

ANNUITIES: THE GOOD AND THE BAD

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Abstract

This paper delves into the world of annuities and explores the problem of the annuity puzzle. Annuities are a retirement product that pay out a fixed stream of payments to an individual as opposed to a lump sum payment. However, this type of product is becoming increasingly unpopular as less individuals are choosing to invest in them. This paper looks at both the good and bad aspects of annuities in an attempt to answer whether or not annuities are a good investment option for individuals. The paper also offers a solution as to who should be investing in annuities and what changes can be made to annuity products in order to make them a better investment option for individuals.

Introduction

The annuity puzzle is a phenomenon that economists have struggled to understand for years. The puzzle referring to the fact that despite economic theory suggesting that individuals would be inclined to invest in annuity products, a stable and relatively risk free investment, individuals actually tend to avoid investing in annuities, making them an unpopular product. However, despite the many pros that exist in an annuity, there also exist many cons. Understanding both of these aspects of annuities can allow economists and individuals to better understand the annuity puzzle and reframe the ways annuities are sold in order to make them a more popular investment option.

Annuities are financial products that pay out a fixed stream of payments to an individual. This type of asset is typically used as an income stream for retirees as opposed to a lump sum payment. Annuities are designed to be a reliable means of securing a steady cash flow for an individual so that they have a source of income during their retirement years. In this way, they help to alleviate fears of longevity risk. This paper will look further into annuity products to determine whether or not they actually are a good option to invest in.

There are several different types of annuities that differ in their structures and can have various factors. They are structured according to a wide array of details and factors. Generally, they come in either fixed or variable payments. Fixed annuities provide regular periodic payments to the individual, while variable annuities allow individuals to receive greater future cash flows if investments of the annuity fund do well and smaller payments if they do bad. Variable annuities are seen as less stable cash flows but reap higher benefits of strong returns. Annuities are seen as an illiquid type of investment. (See appendix for definitions).

The Good

Good Decumulation Tool

Many individuals tend to struggle with allocating their assets once they reach retirement, a problem that annuities are able to solve. Annuities are a popular choice due to their value during the decumulation stage of wealth in an individual's retirement. This tends to be the biggest reason that individuals choose to invest in annuities. Saving for retirement is a common and substantial part of an individual's savings. However, this gives way to the problem of increased saving during the accumulation stage versus the problem of decumulation of assets, where individuals are unsure how to draw their assets. The issue with decumulation is individuals do not want to draw too much of their assets causing them to run out yet do not want to save too many assets causing them to have unused assets at the time of their passing. The key is for individuals to draw down from these assets in an optimal way for the remainder of their

lifetime. Firstly, the issue is that solving the decumulation problem requires an estimate of life expectancy for the individual. However, finding this information is uncertain and non-concrete. Secondly, many circumstances and uncertainties outside of one's income can create different needs for income requirements during retirement. These circumstances are also uncertain and unable to be anticipated ahead of time. Thirdly, psychological differences in perceived fairness, feelings of ownership, loss aversion, and life expectation are strong factors of how individuals approach the decumulation decision (Shu, Zeithammer, & Payne, 2018). These problems can be solved with the use of annuities as a decumulation tool.

Converting some portion of retirement savings into a life annuity allows for natural decumulation. A life annuity allows an individual to swap a lump sum of money for a guaranteed stream of payments that are paid out through that individual's lifetime. This allows assets to be converted into an income stream that is similar to a defined pension plan. Life annuity plans allow for implied insurance against outliving an individual's assets and claim to give a higher annual return as compared to self-managed accounts. This makes these a great asset class for those expect to live longer, are high risk averse, and want to avoid uncertainty in future income. Life annuities have higher returns because the assets from contributors are pooled together to support the income of the annuity holders who are living. Life annuities also have their own disadvantages. Primarily, since the assets are transferred to the issuing company, they cannot be transferred to beneficiaries or be pulled out in case of an emergency, making them a less liquid product. Some companies have combatted these by introducing options such as period-certain guarantees, deferred start dates, annual income increases that compensate inflation, and joint products for married couples. However, these solutions carry a financial tradeoff. These consumer-oriented options have higher prices, so an individual would have to be willing to pay more in exchange for these benefits. "Life annuities eliminate 'longevity risk'—the risk of outliving one's assets—while also offering a mortality premium on returns, due to the fact that some people in the annuity pool will die early" (Shu, Zeithammer, & Payne, 2018, p.4)

