

# IS ADVERSE SELECTION IN THE ANNUITY MARKET A BIG PROBLEM?

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## Introduction

An annuity provides an individual or a household with insurance against living too long.<sup>1</sup> In exchange for a one-time premium payment, the insurer agrees to make periodic payments to the insured for life. In theory, annuities seem like a valuable product for many retirees given an uncertain date of death. However, in practice, few people purchase annuities. Researchers who have studied this puzzle have concluded that annuities are not "actuarially fair," that is, for someone with average life expectancy they provide only about 74 to 85 cents in income for every dollar in premium payments.<sup>2</sup>

Two factors make annuities actuarially unfair for the average person. First, insurers have to charge enough to cover their own costs and earn a profit. Second, the people who buy annuities tend to live longer than those who do not. These longer-lived people are more costly for the insurer, so their presence in the market raises the price for everyone, a situation known as "adverse selection." Previous research has concluded that such adverse selection reduces premium payments by 4 to 10 cents per dollar.<sup>3</sup>

This brief takes another look at adverse selection by examining only the group of individuals who are likely to consider buying an actuarially fair annuity, subject to a deduction for insurance company admin-

istrative costs. It concludes that these "potential annuitants" tend to live considerably longer than average and thus would receive a better deal from an annuity than the average person. According to this analysis, the impact of adverse selection on annuity prices is only about half as great as previously estimated, or about 2 to 5 cents per dollar.

## What Is Adverse Selection?

In most insurance markets, insurance companies attempt to relate premiums to the probability and likely amount of a claim. In the annuity market, individuals are certain to make a claim, unless they die before the first payment is due, but the amount of their claim depends on how long they live. So, for insurers, a key factor in determining the price of an annuity is the expected lifespan of their potential customers. If the insurer considers the whole population to be potential customers, they will focus on the average lifespan of this population when setting prices. However, if the individuals most likely to buy annuities tend to live longer than average, insurance companies will lose money as a result of this "adverse selection." To avoid losing money, these companies must charge higher prices, which further discourages those who expect to die sooner from buying.

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In theory, the problem of adverse selection could be avoided if insurers were able to effectively assess the risks of each customer and charge different prices for annuities based on the customer's level of risk. However, in practice, insurers are generally unable to obtain this information and so they charge the same price to everyone.<sup>4</sup> This situation hurts the low-risk people, because they are dissuaded from buying a product that the insurance company could profitably sell to them at a price they would be willing to pay if the high-risk people were not in the market.

## What Is the Impact of Adverse Selection?

An annuity is considered actuarially unfair if the expected value of the stream of payments is less than the premium paid.<sup>5</sup> Previous research has demonstrated that annuities are actuarially unfair to someone with population average life expectancy — they provide only about 74 to 85 cents in payments for every dollar of premium payment.<sup>6</sup> There are two reasons for this outcome.

The first reason is that insurance companies have to pay administrative costs and earn a profit. These costs amount to 5 to 15 percent of the purchase price of the annuity.<sup>7</sup>

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## Annuities are expensive for individuals with average life expectancy.

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The second reason for actuarial unfairness is the presence of adverse selection. One common way to calculate the impact of adverse selection is to compute the level of actuarial unfairness faced by the population as a whole and compare it with the level of actuarial unfairness faced by the people who actually buy annuities.<sup>8</sup> The result tells you how much worse a deal people with population average mortality are being offered relative to the people who actually buy annuities. One study found that the difference in expected present values was typically in the range of 4 to 10 percent.<sup>9</sup>

## The Impact of Adverse Selection — A Second Look

Adverse selection only imposes a cost on short-lived people if they would have bought annuities in its absence — otherwise it is irrelevant. Therefore, it is useful to consider what factors other than perceived value for money might affect the decision to purchase an annuity. For example, various researchers have identified a strong relationship between wealth and mortality.<sup>10</sup> Households with little or no financial wealth are likely to die sooner than the remainder of the population. But these high mortality households will never buy annuities whatever the price, if for no other reason than that they have little or no wealth to annuitize. A better estimate of the impact of adverse selection on annuity prices would be obtained by comparing the level of actuarial unfairness faced by people who actually annuitize with the level faced by "potential annuitants" — that is, the people who would have annuitized if adverse selection had not increased costs.

