ACTUARIAL VALUATION OF PROPERTY/CASUALTY INSURANCE COMPANIES

ROBERT W. STURGIS

Abstract

There has been a surge of insurance company acquisition and merger activity in the United States and Europe in recent years. Most of this activity has been in the life insurance area, but the pace of property/casualty activity has picked up recently, and there are predictions of heavy future activity.

The bibliography following this paper is not an exhaustive list of readings on the subject of actuarial valuations of insurance companies, but it represents an impressive library of actuarial readings on the subject of life company valuations. However, there is scant actuarial literature on the subject of casualty company valuations, and such discussions are absent from our *Proceedings*.

Evidence of the interest in this topic is the fact that the 21st International Congress of Actuaries held in June of 1980 had as its Topic 4, "Estimating the Value of Insurance Companies and Portfolios," with thirty papers presented. In his introductory remarks, J. B. R. Lieberman[1] suggested three general points for discussion. One of the three was: "How are non-life (property/casualty) insurance companies and portfolios valued in practice?" None of the thirty papers presented dealt specifically with property/casualty companies and, in spite of Mr. Lieberman's suggestion, the discussion was confined essentially to the life insurance business.

Accordingly, this paper is intended to set forth a basic method for the actuarial valuation of property/casualty companies.

[1] J. B. R. Lieberman, "Estimating the Value of Insurance Companies and Portfolios," (Topic 4), *Transactions of the 21st International Congress of Actuaries*, Introduction (June 19–26, 1980), p. 8.

ALTERNATIVE MEASURES OF VALUE

Mogens Andersen[2] in his paper points out the need to differentiate between the price a buyer is willing to pay and economic value. Bowles and Turner[3] go further in discussing this point. Purchase price is defined to be "the amount for which a company is, or is expected to be, purchased in an acquisition transaction." "In short, purchase price represents what an acceptable price is, or is expected to be, to *both* buyer and seller, and reflects the psychology of, and forces at work in, the marketplace." The authors define value, on the other hand, as the result of appraisals independently performed by the buyer and the seller. Value represents what an acceptable purchase price ought to be and "value determinations normally set the limits of purchase price acceptability." The authors proceed to describe in some detail five measures of value. These are summarized very briefly below.

Market Value is the value of outstanding shares of common stock. This measure is relevant since almost all acquisitions are consummated at a purchase price greater than market value.

Book Value is the amount of shareholders equity in the insurance company to be valued, on a GAAP or statutory basis. Since book value does not reflect any value for the company's ability to produce profitable business in the future, it may be a part of, but is not in itself a reasonable reflection of what an acceptable price would be.

Comparative Values are the ratios of purchase prices for recent company acquisitions to denominators such as market value, book value and earnings. For example, two comparative values that are representative of recent acquisitions are two times statutory net worth and ten times statutory earnings.

Dilution Value means the purchase price that would decrease the buyer's earnings per share or return on equity, whichever basis is used. Dilution value serves as an indicator of the maximum purchase price which would likely be tolerable to the buyer's shareholders and, thus, does represent a relevant consideration by the buyer in a purchase transaction.

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[2] M. Andersen, "Some Remarks on the Value of Insurance Companies and Portfolios," (Topic 4), *Transactions of the 21st International Congress of Actuaries*, (June 19–26, 1980), p. 1.

[3] T. P. Bowles and S. H. Turner, "Acquisition of a Life Insurance Company: Determination of Value and Purchase Price," (Topic 4), *Transactions of the 21st International Congress of Actuaries*, (June 19–26, 1980), p. 84.

Economic Value is the book value plus the present worth (i.e., the capitalized value) of expected future earnings.

Of the measures of value enumerated above, only economic value fully satisfies our definition of value. The others place certain practical boundaries on the purchase price, but do not represent what an acceptable purchase price ought to be. Economic value is based upon a projection of future earnings, and as such, it is a determination which actuaries are most qualified to make.

ACTUARIAL DETERMINATION OF ECONOMIC VALUE

From a review of the actuarial readings on this subject, it appears that J. C. H. Anderson's[4] 1959 paper was the genesis for the current concept of actuarial valuations of life companies. In that paper Mr. Anderson pointed out that the value of a life insurance company must represent more than the total of its capital and surplus: "A more realistic value of an entire company must take account of its business in force and agency organization." Specifically, one must evaluate:

1. The present value of unrealized profits on business now in force, discounted at a rate representing adequate return to the investor on the total value; and,
2. The present value of profits on new business.

