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Efficient Retirement Design

By John B. Shoven

The pension system in the U.S. has changed dramatically over the past forty years. Social Security benefits have been inflation indexed and many different benefit commencement options have been introduced. Getting the most out of Social Security is now quite a complex calculation. The predominant private pension system has switched from the old defined benefit system which typically provided monthly benefits for life to defined contribution programs such as 401(k) accounts which simply provide mutual fund account balances. There have been lots of studies by economists of the defined contribution system, concentrating on the accumulation phase with such topics as the impact of automatic enrollment, the effect of employer matching or the consequences of hardship withdrawals on the resources

available at the time of retirement. On the other hand, there have been very few studies on what retirees should do with their defined contribution assets once they retire. Similarly, until very recently, there have been only a few analyses of the best commencement strategy for people eligible for Social Security. For the past couple of years, I have been working on strategies to combine private defined contribution assets and Social Security so as to maximize retirement resources. That is, how can people use the assets and entitlements that they have to maximize their standard of living in retirement? My co-author on all of this work is Sita N. Slavov of the American Enterprise Institute. We have produced a booklet called *Efficient Retirement Design* which can be found at http://siepr.stanford.edu/retirement_design.
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About The Author

John Shoven is the Wallace R. Hawley Director of the Stanford Institute for Economic Policy Research and the Charles R. Schwab Professor of Economics at Stanford. He is also a Senior Fellow at the Hoover Institution and a Research Associate of the National Bureau of Economic Research. He specializes in public finance and corporate finance and has published on Social Security, health economics, corporate and personal taxation, mutual funds, pension plans, economic demography and applied general equilibrium economics. He is Chairman of the Board of Board of Cadence Design Systems and serves on the boards of American Century Funds, Exponent, Inc. and Financial Engines, Inc.



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In this *Policy Brief* the general topic will be introduced and some of our results will be previewed.

Before talking about efficient retirement design or getting the most out of one's retirement assets, let's look at what people actually do, what we could call the prevalent retirement design. Most people have two major retirement assets — Social Security and defined contribution account balances

Figure 1 shows the distribution of the months of delay between when someone retires (or when they become 62 if they retired before that age) and when they start their Social Security benefits. What you are supposed to see in Figure 1 is that the vast majority of people

start their Social Security almost immediately upon reaching 62 or retiring. They start collecting Social Security as soon as possible. Once they have done that, there is nothing left to do with their 401(k), 403(b) or 457 assets other than to try to finance a Social Security supplement with the funds. One finding of *Efficient Retirement Design* is that this strategy of starting Social Security ASAP and using defined contribution assets to fund a Social Security supplement is a big mistake for most people, possibly involving as much as \$250,000.

Figure 1 makes it look like people think that starting Social Security and retiring are one and the same thing. What other retirement design should they

consider? Well, workers could separate the decision to retire from the decision to commence Social Security. They could delay collecting Social Security and this might make sense once they learn that monthly Social Security benefits are higher the later they are started. In fact, monthly benefits go up for each month of delay from age 62 to age 70. Defined contribution assets could be used to finance the deferral of Social Security instead of financing a supplement to Social Security. It turns out that deferral is a better strategy for most people.

What happens if you delay starting Social Security? Well, the monthly benefits go up. How much to they go up? Look at Table 1. There you will see an entire schedule of the percentage increase in monthly benefits for delays from particular whole number ages to later whole number ages.

The upper left-hand number indicates that starting Social Security at age 70 rather than at age 62 results in monthly benefits that are 76 percent higher. The table also shows that deferring commencement from 63 to 66 results in a 25 percent increase in benefits and that deferring from 66 to 69 results in a 24 percent increase. It should be pointed out that benefits are increased during the deferral

Figure 1. Delay between Retirement and Social Security Commencement

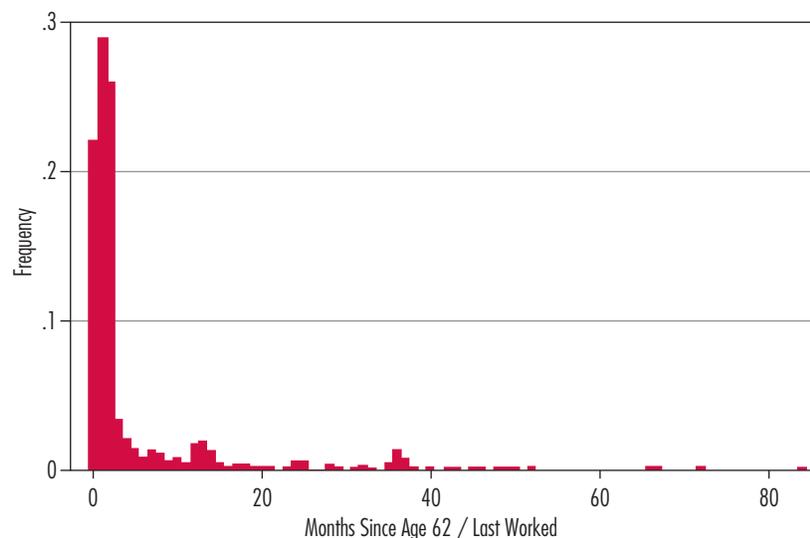


Table 1. Actuarial Adjustments for Deferring Commencement (% change in monthly benefit)