Protection Against Inflation

When looking at investment options, many investors look at what will protect their assets from future inflation. A variable annuity is a product that many companies have created to combat this. Variable annuities have premiums that are invested in common stocks as opposed to conventional annuity premiums which are instead used to purchase debt based securities. This means that variable annuities have benefits that fluctuate with changing stock prices and dividend declarations, while conventional benefits continue to be payed out in predetermined fixed amounts. The purpose of making annuities variable is to protect against the loss of purchasing power by hedging against inflation. Fluctuation of the markets is the key to this hedge, hence why companies may choose to do this as opposed to investing in traditional debt securities. These debt securities offer certain and guaranteed outcomes, however they are fixed interest rates. Instead common stocks will fluctuate with business conditions, price levels and costs of living, allowing for greater yields. (E.A.M., Jr., 1957). This is a great way for investors to know that their assets will reflect market prices and give market returns, but still allow them to received monthly steams after retirement.

Fitting Certain Conditions

There are certain conditions that an individual can fulfill that would make it so that full annuitization could actually benefit them. These conditions go back to one of the most transformative academic cases on annuities that was published in 1965 by Yaari. His work brought annuities to a new perspective and they have played a central role in economic theory since. His theory claimed that given that an individual satisfied certain assumptions, they should fully annuitize all of their savings to maximize their savings. These assumptions being that they were utility maximizers with intertemporally separable utility faced no uncertainty besides time of death, had no bequest, and purchases fair annuities. However, in their research, Davidoff, Brown, and Diamond present conditions for full annuitization that are less restrictive than those posed by Yaari. The authors argue that by comparing a one-year CD to an annuitized asset, the annuitized asset is seen as a better asset. This is because a CD will pay a higher interest rate at the end of the year; however, this is conditional on living and pays out nothing at the end of the year if the individual dies. In this case, we are now attaching no value to wealth after death, the same as what exist in annuities, so we can make a comparison to annuities since they are matching assets. The dominant comparison of these assets relies on the identical liquidity in the annuitized and non-annuitized assets (Davidoff, Brown, & Diamond, 2005).

Fitting the following conditions would allow an individual to maximize their wealth by pursuing full annuitization. For full annuitization to be an optimal option requires the conditions that the individual has no bequest motive, and that annuities pay a rate of return to surviving investors that is greater than the return on conventional assets of matching financial risks. Under these conditions, full annuitization can be seen as a favorable way to invest assets. This is because “if there is no future trade once portfolio decisions have been made and if there is a set of annuities with payouts per unit of investment that dominate the payouts of some subset of bonds that are held, then a welfare gain is available by the subset of bonds and replacing the bonds with the annuities” (Davidoff, Brown, & Diamond, 2005, p.1578). This welfare gain is made up from two parts. The first part is the savings while financing the same consumption bundle as when there is no annuitization. The second part is the savings from adapting the consumption bundle to the change in prices. Therefore, annuitization will give back higher returns than those of bond holders (Davidoff, Brown, & Diamond, 2005). While full annuitization may not be a favorable option for all individuals, it can strongly benefit those who fall under the assumptions and allow them to maximize their welfare gain.

Reframing Retirement

Another benefit to annuities is that they reframe the way traditional retirement plans are framed to consumers, allowing them to more easily digest their assets. Rather than seeing the benefits as a single lump sum account, individuals will see it as a steady income stream. This allows them to see each payment as a pension check- or deferred compensation for work done. Annuity options are seen as safe and stable investments, especially when markets are turbulent. Annuities are an investment opportunity that have low volatility risk. Another big advantage to investing in annuities versus other assets is that there is lack of default risk (Kojien & Yogo, 2012). While annuities can be seen as costly, different products can combat this. For example, deferred annuities are an option that can help to reduce cost. This is because group annuities are less costly than those purchased individually since there is greater bargaining power (Iwry & Turner, 2009). This bargaining power allows for buyers to get cheaper deals from sellers.