Future earnings can be capitalized at any desired rate of return. Selection of such a rate depends upon the buyer's desired return on investment and his assessment of risk. In particular, the less confidence one has in the projections of future earnings, the higher the risk rate of return should be in the discounting of those projections.

This general valuation concept has been adopted in all of the works reviewed by this author.

As Bowles and Turner[5] pointed out, the adopted concept requires that the determination should only include earnings *available* to the buyer. This suggests that earnings should be after federal income tax and should be statutory rather than GAAP, because such earnings are available for reinvestment in new busi-

[4] James C. H. Anderson, "Gross Premium Calculations and Profit Measurement for Non-Participating Insurance," *Transactions, Society of Actuaries*, Vol. XI (1959), p. 378.

[5] T. P. Bowles and S. H. Turner, *op. cit.*, p. 87.

ness and/or withdrawal from the company as shareholder dividends. It also suggests two alternative formulas:

1. The discounted value of maximum stockholder dividends; and,
2. Current net worth plus the discounted value of future earnings less cost of capital.

The first formula is based on the principle that only dividend income is available to the investors, and thus, only that should be considered. In other words, the economic value of net worth is best reflected by the earnings it produces by virtue of its investment in the insurance operation. Thus, the entire valuation is based upon projections of future earnings and is wholly dependent upon the particular selected risk rate of return.

The second alternative splits the economic value into component parts, and is the one most commonly adopted in the literature. The first component, net worth, is an accounting value, directly available from financial statements, and perhaps, subject to actuarial adjustment for reserve adequacy. This represents a significant portion of economic value and is not dependent on the selected risk rate of return. The third component, cost of capital, recognizes that the capital and surplus required to support the insurance operation will be required to be invested in a conservative manner. The cost of capital then is based upon the difference between the anticipated rate of return that will actually be realized on invested capital and surplus, and the rate of return it could be earning if invested elsewhere.

In the examples that follow, the second, or traditional, formula has been used. For a life insurance company, future earnings are usually based on separate valuations of the in-force business and new business. Here, the business in-force includes the renewals of current policyholders, since most individual life insurance business is issued with long term benefit and premium guarantees. As such, the value of the business in-force is often the largest part of the value of a life insurance company.

In property/casualty, coverage and premium guarantees seldom extend beyond one year, so that the business in-force is just the run out of the unearned premiums and the losses, expenses and investment income on premiums already written. In the example that follows, earnings on in-force and new business are calculated based on separate assumptions, but are combined in the determination of future earnings.

PROPERTY/CASUALTY MODEL

The exhibits that follow this paper present an example of a computer model for establishing a valuation of future earnings for a hypothetical company, W. C. Protective, writing only workers' compensation. In practice, the model will accommodate any number of lines.

The model is by underwriting, or policy, year. Accordingly, underwriting assumptions must be made for each policy year including past policy years for which loss reserves are still held. The example assumes a valuation at 12/31/81, and is based on the following underwriting assumptions:

1. *Coverage Term*—All policies are for one year terms and are issued evenly throughout the year.
2. *Reserve Runoff*—The ratios of loss and loss expense reserves to ultimate incurred at successive twelve month intervals from the beginning of the policy year are:

12 Mos.	.677	72 Mos.	.089
24 Mos.	.382	84 Mos.	.065
36 Mos.	.250	96 Mos.	.040
48 Mos.	.167	108 Mos.	.028
60 Mos.	.120	120 Mos.	.019

3. *Written Premium*—$40 million in 1982 followed by ten percent annual growth thereafter.
4. *Unearned Premiums*—Taken directly from the annual statement, assumed to be $11 million. (The unearned ratio is typically low for workers' compensation due to additional audit premiums which are fully earned.)
5. *Loss Reserves*—The actual loss and loss expense reserves ($53 million) held at 12/31/81 by accident year:

1981	$10 million	1977	$4 million
1980	17 million	1976	3 million
1979	11 million	1975	2 million
1978	6 million		

6. *Loss Ratios*—Assumed loss and loss expense ratios for all policy years:

1975	.75	1980	.75
1976	.77	1981	.77
1977	.75	1982	.75
1978	.70	Thereafter	.75
1979	.74		

7. *Acquisition Expense*—The ratio of those expenses to be related to written premiums is assumed to be 8% from 1975 through the end of the projection period.
8. *General Expense*—The ratio of all other expenses to be related to earned premiums is assumed to be 20% from 1975 through the end of the projection period. (The model is able to handle expenses related to incurred losses as well.)

