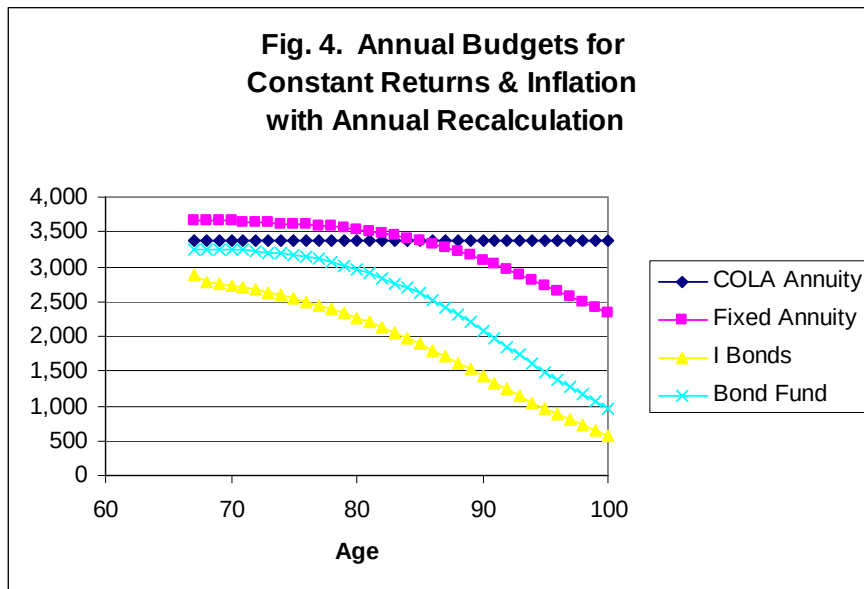
Part II. Recalculation Analysis

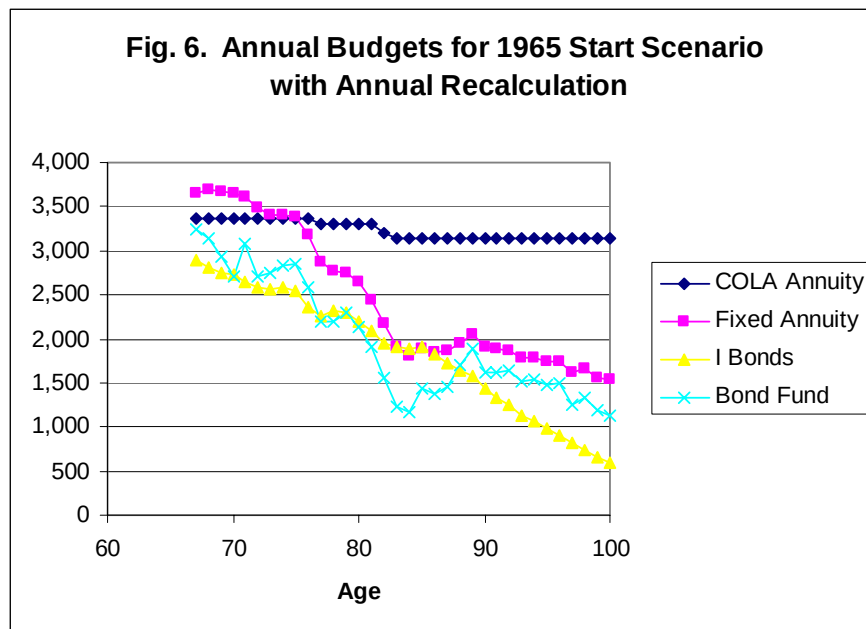
Recalculation analysis is the most realistic kind of projection because no one is going to keep spending at a very high level, which is further increased by last year's inflation, when investments drop markedly in value. Conversely, when investments boom to great levels, planners feel that their clients can spend more. Virtually no professionals would advocate spending at last year's level plus inflation as might have been recommended either by themselves or by another professional the year before in these situations.

We based these calculations on conventional planning equations using the age related IRS single life-expectancy increased by 5 years to keep the client on the conservative side in an attempt to preserve funds should the client live past the 50/50 point. The real returns in the planning equations were 2% and the forecasted returns at what would have hoped to be a conservative 5% estimate for whatever the future held for a bond portfolio.

Figures 4, 5, and 6 represent the cases for constant returns, the 1948 retirement scenario, and the 1965 retirement scenario, respectively. Annuities are the better choice again, but the initial annual budgets are almost always lower than with exhaustion analysis. What is striking about all of the cases is the resulting spending profiles. With the exception of the COLA annuity, there are few choices that you would like late in life. This indicates that planners should use very conservative values when making projections in order to keep initial spending low and preserve some funds for late in life.

It is incumbent on professionals to let their clients know how much spread there could be in their future spending profiles if the future contains cases as good as the 1948 historical retirement scenario or as bad as the 1965 historical retirement scenario.





Those who use Monte Carlo analyses can give their client some perception of investment uncertainty, but, each Monte Carlo run is an exhaustion analysis. Therefore, the individual components of that kind of analysis don't represent what people will really do in very good and very bad investment environments. In fact, whether in good or bad environments, exhaustion analyses tend to give relatively optimistic results relative to how real people behave. That's because they overspend in good times expecting markets to remain high forever, while in bad times they also overspend anticipating their investments will recover. This can be aggravated by believing that they can always spend at least last year's budget increased by inflation. Another factor is that as people get older, the age they expect to die increases, something that Monte Carlo analysis fails to accommodate in the model for each run.