The Bad

High Variance

A major problem of investing in annuities is the high variance between returns, suggesting that they are not a fair product when it comes to returns. Research done by Kojien and Yogo looked at both term and life annuities. They observed 870 semiannual observations on 10 year term annuities dated from January 1989 to July 2011. Their data found that the average markup on term annuities falls in maturity is consistent with the presence of fixed costs. Data also found that the price of these annuities varied significantly across different insurance companies, with a standard deviation of 4.2%. The researchers looked at 13,675 monthly observations on life annuities dated from January 1989 to July 2011. This data found the average markup to be 7.9 % and the standard deviation amongst different insurance companies to be 7.6%. Having such high markups on the product makes it an unattractive investment option for investors since they could choose to invest in products with lower markups. The high standard deviation between companies suggests high variation which means that companies are often inaccurately pricing the product. Their data continues to show that there is a time-series variation in average markup on term annuities at various maturities. “This variation implies that insurance companies do not change annuity prices to perfectly offset interest-rate movements” (Kojien & Yogo, 2012, p.8).

Similar data was found in life annuities with markups even reaching a -19%. *Figure 1* shows a cross-sectional relationship between changes in annuity pricing from May 2007 to November 2008 against four measures of balance sheet stocks at fiscal year-end 2008. Observing this figure, it can be seen that most insurance companies reduced the prices of annuities during this period. This is interesting because at this time interest rates were falling which implied rising actuarial values. Comparing the different graphs in this figure also shows us that price reductions were larger for companies with lower asset growth, higher leverage ratio, lower risk-based capital relative to guideline, and higher ratio of deferred annuity liabilities to equity. Deferred annuity liabilities, which had unprofitable guarantees during the financial crisis, showed to be an important source of balance sheet stocks for companies that were active in the market. Since price reductions were larger for companies that had larger balance sheet shocks, price reductions can be explained by financial frictions. However, even companies that were relatively unaffected reduced prices or kept them constant, suggesting that financial and product market frictions could be cause for the price reductions. Financial frictions are a cause of leverage constraint on the value of assets relative to statutory reserves. Product market frictions are a result of search frictions that make future demand increases in statutory capital through things such as higher ratings (Kojien & Yogo, 2012). Companies combat this by reducing prices, sometimes even below the annuity’s actuarial value, in order to relax the leverage constraint or boost future demand. This shows that often insurance companies act in their own interest and will price products for their own incentives as opposed to those of their clients. Going back to *Figure 1*, in the cross-sectional diagrams, it can be seen that the price reductions are higher for companies with larger shadow cost of capital. The figure supports this assertion because if companies that suffered larger balance sheet shocks had higher shadow costs, they would be more constrained or more willing to boost future demand.

Another study conducted by Mark Greene, John Neter, and Lester Tenney found similar results that showed variability. In this study, “current basis” represents annuity rates and rents which would result if current (1975) mortality and investment experience of the insurer continues into the future. “Guaranteed basis” represents the minimum levels guaranteed by the

insurers. One of the aspects of annuities examined in the study was the variability of annuity rents. It was found that there is a considerable amount of variation in annuity rents and that they varied more on a current basis than a guaranteed basis. The table in *Figure 2* shows these variations. One of the indicators of the variation comes from examining the ranges of values. Looking at column 5, it can be seen that on a guaranteed basis, the first-ranking insurers pay annuity rent of \$289.42 monthly as compared to the lowest-ranking insurer that only pays annuity rent of \$177.73 monthly. Standard deviation on a guaranteed basis is 22.46 and on a current basis is 56.71. This shows a high level of variation between different annuities. Therefore, it highly impacts a consumer as to what insurer they pick and consumers must shop around in order to make sure they are actually choosing an annuity that gives of fair returns. The variability of rents stems from the variability of rates and investment accumulations. The rent, or the amount that an individual receives from an annuity, is the product of annuity rate and investment accumulation. According to the study, investment accumulation was a more significant factor in this variation. The data found that standard deviation of annuity rates was only .26 on a guaranteed basis and .50 on a current basis. However, standard deviation of investment accumulation was 2369 on a guaranteed basis and 5303 on a current basis (Greene, Neter, & Tenney, 1977). *Figure 3* summarizes the standard deviations as well as the coefficients of variation. The findings show that annuity rates tend to vary the least and investment accumulation vary more, leading to annuity rents that vary a significant amount and the most, both on a guaranteed as well as current basis. These findings suggest that an individual is best off by finding an insurer with the best investment experiences, as this seems pivotal in producing high performance on annuity rents (Greene, Neter, & Tenney, 1977).