For the purposes of this paper, underwriting selections are, of course, simple and illustrative only. In practice, they are the crux of the actuarial valuation. The further into the future the projections, the less reliable they are; but they are also less critical, because of the increasing impact of the present value discounts.

Projections of premium growth and underwriting ratios are typically based on comparisons of company versus industry performance. Often, long range financial plans of the company being valued will be available. These can be a valuable input to the process, but clearly cannot be relied on entirely.

In addition to the by-line projections enumerated above, companywide data and assumptions must be input. Since net worth will be accounted for separately, the model is initialized with zero capital and surplus. However, a theoretical surplus requirement is established at one third the annual written premium volume, and the "cost of capital" is set at 5% of that amount. In other words, the "required statutory surplus" could be earning an additional 5% interest, after tax, if it were available to invest elsewhere. Annual stockholder dividends are maintained at zero throughout the projection period.

Investment rates are expressed as return on total assets, rather than invested assets, and are net of investment expenses. In this example, one third of the company's assets are invested in non-taxables at six percent, and two thirds in taxables at ten percent. The federal tax rate is assumed to be 46% of taxable earnings.

The model was run for thirty future years plus reserve runoff thereafter, and the results, in balance sheet and income statement form, are shown in the attached exhibits and summarized in Table 1.

The statutory net worth of W. C. Protective, $15 million, is added to the above discounted adjusted earnings to produce a formula value of $34 to $76 million, depending upon the risk rate of return.

TABLE 1

Assumed Risk Rate of Return	Present Values (000's) Statutory Earnings	Cost of Capital	Adjusted Earnings
10%	$79,945	$18,788	$61,157
15%	40,870	9,972	30,898
20%	25,118	6,218	18,900

ADJUSTMENTS TO FORMULA VALUE

The valuation above is on a formula basis, with both current net worth and future earnings determined according to statutory accounting standards. There are several adjustments to this value that should either be made or called to the attention of the potential buyer as additional considerations.

From the example shown, it is obvious that the selected risk rate of return has a significant impact on the valuation of future earnings. The selected rate should be at a level above the risk-free rate of return (e.g. U.S. Treasury Notes) that can reasonably be expected throughout the projection period. This additional discount margin should reflect the uncertainty of actually achieving projected growth and profit levels. As pointed out, selection of the appropriate rate is often best left to the buyer based upon his own desired return on investment and assessment of risk.

In addition to producing values based on a range of discount rates, it is good practice to test the sensitivity of the model to future underwriting assumptions by running a series of alternative assumptions. If one assumes that strict underwriting and/or rating practices lead to lower loss ratios and depressed premium growth, there will be offsetting impacts on projections of future earnings. This fact, along with the impact of the discount rate, usually leads to the conclusion that the valuation is not unduly sensitive to a reasonable range of underwriting assumptions.

Any thorough valuation of a property/casualty company requires a thorough analysis of loss and loss expense reserves. In effect, the formula value assumes

exact reserve adequacy. In this regard, the Schedule P penalty, if any, should be considered part of the company's reserves. Any reserve redundancy (inadequacy) should be added to (subtracted from) statutory net worth. Of course, the tax effect of any adjustment to reserve levels (as well as any other adjustments to net worth) should also be reflected.

There are often several accounting adjustments to statutory net worth that should be considered. These include non-admitted assets and special liabilities such as reinsurance from unauthorized reinsurers. Such adjustments should either be made by the actuary or simply highlighted as possible adjustments depending upon his knowledge of them.

Statutory accounting does not reflect any liability for incurred but undeclared policyholder dividends, since there is no binding obligation to pay them. Any such anticipated dividends should be reflected as an expense item in the underwriting assumptions.

Most property/casualty companies carry a substantial portfolio of bonds at book value. This should be pointed out to the client so that an adjustment to market value could be made if he deems that appropriate. However, it should also be pointed out that such an adjustment should carry with it a partially offsetting adjustment to the cost of surplus calculation. That is, our cost of surplus would be lower if we used a market, rather than a statutory, valuation of required capital and surplus.

All of the above assumes that we are dealing with an insurance company, but occasionally the company to be valued is a non-insurance holding company. Usually the actuary would confine himself to the valuation of the insurance subsidiaries, but if they make up the bulk of the holding company's operation, it may be desirable to value the entire operation. If there are any non-insurance subsidiaries they can be carried at book value and so noted to the buyer. As for the holding company itself, an adjustment should be made to reflect the difference between the actuary's valuation of the insurance subsidiaries and the value carried in the parent's financial statement.