Also, it is important not to let clients believe that the statistics associated with either Monte Carlo analyses nor those herein represent what will happen in the future. They are only characterizations of what happened in the past, and scenarios with the actual inflation and return histories may well do a better job of representing that past than a random scrambling of inflation and returns. Events (such as rationing in war time and tax law changes) had a big influence in the past, and none of us can predict future events nor exactly how future economic conditions will come out. Paul Samuelson, one of my professors and a Nobel Economics Prize winner was found of telling us that history is only one data point, and it's very difficult to extrapolate from one data point.

Summary

Figure 7 tabulates the cumulative present values of all payments till the ages shown as well as shows the remaining estate values when recalculation is used. Each case represents a \$60,000 initial investment.

Of course, estate values are zero for fixed payment and COLA annuities. That's also true for analyses based on exhausting all investments before death. Further, the sum of all payments (in today's dollar values) is only shown for ages 90 and 100. In all of these cases including both annuities and bonds, the full \$60,000 is returned as payments and

what is left in the estate. This certainly would not be so for the annuities if the owner died at an age less than the life-expectancy at the time the annuity was purchased.

Fig. 7. Total Real Values Over Lifetimes

All amounts are in Today's Dollar Values. Bold print indicates better performance.

Constant inflation and return

Method	Ages	Total Annuity Payments		Total Bond Payments and Residual Estate			
		COLA Annuity	Fixed Annuity	I Bonds	Estate	Bond Fund	Estate
Exhaustion	67-90	80,940	90,328	66,291	0	83,388	0
Recalculation	67-90	80,940	83,916	54,562	12,637	69,629	17,694
Exhaustion	67-100	114,664	111,869	66,291	0	83,388	0
Recalculation	67-100	114,664	110,852	63,936	3,858	84,078	6,145

Start retirement in 1948

Method	Ages	Total Annuity Payments		Total Bond Payments and Residual Estate			
		COLA Annuity	Fixed Annuity	I Bonds	Estate	Bond Fund	Estate
Exhaustion	67-90	80,940	97,190	66,578	0	62,712	0
Recalculation	67-90	80,940	90,554	54,864	12,604	53,163	10,609
Exhaustion	67-100	113,909	118,121	66,578	0	62,712	0
Recalculation	67-100	113,909	115,323	63,888	3,955	60,417	1,884

Start retirement in 1965

Method	Ages	Total Annuity Payments		Total Bond Payments and Residual Estate			
		COLA Annuity	Fixed Annuity	I Bonds	Estate	Bond Fund	Estate
Exhaustion	67-90	78,519	70,800	65,239	0	62,712	0
Recalculation	67-90	78,519	66,053	53,493	12,860	52,938	14,780
Exhaustion	67-100	109,865	81,772	65,239	0	62,712	0
Recalculation	67-100	109,865	83,206	62,992	3,933	67,157	7,665

Fixed payment annuities, using current quotes, were better than the COLA annuities for most conditions except for the very high inflation associated with the 1965 retire scenario. Then the COLA annuities were much better. Keep in mind that for the fixed payment annuity to be better than the COLA annuity, the owner must not spend all that she receives each year and must save a good part. A rough rule-of-thumb is to only spend an amount equal to the after-tax payment multiplied by her current age divided by 100. The remainder should be invested and drawn down in accordance with conventional planning equations. Another rough rule of thumb for a retiree is to not draw more from investments than the previous balance divided by life-expectancy (as measured in terms of years yet to live). This is equivalent to saying that the investments will grow at the same rate as inflation on the average.

An annuity was always better than investing in I Bonds or bond funds in these long-lived examples which use current quotes for annuities and I Bonds and historical values for mutual bond funds. Still it's interesting that whether I Bonds or mutual bond funds were better depends on both the scenario as well as whether using exhaustion or recalculation analyses. The better comparisons are made with the more realistic recalculation analyses which surprisingly give mutual bond funds an edge over I Bonds in the 1965 retire case which has high inflation. That's due to the low returns currently quoted for I Bonds. Someone who bought I Bonds a couple of years ago would come to a much different conclusion.

When making choices between alternative investments, it's important to look at varying conditions and to use the most realistic representation possible for these cases. At best, exhaustion analysis is but a guide and will almost always overestimate affordable spending early in retirement. The Dynamic Financial Planning Pro from www.analyzenow.com runs two simultaneous planning programs so that you can put one alternative on one program and the other on the second program. Both results are displayed simultaneously on the same charts so that it is easy to determine which planning alternative is better. The program lets you distinguish tax rates for different situations. It also makes it easy to see how these comparisons change using different historical years to start retirement as well as modeling different behavior patterns for the client in rising or falling markets.

Finally, PLEASE don't tell clients that they have X% chance of not exhausting their investments before they die. That presumes you know the future, and the truth is you don't have a clue either about future market performance or particular personal events that can destroy savings. The best you can do is adopt a stance that worked well in many situations in the past and hopefully has some protection for bad economic conditions. Take another look at Figures 4, 5, and 6. Don't set your clients up so that they overspend early in retirement and are destined to poverty later on because you relied on an exhaustion analysis that is inherently optimistic.