Complexity

One of the main problems with annuities is that they are complicated and hard to understand, making it unappealing for individuals to want to invest in them. For the average person, the concept and terminology surrounding annuities can be very complex. This is good for the seller but bad for the purchaser since this gives sellers an opportunity to trick consumers into buying annuity products that may not necessarily benefit them. Annuities can also be expensive. This is because of the seller having mortality charges and expensive investments in the line-up. Finally, annuities can be restrictive with heavy redemption penalties. Many annuities also do not give payments to bequest so this is very restrictive to the average consumer. Indexed variable annuities are sold on the terms that they will do as well as the markets plus the consumer will have downside protection, making them have “zero costs”. However, this is untrue as firms make money by taking the dividend income an annuitant would have received on a regular account. Dividend income can make up 2% or more of annual returns. In this case, the upside return potential is decrease in exchange to have a little bit of support in the downside to protect the investor against risk. However, the investor is losing in upside returns. Annuity investors are relying on the financial strength of the provider. There is default risk since if the provider goes under, funds may be unrecoverable. Tax consequences are also an important consideration when purchasing annuities. Finally, selling annuities can be very difficult and cause for conflict of interest. Essentially, annuities are a dangerous asset to buy since often advisors who sell annuities take commission off products that they sell, so they are not fiduciaries (Kaplan, 2018).

Lack of Control

Another issue with annuities is that there is a lack of control over annuities, making them a less popular option. Relatively few individuals and households in the United States choose to annuitize their assets. In fact, in defined contribution savings plans, only 10% of individuals annuitize their savings for retirements. This resistance is referred to as the “annuitization puzzle” since many economists argue that buying annuities should be seen as favorable since it makes sure an individual would not outlive their assets. However, surveys done by Beshears and more help to answer why annuities are an unfavorable investment option. The authors took two large surveys in which they offered hypothetical annuitization choices to individuals aged 50-75. This include bequest motives, uncertain healthcare expenses, high prices for annuity products, and government plans. The high prices of annuities partially come from adverse selection which is the concept that those who have longer life expectancies are more likely to buy annuity products. Government plans include Medicaid and Social Security, which already act to give a means of income, causing consumers to not want to purchase these products on their own. They found that one of the biggest issues people have with annuities is not having enough income, lack of flexibility in spending, and fear of default risk (Beshears, Choi, Laibson, Madrian, & Zeldes, 2012). They also found that partial annuitization is preferred to full annuitization. The main issue they found was the lack of flexibility and control over annuities. Annuities do not offer control over payout stream year by year nor do they allow for control over asset allocation. Access to partial annuitization also seems to be a big obstacle for most investors.

When to Buy Annuities

Overall, annuities are not seen as the best investment option for the average individual. Primarily, they are extremely complicated investment options. They also tend tie up your money and it is almost impossible to withdraw your money from that investment. Annuities also charge unclear and high fees and offer low control over investments. Despite this, in certain cases annuities can be a good option for an investor. CNN Money suggests only consider an annuity after having maxed out other tax-advantaged plans such as 401(k) and IRA plans. After that, if an individual has additional money to save for retirement, it may be a good idea to invest in a tax-free growth annuity. Annuities allow for safe, long-term growth that will pay out as an income. One of the main reasons to invest into annuities is to hedge against longevity risk. If this is something an investor is concerned about, annuities are a good option. This makes annuities a good investment for those who have low risk tolerance, don't want to worry about outliving their savings, and want a zero-maintenance investment strategy.