There are, of course, adjustments and considerations other than the critical and directly measurable ones enumerated above. Many of these can only be gauged by the prospective buyer and involve operational and financial synergism with his existing operation. However, the actuary can provide input to these considerations with information on cash flows, tax loss carry forwards, etc.

SUMMARY

A major part of valuing a property/casualty company requires an evaluation of future earnings potential, which is a determination that actuaries are most qualified to make. This paper has presented a method for carrying out such a valuation by adapting classical life company valuation methods. While there is considerable fluctuation likely in actual future earnings, a range of reasonable present values can be established. Moreover, that range is typically narrower than the range of reasonable underwriting assumptions. Finally, several adjustments to the formula value were discussed. Depending upon their nature, these adjustments can best be made by the actuary, accountant or prospective buyer.

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EXHIBIT 1

PRESENT VALUES OF STATUTORY GAIN
WRITTEN PREMIUMS THROUGH 2012
W. C. PROTECTIVE

Year	Statutory Gain	Surplus Cost	Adjusted Gain	Dividend	Discount Factors @ 10.00%	@ 15.00%	@ 20.00%
1982	2678	667	2011	0	0.9090909	0.8695652	0.8333333
1983	3124	733	2391	0	0.8264463	0.7561437	0.6944444
1984	3350	807	2543	0	0.7513148	0.6575162	0.5787037
1985	3617	887	2730	0	0.6830135	0.5717532	0.4822531
1986	3913	976	2937	0	0.6209213	0.4971767	0.4018776
1987	4254	1074	3180	0	0.5644739	0.4323276	0.3348980
1988	4645	1181	3464	0	0.5131581	0.3759370	0.2790816
1989	5090	1299	3791	0	0.4665074	0.3269018	0.2325680
1990	5585	1429	4156	0	0.4240976	0.2842624	0.1938067
1991	6138	1572	4566	0	0.3855433	0.2471847	0.1615056
1992	6753	1729	5024	0	0.3504939	0.2149432	0.1345880
1993	7430	1902	5528	0	0.3186308	0.1869072	0.1121567
1994	8173	2092	6081	0	0.2896644	0.1625280	0.0934639
1995	8991	2302	6689	0	0.2633313	0.1413287	0.0778866
1996	9889	2532	7357	0	0.2393920	0.1228945	0.0649055
1997	10878	2785	8093	0	0.2176291	0.1068648	0.0540879
1998	11966	3063	8903	0	0.1978447	0.0929259	0.0450732
1999	13162	3370	9792	0	0.1798588	0.0808051	0.0375610
2000	14479	3707	10772	0	0.1635080	0.0702653	0.0313009
2001	15926	4077	11849	0	0.1486436	0.0611003	0.0260841
2002	17520	4485	13035	0	0.1351306	0.0531307	0.0217367
2003	19271	4934	14337	0	0.1228460	0.0462006	0.0181139
2004	21198	5427	15771	0	0.1116782	0.0401744	0.0150949
2005	23318	5970	17348	0	0.1015256	0.0349343	0.0125791
2006	25649	6566	19083	0	0.0922960	0.0303776	0.0104826
2007	28214	7223	20991	0	0.0839055	0.0264153	0.0087355
2008	31036	7945	23091	0	0.0762777	0.0229699	0.0072796
2009	34140	8740	25400	0	0.0693433	0.0199738	0.0060663
2010	37554	9614	27940	0	0.0630394	0.0173685	0.0050553
2011	41308	10575	30733	0	0.0573086	0.0151031	0.0042127
2012	45440	11633	33807	0	0.0520987	0.0131331	0.0035106
2013	56887	0	56887	0	0.0473624	0.0114201	0.0029255
2014	29656	0	29656	0	0.0430568	0.0099305	0.0024379
2015	19538	0	19538	0	0.0391425	0.0086352	0.0020316
2016	13344	0	13344	0	0.0355841	0.0075089	0.0016930
2017	9200	0	9200	0	0.0323492	0.0065295	0.0014103
2018	6251	0	6251	0	0.0294083	0.0056778	0.0011757
2019	4043	0	4043	0	0.0267349	0.0049372	0.0009797
2020	2432	0	2432	0	0.0243044	0.0042932	0.0008165
2021	1333	0	1333	0	0.0220949	0.0037332	0.0006804
2022	571	0	571	0	0.0200863	0.0032463	0.0005670
2023	125	0	125	0	0.0182603	0.0028229	0.0004725
PRESENT VALUES AT							
10.00%	79945	18788	61157	0			
15.00%	40870	9972	30898	0			
20.00%	25118	6218	18900	0			

