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## To Defer or Not To Defer (SPIA or DIA)?

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*A deferred income annuity (DA) is cheaper than an immediate income annuity (IA), but an IA generates more income than a comparable risk-free investment, writes our guest columnist, the first editor of the Journal of Retirement and a former International Monetary Fund official.*

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Annuities are curious instruments. The garden-variety annuity is the immediate life annuity—hereafter, the IA. Beloved by most economists, it is ignored or distrusted by most everybody else. As this article will show, it is actually the cheapest way to generate secure retirement income, provided the retiree can accept the illiquidity entailed by an IA's upfront purchase requirement.

The IA in its simplest form is a contract with an insurance company, in which, in return for a fairly hefty upfront payment, the insurance company pays the annuitant a monthly sum after the contract is signed that lasts as long as the annuitant does. If payments start at age 66, and the annuitant dies at age 67 (and if the contract has no cash refund or period certain feature), that's it; the payments end. If, on the other hand, the annuitant lives to age 100, or for 35 x 12 months, the insurance company is stuck with 420 monthly payments.

The IA has never been popular with Americans, even those with enough money to be able to buy one. In part, this is because an IA does not come cheap. For a guaranteed monthly income of only, say, \$800 per month, a 65-year old male would have to pay about \$143,000 today (or \$156,000 if the contract has a cash refund feature). Since the life expectancy of a 65-year-old male these days is about 20 years, an insurance company cannot count on the premature death of its annuitants to lower the cost of its contingent liability.

The lack of popularity of IAs means that for most Americans, the only guaranteed lifetime income they will receive in their advancing years is the benefit that Social Security provides, which pays out like an IA, but is also indexed to consumer prices. Social Security is not only the only source of lifetime income for older Americans; for the majority, its present value (if it were possible to capitalize the flow of Social Security payments) would account for most or much of their wealth.

IAs should have a real appeal to many older Americans, since the greater the share of wealth they represent, the less an older American has to worry that his or her retirement nest egg will run out if she lives to an advanced old age. IAs have a *survival-contingent* annual yield that is higher than that of a more conventional financial instrument.

To grasp this, consider that an IA is like a contingent bond: an investor making a choice between an instrument paying a given sum that continues to have value after her death and one that simply stops paying at that point, will pay more for (i.e., it will cost more than) the first type of instrument. But for *as long as the annuitant stays alive*, she will get a higher return on the IA. This differential increases with the starting age of the annuitant, because life expectancy declines with that age.

But what about the price of an IA, and the pain of giving up access to more than \$100,000? The question arises as to whether these are stumbling blocks. Enter the IA's less well-known cousin, the deferred annuity (DA), which typically doesn't begin to pay out until the owner reaches an advanced age, like 81.

A stream of income of \$800 per month beginning at age 81 when purchased at age 65 in the form of a DA might cost only about \$35,000 (or \$43,000, if there's a cash refund feature). That gives the retiree protection against late-life poverty while providing about \$100,000 more liquidity. Thus, the same survival-contingent income stream (\$800), with no payments until age 81, costs much less than an IA, because of the smaller likelihood that the insurance company will have to pay out anything. If death occurs before age 81, there is no payment whatsoever, and the odds that payments will continue for many years even if the annuitant makes it to age 81 are not great.

So, it might appear that a DA gives us the best of both worlds: protection against poverty in advanced old age, and liquidity in the meantime. But that which glitters is often iron pyrite. Let's make the reasonable assumption that our hypothetical annuitant also wants a risk-free income of \$800 per month over the period from age 65 through age 80. If not provided by an annuity, it will have to be provided by a more conventional financial investment.

Assuming a rate of return on risk-free investments of three percent, and not taking account of the cost (including profit margins and sales commissions) of the conventional investment the upfront cost of this 15-year income stream will be about \$115,000.

It can be seen—and will always be true—that the cost of an IA that provides income for life starting at age 65 will be less than the sum of the cost of the DA and the conventional

investment.

Let's do the math. Remember we are assuming, to avoid an apples and oranges comparison, that the conventional investment is risk-free, and therefore has a lower *expected* return than an investment like a S&P500 mutual fund. (We are also working with the actuarial values of both annuities and ignoring the costs of either type of investment. This should not affect the basic conclusion of the comparison.)

Working in years, not months, and letting  $r$  stand for the risk-free rate of interest,  $P_i$  stand for the probability of survival from age 65 to age  $i$ ,  $FTCA$  stand for the fixed-term contingent annuity,  $DA$  stand for the deferred annuity, and  $CI$  stand for the conventional investment, their costs per dollar of income are given by:

$$FTCA = P_{66}/(1+r) + P_{67}/(1+r) + P_{68}/(1+r)^2 + P_{69}/(1+r)^3 + \dots + P_{80}/(1+r)^{15}$$

$$DA = P_{81}/(1+r)^{16} + P_{82}/(1+r)^{17} + P_{83}/(1+r)^{18} + P_{84}/(1+r)^{19} + \dots + P_{100}/(1+r)^{35}$$

$$CI = 1/(1+r) + 1/(1+r)^2 + 1/(1+r)^3 + 1/(1+r)^4 + \dots + 1/(1+r)^{15}$$

The cost of the IA is the sum of  $FTCA$  and  $DA$ . This has to be less than the sum of  $CI$  and  $DA$ , because all the  $P$  terms are less than one. In other words, if you set costs aside, the value of the contingent annuity must be less than the cost of the conventional investment. You can't get a higher return on the conventional investment without taking more risk. And if you take more risk, you lose the predictability that comes with a guaranteed income stream.

Focusing on the low price of a  $DA$  can distract us and make us forget that if we want a given income when we are really old and grey, we might also want the same income during the first part of our golden years.