How to Make Them Better

Although annuities have several shortcomings, they still have potential for improvement. One of the primary reasons not to buy an annuity is that they tend to have fees that come with them. This is because annuity products don't act as fiduciaries and often pay out large commissions. It is not uncommon to have annuity products paying out commissions of 10% to brokers who are selling them (Frankel, 2018). Annuity products could be greatly improved if this aspect of them could be fixed. Potentially passing regulation or creating laws against having high commission on these products would make it so that brokers would not be as incentivized to sell these products at high fees. Restructuring these products so that they are held to a fiduciary standard would make it so that sellers would have interest in the client as opposed to their own interest which would help reduce the fees and potentially sell more annuity products. Another

big issue with annuities is high surrender charges. Annuities are a product that tie up one's money once they invest it. Once an individual has bought into an annuity, they are unable to withdraw their money before retirement without facing severe charges. This makes it an undesirable product to many individuals. Having lower surrender fees could make this product more appealing. Another way to mitigate this is to allow individuals to sell their annuities to another individual who have the same expected life expectancy. Another factor into the negatives of an annuity is the effect of purchasing power and inflation. For example, in the United States, a decline in the USD or a trend of a falling dollar would make purchasing a fixed-dollar annuity an unfavorable investment (E.A.M., Jr, 1957). In order to combat this, investors can benefit by investing in variable annuities as opposed to traditional annuity products. Annuities are structured so that at your time of death, they will stop paying out any income. This can be a concerning aspect for many people who have a bequest. There is fear of dying early, and losing all your savings and being unable to give it to a bequest. If annuities were to include riders or terms in which an individual could get lower payout streams in exchange for guaranteed payouts to a bequest till a certain age even if they were to die, that might make the annuity seem like a better investment option. This could leverage people's fears that they would lose out on their savings. Finally, annuities are seen as a very complex investment that most individuals have trouble understanding. Increasing common literature on this type of annuity could make it a more digestible investment opportunity for the average investor. Furthermore, given the high variance that was found between different annuity products and different companies, it becomes clear that there are certain companies and insurers that offer better deals. Making this information more accessible and easier to find would make it much easier for individuals to choose what annuities to invest in. For example, creating a website that does a comparison and contrast of all products could make it so that consumers are more easily able to identify what products are right for them.

Appendix

- Annuity: financial product paid out in a fixed stream of payments to an individual
- Fixed annuity: regular periodic payments
- Variable annuity: potential to receive greater or smaller cash flows dependent on performance of investments
- Accumulation: period in a person's life in which they are saving for retirement
- Decumulation: a period in a person's life in which they are deploying their assets for use during retirement
- Annuity rent: a payment made to an annuitant from his/ her annuity; amount received by an annuitant
- Longevity risk: the risk of outliving one's assets
- Shadow pricing: the assignment of a dollar value to an abstract commodity that is not ordinarily quantifiable as having a market price, but needs to be assigned a valuation to conduct a cost-benefit analysis