Defer to								
70	76.00	65.00	52.31	41.43	32.00	22.22	13.79	6.45
69	65.33	5.00	43.08	32.86	24.00	14.81	6.90	
68	54.67	45.00	33.85	24.29	16.00	7.41		
67	44.00	35.00	24.62	15.71	8.00			
66	33.33	25.00	15.38	7.14				
65	24.44	16.67	7.69					
64	15.56	8.33						
63	6.67							
	62	63	64	65	66	67	68	69
	Defer From							

Table 2. Remaining Life Expectancy of people in their 60s today

Age	Men	Women
62	21.3	23.6
63	20.5	22.8
64	19.8	22.0
65	19.1	21.1
66	18.3	20.3
67	17.6	19.5
68	16.9	18.8
69	16.2	18.0
70	15.5	17.2

Table 3. Remaining Life Expectancy for Couples

Husband's Age	Wife's Age	Years to 1st Death	Years to 2nd Death	Years of Widowhood
62	60	17.5	29.2	11.7
63	61	16.7	28.2	11.5
64	62	16.0	27.2	11.2
65	63	15.3	26.3	11.0
66	64	14.6	25.3	10.8
67	65	13.8	24.4	10.5
68	66	13.1	23.4	10.3
69	67	12.5	22.5	10.0
70	68	11.8	21.6	9.8

period for inflation in addition to the increase shown in the table for the delay in commencement. In effect, by delaying the start of Social Security benefits, one is purchasing a larger inflation-indexed life annuity from the government. The cost of the purchase is the foregone benefits during the delay period.

The value of a life annuity (i.e. monthly checks for the rest of one's life) depends in a straightforward manner on remaining life expectancy and on interest rates. Let's start with life expectancy. Table 2 shows the remaining life expectancy of retirement age individuals who turned 62 on January 1st, 2013.

These figures were obtained from the Social Security Administration and they incorporate their best guess as to mortality progress in the future. They show that when a man in the 1951 birth cohort turns 65 (in 2016), his remaining life expectancy will be 19.1 years. 65-year old women in the same cohort will have a remaining life expectancy of 21.1 years. These numbers are the average number of years of remaining life for men and women in this birth cohort and they are applicable to single people in average health. They are not that useful for married couples.

Social Security has some

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important rules for married couples. Near the top of the list is that the benefits of the survivor of the couple will be based on the higher individual benefit amount for the couple, regardless of whom it is that survives. For example, if the man in the marriage has the higher individual Social Security benefit amount, that monthly benefit will be received by his widow if he dies before his wife. Increasing the higher benefit through commencement deferral leads to higher benefits that last for both lifetimes, whereas increasing the lower individual Social Security benefit through deferral only increases the couple's income until the first death.

Table 3 shows the expected years until the first death and the second death for couples in

their 60s with a two year age gap between them. The right hand most column shows the expected time that the survivor of a couple outlives the first to die. It shows that the period of widowhood (which we will call it regardless of who the survivor is) has an expected length of ten to eleven years.

The present value of an annuity depends not only on the expected number of checks, but on the discount rate to determine the present value. If you have a Social Security entitlement, you have an obligation of the U.S. Treasury. It is inflation-indexed. It is paid out in the form of a security, in this case a life annuity. Sita Slavov and I argue that if you have a Treasury inflation-indexed security, the right discount rate

to apply to its future payouts is the interest rate on Treasury inflation-protected securities or TIPS. Like other interest rates, TIPS rates have dropped dramatically in the last couple of years. In the case of TIPS, the real interest rates are now distinctly negative for five and ten year maturities and are roughly zero for the twenty year maturity bonds. Figure 2 gives you the history of ten-year TIPS rates with the recent negative rates highlighted.

Who set the payoffs for deferring Social Security benefits shown earlier in Table 1? Was it insurance companies or the financial marketplace? The answer is that these deferral terms were set in legislation, some of it enacted a very long time ago. The earliest part of it was set in 1956 with other parts set in 1962 and 1983. By and large, once set, the terms of deferral either have not changed or have gotten more generous. Further, remaining life expectancy has grown a great deal in the last fifty years, more than forty percent for 65-year old men, for instance. The appropriate discount rate has gone way down in the last few years. All of this combines to make life annuities more valuable and benefit deferral a very attractive proposition for today's retirement age individuals.