EXHIBIT 2

PROJECTION OF STATUTORY GAIN
WRITTEN PREMIUMS THROUGH 2012
W. C. PROTECTIVE

Year	Written Premium	Earned Premium	Incurred Claims	Expenses	Investmt Income	Federal Tax	Statutory Gain	Surplus Cost	Dividend
1982	40000	32725	24719	9733	4821	416	2678	667	0
1983	44000	42167	31624	11953	5187	653	3124	733	0
1984	48400	46383	34788	13149	5594	690	3350	807	0
1985	53240	51022	38266	14463	6059	735	3617	887	0
1986	58564	56123	42094	15910	6581	787	3913	976	0
1987	64420	61736	46302	17501	7170	849	4254	1074	0
1988	70862	67909	50932	19251	7841	922	4645	1181	0
1989	77949	74701	56025	21176	8598	1008	5090	1299	0
1990	85744	82171	61628	23293	9440	1105	5585	1429	0
1991	94318	90388	67791	25623	10376	1212	6138	1572	0
1992	103750	99427	74569	28185	11415	1335	6753	1729	0
1993	114125	109369	82027	31004	12560	1468	7430	1902	0
1994	125537	120306	90230	34104	13816	1615	8173	2092	0
1995	138091	132337	99252	37514	15197	1777	8991	2302	0
1996	151900	145570	109178	41266	16717	1954	9889	2532	0
1997	167090	160128	120096	45392	18389	2151	10878	2785	0
1998	183799	176140	132105	49932	20228	2365	11966	3063	0
1999	202179	193754	145316	54925	22251	2602	13162	3370	0
2000	222397	213130	159847	60418	24476	2862	14479	3707	0
2001	244636	234442	175832	66459	26923	3148	15926	4077	0
2002	269100	257887	193415	73105	29616	3463	17520	4485	0
2003	296010	283675	212756	80416	32577	3809	19271	4934	0
2004	325611	312043	234033	88458	35835	4189	21198	5427	0
2005	358172	343247	257435	97303	39418	4609	23318	5970	0
2006	393989	377571	283179	107033	43360	5070	25649	6566	0
2007	433388	415329	311497	117737	47696	5577	28214	7223	0
2008	476727	456862	342647	129510	52466	6135	31036	7945	0
2009	524400	502549	376911	142462	57712	6748	34140	8740	0
2010	576840	552803	414602	156708	63484	7423	37554	9614	0
2011	634524	608083	456063	172379	69832	8165	41308	10575	0
2012	697976	668892	501669	189616	76815	8982	45440	11633	0
2013	0	319929	239947	63986	64419	23528	56887	0	0
2014	0	0	0	0	39596	9940	29656	0	0
2015	0	0	0	0	26087	6549	19538	0	0
2016	0	0	0	0	17816	4472	13344	0	0
2017	0	0	0	0	12283	3083	9200	0	0
2018	0	0	0	0	8346	2095	6251	0	0
2019	0	0	0	0	5398	1355	4043	0	0
2020	0	0	0	0	3248	815	2433	0	0
2021	0	0	0	0	1780	447	1333	0	0
2022	0	0	0	0	763	192	571	0	0
2023	0	0	0	0	167	42	125	0	0