Figure 1

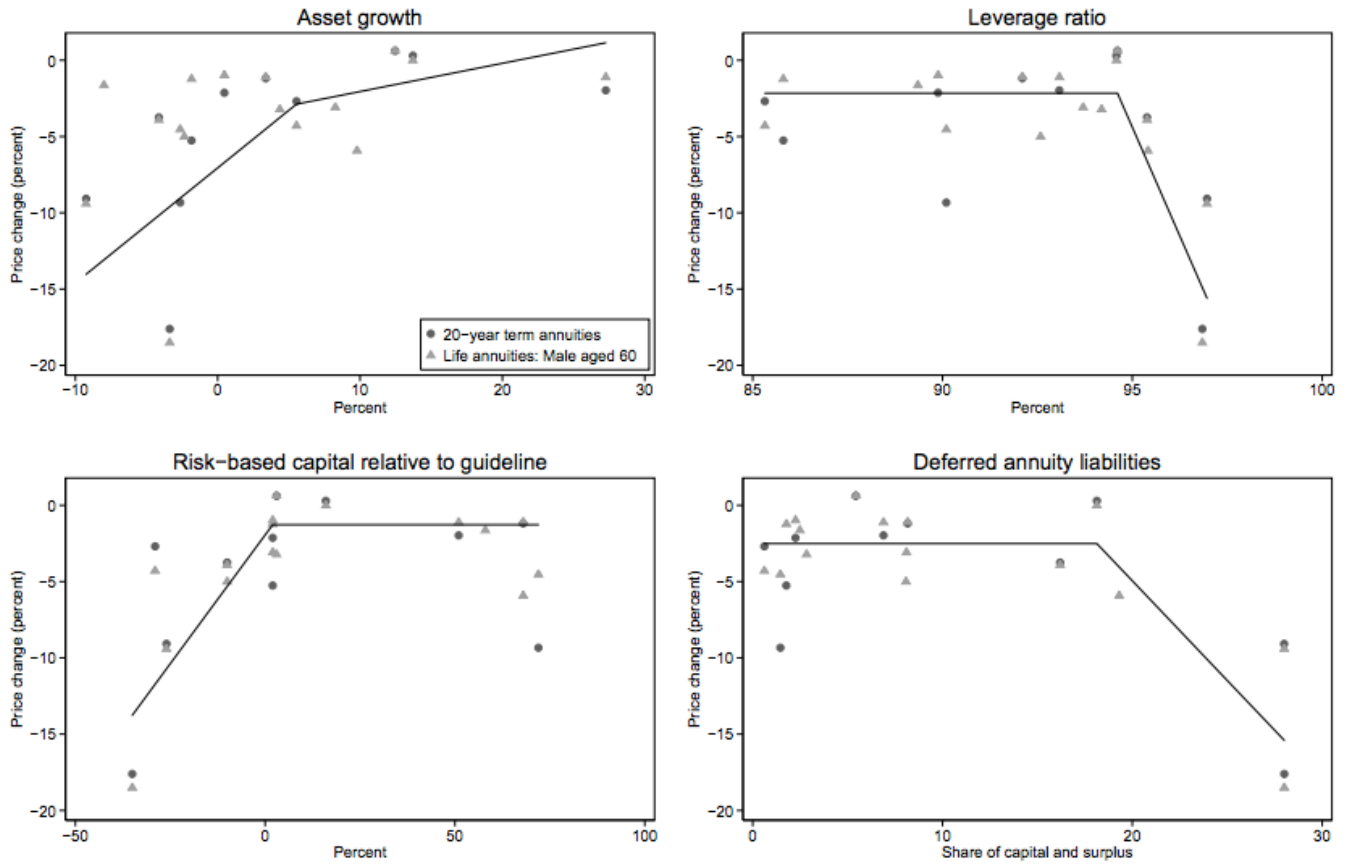


Figure 1: Relation between Price Changes and Balance Sheet Shocks The percent change in annuity prices is from May 2007 to November 2008. Asset growth is from fiscal year-end 2007 to 2008. The leverage ratio, risk-based capital relative to guideline, and the ratio of deferred annuity liabilities to equity are at fiscal year-end 2008. The best-fitting monotone linear spline with one knot weights the observations by total admitted assets at fiscal year-end 2007