Figure 2. Delay between Retirement and Social Security Commencement



Some of the conclusions in *Efficient Retirement Design* are that single men in average health should defer Social Security benefits to age 68 if they have sufficient funds. Single women in average health should defer to 70 (which is the limit that Social Security allows). The higher earner in a couple has the greatest incentive to defer and should almost always defer to 70, whereas the lower earner in a couple is treated in a roughly actuarially fair manner. That means that it is less important when the lower earner commences Social Security (66 works out well for most lower-earners in a couple).

We go on to illustrate strategies which are even better than straight deferral. For many people, it is possible to be paid by Social Security while still earning the deferral credits shown in Table 1. If deferring is a good deal when you have to give up your benefits during the deferral period, it is an even better deal if you can receive some benefits while deferring. Here is an example of how that works. A good strategy is often for the high earner to defer until 70, whereas the lower earner might start collecting benefits at 66. The higher earner can collect spousal benefits at 66 (benefits based on their spouse's record), while still deferring collecting on

their own record. This is not an unusual circumstance. It is often possible. So, between 66 and 70, the higher earner actually collects Social Security benefits (the spousal variety), while deferring collecting on their own record. A similar strategy is available to some single people. Many singles in their 60s were previously married. If their former spouse died or if they got divorced after ten or more years of marriage, they can collect benefits based on their ex-spouse's Social Security earnings record while still deferring their own-record benefits. They would then switch to their own record benefits at a later age, perhaps 70.

All of this means that the best use of defined contribution assets is often not to supplement Social Security but to finance its deferral. This is a whole new way of thinking about 401(k) balances. They can provide the money to live on while you delay the start of your Social Security benefits. Even short delays permitted by small 401(k) balances make good financial sense. The other implication of all of this is that if you cannot afford to live on your 401(k) and similar assets, the only way to take advantage of the much better deal for later Social Security commencement is to work longer. For the higher earner in a couple, at

least, waiting until at least 68 to collect Social Security is advisable (70 if possible) using a combination of private assets and working longer to live on in the meantime.

To make this more concrete, let me illustrate with a particular example. Take a couple, both 62, who want to retire. These are middle income people who both had long working careers, with the husband's average earnings coming out to about \$56,000 in today's dollars and the wife's average was about \$42,000. This particular couple has been pretty responsible in saving for retirement and has defined contribution assets of \$257,000. They consider two strategies, the first of which we could call the traditional strategy of starting their Social Security immediately. If they do that and they want to use all of their defined contribution assets to supplement their monthly income for the rest of their lives, the best thing that they can do with the money is purchase a joint life annuity from an insurance company. They would then have two sources of income, the monthly checks from Social Security and from the insurance company. Their total income in the first year of retirement would be just shy of \$4,000 per month. Their Social Security income would

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be increased annually to reflect inflation whereas I am assuming that they purchased a fixed nominal life annuity from the insurance company. The second strategy that they are considering is to completely delay the start

of Social Security until they are both 66. At that point, the lower earner, the wife in this case, would commence her benefits and the husband would commence spousal benefits. At age 70, the husband would

switch to his own benefit which would be 76 percent higher than under the first strategy. We can call this the 66/70 strategy. It turns out that the \$257,000 in their defined contribution accounts provides just enough money so that the couple can have the same spending income from age 62 to age 70 under the second strategy as the first. That is, the 401(k) type accounts are drawn down between ages 62 and 70 in such a way as to just match the income that the couple would have had if they had started their Social Security at 62 and had bought a private annuity. So, between ages 62 and 70, the score is tied between the two approaches. What happens at 70? Look at Figure 3. At 70, the couple's monthly income is almost \$600 per month Higher under the 66/70 deferral strategy than under the 62/62 immediate Social Security commencement strategy. That advantage continues to go up since all of their income is inflation indexed under the 66/70 plan, whereas under the 62/62 plan they have a non-indexed private annuity.

With two percent inflation, the advantage of the 66/70 strategy grows to over \$1,400 per month by age 90. What is shown in Figure 3 is the difference in income while both members of the couple survive.