## Who Are the Potential Annuitants?

People are unlikely to annuitize if they have few financial assets, or if they already have much of their wealth annuitized. Therefore, as described below, constructing a pool of potential annuitants requires eliminating these groups.

Lack of financial assets is an obvious reason why someone would be unlikely to purchase an annuity. One recent study analyzed the financial wealth of households turning 65.<sup>11</sup> It sorted the households into total wealth deciles (or tenths), and then calculated the mean financial wealth of households in each decile. Married couples in the bottom wealth decile have financial assets averaging only \$3,804 — so these households are highly unlikely to annuitize. Even in the fourth wealth decile, the mean is only \$46,462.

In addition to having few assets, a second reason why low- and middle-income households may not annuitize is that they may not sufficiently value the longevity insurance it provides. Households already have a lot of longevity insurance through Social Security, which pays benefits for as long as the household survives, and defined benefit pension plans, which typically also provide lifelong benefits to at least the retired worker and sometimes a surviving spouse as well.

TABLE 1. COMPOSITION OF HRS HOUSEHOLDS' BALANCE SHEETS AT AGE 65 — COUPLES (IN 2000 DOLLARS)

Type of Asset	Lowest Decile	Fifth Decile	Highest Decile
Annuitized Wealth	\$152,314	\$402,198	\$819,387
Social Security	142,111	260,138	301,920
Defined Benefit Pensions	10,203	129,641	394,919
Total Financial and Retirement Wealth	155,911	479,659	1,672,159
Annuitized Wealth as % of Financial and Retirement Wealth*	94%	83%	49%

Source: Dushi and Webb (2004).

\*Note: This percentage is calculated using the average of the annuitized percentages of each household in the wealth decile, a number that does not necessarily equal the annuitized percentage of mean wealth in the decile.

Table 1 shows for the lowest, fifth, and highest deciles the proportion of each household's wealth that has been compulsorily annuitized through employer pensions and Social Security. Among married couples, mean annuitized wealth exceeds 83 percent of total financial wealth for the bottom half of households (see Table 1). The percentage declines as wealth increases, but is still 49 percent for the top wealth decile. The figures for single men and women are even higher and show a similar pattern. So most households, particularly the less wealthy, already have a lot of longevity insurance, and their willingness to pay for additional amounts through the annuity market may be quite limited. If these households would decline an actuarially fair annuity, subject only to a deduction for insurance company administrative expenses, they cannot really be regarded as potential annuitants.

So how limited might households' willingness to pay for further annuitization actually be? Economic theory suggests that, in addition to how much longevity insurance the household already has,<sup>12</sup> the value a household places on further annuitization depends on:

- its risk tolerance;
- its beliefs regarding its life expectancy;
- the insurance company's costs as they are reflected in the price of the annuity;
- the household's marital status;<sup>13</sup> and
- its age.

Accounting for these factors, this analysis found that — even assuming no adverse selection — plausible levels of insurance company administrative costs would deter households over the bottom three quarters of the wealth distribution from annuitizing.<sup>14</sup> Thus, "potential annuitants," defined as people who would annuitize if offered what was for them a fair annuity, less a deduction for insurance company administrative costs, are concentrated in the top part of the wealth distribution.

## Comparing Actual with Potential Annuitants

Given that potential annuitants may have lower mortality than the population as a whole, an alternative measure of the impact of adverse selection could be based on the mortality rates of similarly wealthy non-annuitants, the "potential annuitants."<sup>15</sup> These potential annuitants have higher mortality than the people who actually buy annuities, suggesting that some adverse selection does occur. But they also have much lower mortality than the population as a whole.