Figure 2

Annuity Rents and Rates

TABLE 1
ANNUITY RATES AND INVESTMENT ACCUMULATIONS, GUARANTEED AND CURRENT,
42 LIFE INSURERS, 1975

(1) Insurer Number	(2) Type*	Guaranteed				Current			
		(3) Annuity Rate Per Month, \$1000 Proceeds	(4) Amount of Investment Accumulation, \$100 Monthly, 20 Years	(5) Annuity Rent (3) x (4)	(6) Interest on Col. (4)	(7) Annuity Rate Per Month, \$1000 Proceeds	(8) Amount of Investment Accumulation, \$100 Monthly, 20 Years	(9) Annuity Rent (7) x (8)	(10) Interest on Col. (8)
37	2	\$ 7.67	\$ 37754	\$ 289.42	4.25	\$ 8.14	\$ 51875	\$ 422.26	6.96
28	2	7.31	36800	269.01	4.02	9.37	50832	476.30	6.79
11	2	7.44	34698	258.15	3.49	9.04	48259	465.22	6.36
18	2	7.15	35598	254.53	3.73	8.27	53351	441.21	7.19
5	2	7.13	34476	245.81	3.44	8.26	50772	449.84	6.78
36	2	7.02	34366	241.25	3.41	9.28	49371	458.16	6.55
32	2	7.09	33581	238.09	3.20	8.99	48355	434.71	6.37
17	2	7.02	33878	237.82	3.28	8.50	48553	412.70	6.41
6	2	7.21	32847	236.83	3.00	9.46	51351	485.78	6.88
9	2	7.02	33496	235.14	3.18	8.10	48391	391.97	6.38
21	2	7.02	33398	234.45	3.16	8.75	52713	461.24	7.09
43	2	7.02	33347	234.10	3.13	9.42	54403	512.48	7.34
44	2	7.02	33343	234.07	3.13	9.00	52927	476.34	7.13
10	2	6.97	33540	233.77	3.19	7.81	46577	363.77	6.06
38	1	6.68	34887	233.05	3.54	9.41	52273	491.89	7.02
40	2	7.02	33133	232.59	3.07	9.18	49371	453.25	6.55
26	1	7.02	32779	230.11	2.98	8.65	51740	447.55	6.94
12	2	6.82	33491	228.41	3.18	8.29	40883	338.93	4.94
34	2	7.02	32500	228.15	2.90	8.94	49371	441.38	6.55
45	2	6.54	34821	227.73	3.53	8.75	53914	471.75	7.27
19	2	6.74	33632	226.68	3.22	8.65	49788	430.67	6.62
2	2	7.02	31625	222.00	2.65	8.42	47318	398.42	6.19
33	1	6.93	31616	219.10	2.65	8.90	51994	467.75	6.98
35	1	6.80	32140	218.55	2.80	9.54	53114	506.71	7.15
49	2	7.02	30629	215.02	2.35	8.43	46406	391.20	6.04
47	1	6.93	30953	214.50	2.45	9.19	40186	369.31	4.80
29	1	6.70	31650	212.06	2.65	9.19	42904	394.29	5.36
42	2	6.78	31144	211.16	2.51	8.25	41038	338.56	4.98
27	1	6.73	31369	211.11	2.58	8.77	45112	395.63	5.80
8	2	6.75	31077	209.77	2.48	8.94	48234	431.21	6.36
13	2	6.97	29621	206.46	2.04	8.44	37451	316.09	4.18
23	1	6.80	30310	206.11	2.26	8.12	40108	325.68	4.78
31	1	7.03	29993	204.52	1.87	9.01	39917	359.65	4.74
1	1	6.80	29991	203.94	2.16	9.08	36743	333.63	4.01
48	1	6.84	29414	201.19	1.97	9.91	40339	398.77	4.84
7	2	6.68	29957	200.11	2.15	9.22	52364	482.80	7.03
24	2	6.64	29644	196.84	2.05	8.69	39195	340.60	4.58
25	1	6.88	28479	195.94	1.67	8.91	40987	365.19	4.97
20	1	6.92	28142	194.74	1.55	8.82	38799	342.21	4.49
46	2	6.68	28580	190.91	1.70	8.49	49733	422.23	6.61
39	1	6.11	29824	182.22	2.10	9.55	51891	495.56	6.96
22	1	6.50	27343	177.73	1.27	7.87	39958	314.47	4.75
A Mean		\$6.92	\$32118	\$222.46	2.76	\$8.82	\$47116	\$416.96	6.00
B Standard Deviation		\$.26	\$ 2369	\$ 22.46	.69	\$.50	\$ 3303	\$ 56.71	1.00
C Coefficient of Variation (B/A)/100		3.7%	7.4%	10.1%	25.0%	5.7%	11.3%	13.6%	16.5%

*1=Mutual, 2=Stock

Figure 2: this table shows the annuity rates and investment accumulations of the 42 life insurers that were studied on both a guaranteed and current basis

Figure 3

Standard Deviation	Guaranteed Basis	Current Basis	Coefficient of Variation	Guaranteed Basis	Current Basis
Annuity Rents	22.46	56.71	Annuity Rents	10.1%	13.6%
Annuity Rates	.26	.50	Annuity Rates	3.7%	5.7%
Investment Accumulation	2369	5303	Investment Accumulation	7.4%	11.3%

Figure 3: This table shows the standard deviation and coefficient of variation for annuity rents, annuity rates, and investment accumulation on both a guaranteed and current basis

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