EXHIBIT 3

INCOME AND EXPENSE BY YEAR*
W. C. PROTECTIVE

	1982	1983	1984	1985	1986	1987	1988
Written Premium	40,000	44,000	48,400	53,240	58,564	64,420	70,862
Unearned Premium							
Beginning of Year	11,060	18,335	20,168	22,185	24,403	26,844	29,528
End of Year	18,335	20,168	22,185	24,403	26,844	29,528	32,481
Earned Premium	32,725	42,167	46,383	51,022	56,123	61,736	67,909
Paid Claims	27,250	28,249	30,785	33,673	36,952	40,326	44,046
Claim Reserve							
Beginning of Year	53,000	50,469	53,844	57,847	62,440	67,582	73,558
End of Year	50,469	53,844	57,847	62,440	67,582	73,558	80,444
Incurred Claims	24,719	31,624	34,788	38,266	42,094	46,302	50,932
Percent of Earned	75.54%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%
Expenses Related to							
Written Premium	3,200	3,520	3,872	4,259	4,685	5,154	5,669
Earned Premium	6,533	8,433	9,277	10,204	11,225	12,347	13,582
Paid Claims	0	0	0	0	0	0	0
Total	9,733	11,953	13,149	14,463	15,910	17,501	19,251
Percent of Earned	29.74%	28.35%	28.35%	28.35%	28.35%	28.35%	28.35%
Total Claims & Exp.	34,452	43,577	47,937	52,729	58,004	63,803	70,183
Percent of Earned	105.28%	103.34%	103.35%	103.35%	103.35%	103.35%	103.35%
Underwriting Gain	(1,727)	(1,410)	(1,554)	(1,707)	(1,881)	(2,067)	(2,274)
Percent of Earned	(5.28)%	(3.34)%	(3.35)%	(3.35)%	(3.35)%	(3.35)%	(3.35)%
Investment Income	4,821	5,187	5,594	6,059	6,581	7,170	7,841
Percent of Earned	14.73%	12.30%	12.06%	11.88%	11.73%	11.61%	11.55%
Pre-Tax Gain	3,094	3,777	4,040	4,352	4,700	5,103	5,567
Percent of Earned	9.45%	8.96%	8.71%	8.53%	8.38%	8.27%	8.20%
Federal Income Tax	416	653	690	735	787	849	922
Percent of Earned	1.27%	1.55%	1.49%	1.44%	1.40%	1.38%	1.36%
After Tax Gain	2,678	3,124	3,350	3,617	3,913	4,254	4,645
Percent of Earned	8.18%	7.41%	7.22%	7.09%	6.97%	6.89%	6.84%
Surplus Cost	667	733	807	887	976	1,074	1,181
Percent of Earned	2.04%	1.74%	1.74%	1.74%	1.74%	1.74%	1.74%
Adjusted Gain	2,011	2,391	2,543	2,730	2,937	3,180	3,464
Percent of Earned	6.14%	5.67%	5.48%	5.35%	5.23%	5.15%	5.10%
Expense % Written	24.33%	27.17%	27.17%	27.17%	27.17%	27.17%	27.17%
Claim % Earned	75.54%	75.00%	75.00%	75.00%	75.00%	75.00%	75.00%
Total	99.87%	102.17%	102.17%	102.17%	102.17%	102.17%	102.17%

* Thirty years were actually run, of which seven are exhibited here.

EXHIBIT 4

ASSETS, LIABILITIES, AND VALUE OF IN-FORCE*
W. C. PROTECTIVE

	1982	1983	1984	1985	1986	1987	1988
Invested Assets**	68,804	74,012	80,032	86,843	94,426	103,086	112,925
Liabilities							
Unearned Premiums	18,335	20,168	22,185	24,403	26,844	29,528	32,481
Loss Reserves	50,469	53,844	57,847	62,440	67,582	73,558	80,444
Total Liabilities	68,804	74,012	80,032	86,843	94,426	103,086	112,925
Capital and Surplus							
Capital	0	0	0	0	0	0	0
Surplus	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
Total Liabilities							
Capital & Surplus	68,804	74,012	80,032	86,843	94,426	103,086	112,925
Present Value of Future Statutory Gains from In-Force							
@ 10.00%	7,137	7,592	8,151	8,816	9,597	10,496	11,514
@ 15.00%	6,456	6,872	7,379	7,981	8,686	9,498	10,418
@ 20.00%	5,892	6,276	6,741	7,290	7,933	8,674	9,513
Capital & Surplus Plus Value of In-Force							
@ 10.00%	7,137	7,592	8,151	8,816	9,597	10,496	11,514
@ 15.00%	6,456	6,872	7,379	7,981	8,686	9,498	10,418
@ 20.00%	5,892	6,276	6,741	7,290	7,933	8,674	9,513
Surplus Reconciliation							
Beginning of Year	0	0	0	0	0	0	0
Underwriting Gain	(1,727)	(1,410)	(1,554)	(1,707)	(1,881)	(2,067)	(2,274)
Investment Income	4,821	5,187	5,594	6,059	6,581	7,170	7,841
Pre-Tax Gain	3,094	3,777	4,040	4,352	4,700	5,103	5,567
Fedl. Income Tax	416	653	690	735	787	849	922
Stockholder Divs.	0	0	0	0	0	0	0
End of Year	0	0	0	0	0	0	0

* Thirty years were actually run, of which seven are exhibited here.

** Since earnings are attributed to the investor, invested assets are deemed equal to liabilities.