As a result the expected present value of annuities for potential annuitants will be greater than their expected present value to the population as a whole. This analysis finds that adverse selection only increases annuity prices to potential annuitants by 2 to 5 percent rather than the 4 to 10 percent suggested by previous research. Given this small impact, adverse selection will have only a limited effect on the likelihood that a potential annuitant will actually annuitize.

## Conclusion

Households entering retirement face a dilemma. If they spend their wealth too rapidly, they risk outliving it, whereas if they spend it too slowly, they forego valuable consumption opportunities. Annuities offer a solution to this dilemma.

Adverse selection has the potential to cause private annuity markets to function poorly. At the extreme, one can arrive at a position where every individual is willing to pay more than an actuarially fair premium, but the market price is so high that no one buys. The ability of households to purchase longevity insurance at an affordable price will depend in large part on the degree of adverse selection in the market.

At present, most households have the majority of their wealth in compulsorily annuitized form through Social Security and defined benefit pensions. The value of further voluntarily annuitization is, for most households, correspondingly small. However, two factors might change the picture in the future by reducing the share of compulsory annuitization: 1) the displacement of defined benefit by defined contribution plans (e.g. 401(k)s) in which annuitization is almost never compulsory, and 2) reductions in Social Security benefit levels due to already enacted changes (e.g. the rise in the normal retirement age) and potential changes to address the program's long-term financial shortfall.

The research summarized here suggests that adverse selection has a relatively small impact on today's annuity market. And the impact may be even more limited in the future as the demand for voluntary annuitization could increase.

## Endnotes

1 This brief focuses on immediate annuities which provide either no death benefit or a limited benefit, for example, a guarantee that payments will be made for a minimum number of years. The essential characteristic of immediate annuities is that wealth is transferred from the dead to the living, and it is these mortality credits that make it possible for them to offer a higher return than similar unannuitized investments. The vast majority of annuity sales are of so-called deferred annuities. In contrast to immediate annuities, these typically provide a death benefit, and in consequence, the income on such products is not enhanced by mortality credits.

2 See Mitchell, et al. (1999). The precise degree of actuarial unfairness depends on the rate of interest used to discount the income stream and, to a lesser extent, on the type of the annuity.

3 One can infer the degree of adverse selection by comparing the value of an annuity to someone with annuitant mortality with its value to someone with population average mortality. An analysis of the calculations in Mitchell, et al. (1999) shows that this measure of adverse selection is influenced by age, gender, policy type, and taxation assumptions.

4 This lack of differential pricing is not absolute. For example, the United Kingdom has a small but growing market for impaired life annuities — medically underwritten annuities for people in poor health.

5 One can calculate this expected present value by discounting the income stream by the sum of (a) a rate of interest and (b) the probabilities that the individual is alive to receive each payment, and then summing the series. One can express the expected present value of the payments as a percentage of the premium paid. The smaller the percentage, the more actuarially unfair is the annuity.

6 Mitchell, et al (1999).

7 These estimates of administrative costs are inferred from the estimates in Mitchell, et al. (1999) of the value of annuities to people who actually buy them.

8 The computation of actuarial unfairness for the whole population discounts the annuity payments using population survival probabilities while the calculation for those who actually buy annuities uses annuitant survival probabilities.

9 Mitchell, et al. (1999).

10 See, for example, Attanasio and Emmerson (2003), Attanasio and Hoynes (2000), Hurd, McFadden and Merrill (2001), and Menchik (1993).

11 Dushi and Webb (2004). This study used data from the 1992-2000 waves of the Health and Retirement Study.

12 Given reasonable assumptions about household preferences, what really matters is the proportion of the household's wealth that is pre-annuitized. The greater that proportion, the smaller will be the value of further annuitization.

13 Married couples will value longevity insurance less highly than singles because couples are able to pool longevity risk. For a fuller explanation, see Dushi and Webb (2005).

14 Dushi and Webb (2005).

15 More precisely, they weight mortality rates by the probability of annuitizing.

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