Figure 3. Difference in Couples Income

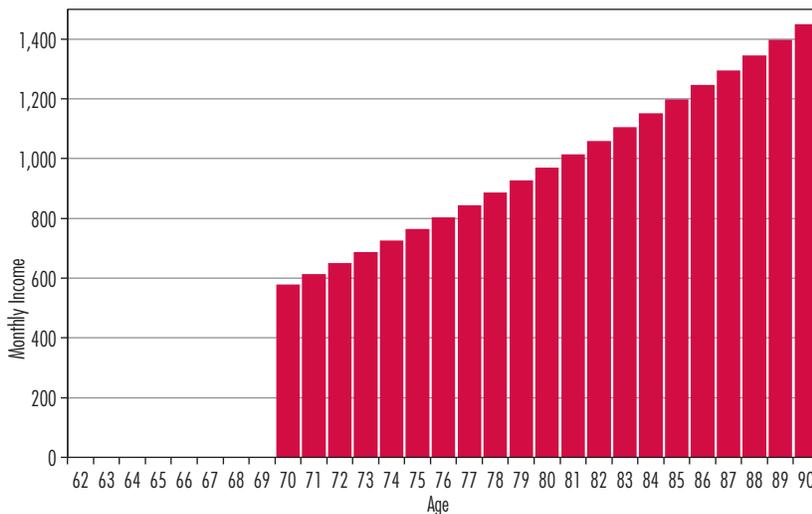
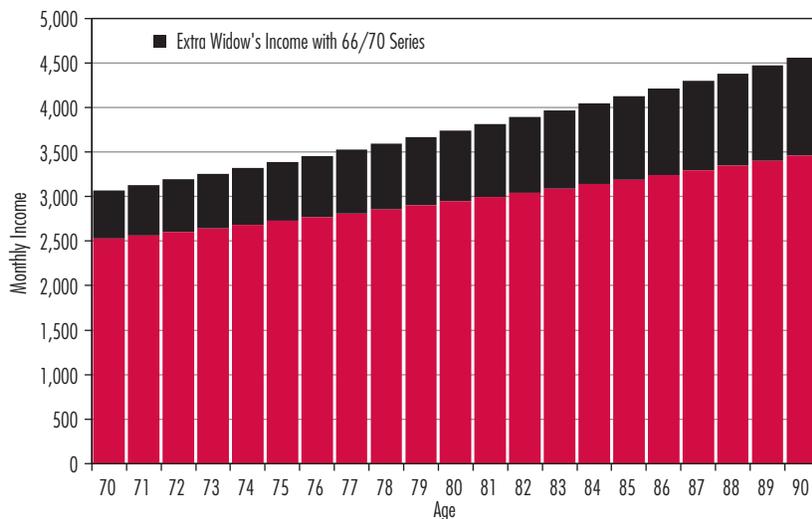


Figure 4. Survivor's Income with 66/70 Series



A second big advantage of the Social Security deferral strategy is that the ultimate survivor has considerably higher income to live on. Figure 4 shows that advantage. The black upper portion of the bars shows the extra income that the survivor would enjoy with the 66/70 strategy over and above what she or he would have with the traditional approach. If you just look at Figure 4, you can see that the survivor has about thirty percent higher income.

Let's summarize the situation for this example. We have a middle income two-earner couple. They want to retire at 62 and in fact do so. If they use their defined contribution assets to defer Social Security rather than to supplement Social Security, they can match their income between ages 62 and 70 and have considerably more money after that. By age 80, the advantage is approximately \$1,000 per month (from Figure 3). The survivor of the couple will have a roughly thirty percent higher income. Even the couple's children are likely better off. That is because elderly survivors often become dependent on their children. This is much less likely to happen if the survivor has thirty percent more income. For this couple, the deferral strategy simply dominates the prevalent

strategy of starting Social Security immediately. The gain in the expected present value of income in this case is more than \$200,000.

In *Efficient Retirement Design* we go through more situations. The general message, however, is that Social Security deferral is a good deal for most people. We have looked at people with far less in terms of assets than the couple just described. We have looked at the matter by race, by education and by health. Just to illustrate how robust the deferral strategy is, we find that a single male smoker with two times the average mortality rate for his age still should defer from 62 to 65. A woman with that same 2X mortality (typical of smokers), should defer to 68.

Our conclusion is that most people should be using at least a substantial part of their retirement savings to defer Social Security rather than supplement it. Almost no one is getting it right. It may be that people simply don't trust that Social Security will still be there if they defer. If that is what they think, I feel that they are exaggerating the likelihood of Social Security cutbacks for people currently of retirement age. I have never seen a Social Security reform proposal that did not protect people 55 and over. The politics of cutting the benefits of current

beneficiaries or people close to retirement age are such that I actually think these benefits should be treated as quite safe. On the other hand, the terms of Social Security probably will be substantially altered for those born after 1965.

There is more research to be done about why people appear to be leaving so much Social Security money on the table by not taking advantage of the tremendous deal offered for deferral and summarized in Table 1. Meanwhile, I think that baby boomers should consider the Social Security deferral strategy financed, at least partially, by defined contribution asset withdrawals.

Note: John B. Shoven is the Wallace R. Hawley Director of the Stanford Institute for Economic Policy Research. The research behind this Policy Brief and the Efficient Retirement Design booklet was supported by the Alfred P. Sloan Foundation and the Social Security Administration. John B. Shoven is on the board of directors of Financial Engines, a company that gives investment assistance and advice to retirement savers. This work reflects the best efforts of Sita N. Slavov and John B. Shoven and was not influenced by any of these connections.

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