LOSS RESERVING IN THE SIXTIES

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For some time it has been obvious to the writer that recent loss reserves are not as strong as they were ten or fifteen years ago. This opinion he formed on the basis of loss reserve developments of a handful of selected companies. The steady rise in the bureau development factors used in Private Passenger Auto ratemaking tended to provide additional support for such an opinion.

The purpose of this paper is to analyze some industrywide data to determine more closely what has happened to loss reserve safety margins.

BASIC DATA USED IN THIS STUDY

The basic data were derived from the Supplement to New York Auto Liability Experience published annually by the New York Insurance Department in the Loss and Expense Ratios. This shows developments of policy year loss experience at twelve month intervals up to 84 months. It is the same exhibit used by Frank Harwayne in his paper "Estimating Ultimate Incurred Losses in Auto Liability Insurance" published in PCAS Volume XLV. Attention has to be drawn to the fact that the New York exhibit is not a closed system and therefore we have some slight fluctuations in policy year earned premiums even at a relatively late stage of development. To avoid representing a withdrawal of a company as favorable loss development, the writer decided to follow Mr. Harwayne and relate the incurred, outstanding and paid loss data to earned premiums. These figures are summarized in Exhibit I for policy years 1953 to 1969.

FINDINGS

The most important finding is that there is a progressive increase in the amount of payments at later stages of development. This is shown in Table 1 which relates, by policy year, the cumulative payments at a given stage of development to cumulative payments twelve months earlier. These ratios show a fairly steady rise, and they have been projected for the not yet fully developed policy years by fitting straight lines to the actual figures for the latest eleven years. The ratio of incurred losses at 84 months to paid losses at 84 months also exhibited an increasing trend, and it has been projected in a similar manner to paid losses for the undeveloped policy years.

TABLE 1

AUTO B.I.—N.Y.

Ratio of cumulative paid losses at X months development to paid losses at (X-12) months development

Pol. Yr.	X=36	X=48	X=60	X=72	X=84	Ratio of Incurred Losses at 84 months to paid losses at 84 months
1953	1.6123	1.1845	1.0921	1.0429	1.0211	1.0314
1954	1.6980	1.1829	1.0835	1.0388	1.0182	1.0338
1955	1.6311	1.1818	1.0821	1.0353	1.0205	1.0417
1956	1.6360	1.1938	1.0915	1.0465	1.0262	1.0511
1957	1.6314	1.2066	1.0906	1.0428	1.0336	1.0547
1958	1.6392	1.2116	1.1001	1.0641	1.0314	1.0588
1959	1.6269	1.2195	1.1115	1.0668	1.0343	1.0598
1960	1.6369	1.2177	1.1194	1.0722	1.0489	1.0643
1961	1.6276	1.2504	1.1259	1.0944	1.0300	1.0792
1962	1.6231	1.2620	1.1584	1.0641	1.0512	1.0740
1963	1.6119	1.3052	1.1270	1.0940	1.0621	1.0814
1964	1.6929	1.2313	1.1560	1.1245	1.0730	1.0672
1965	1.6739	1.2890	1.1676	1.1239	1.0677*	1.0850*
1966	1.6896	1.2895	1.1956	1.1264*	1.0725*	1.0891*
1967	1.6843	1.3244	1.1894*	1.1349*	1.0773*	1.0932*
1968	1.7310	1.3202*	1.1991*	1.1434*	1.0820*	1.0973*
1969	1.7130*	1.3310*	1.2088*	1.1519*	1.0868*	1.1014*

*Projected by the use of straight lines fitted to the actual figures for the latest 11 years.

At the end of 1970, policy years 1953 through 1964 have been fully developed to 84 months. For policy years 1965-1969, the incurred losses at 84 months development can be estimated by the use of projected ratios from Table 1. These estimates are shown in the attached Exhibit I.

The figures in Exhibit I indicate that in the fifties the losses, by policy year, were reserved with a margin of safety. This margin at 24 months development ranged from 5.2% for policy year 1954 to 9.5% for policy year 1959. While these safety margins fluctuated, there did not appear to be any particular trends. The real trend began with policy year 1961. Table 2 summarizes a few figures.

TABLE 2

Loss Reserves Margins at 24 Months Development

Policy Years	% of Outstanding Loss Reserves*
1960	8.65
1961	4.87
1962	0.43
1963	(−)3.55
1964	(−)7.32

* (−) indicates adverse development

The above margins have been determined on the basis of actual development to 84 months, and they indicate a rather sharp change in loss reserving practices. According to the projections, this continued through the sixties and the loss reserves for 1969 policy year at 24 months development appear to be inadequate by 22.4%.

For those who like to observe reserve margin changes by calendar year, the adequacy margins by policy year from Exhibit I can be applied to outstanding loss reserves at the end of a particular calendar year. The results are summarized in Table 3.

TABLE 3
(in 000's)

Policy Years	Valuation Date	Actual Loss Reserve	Reserve Margin* Amount	%
1955-59	12-31-60	$402,165	$ 56,435	14.0
1956-60	12-31-61	421,569	60,719	14.4
1957-61	12-31-62	428,226	46,838	10.9
1958-62	12-31-63	446,556	33,629	7.5
1959-63	12-31-64	463,996	11,538	2.5
1960-64	12-31-65	499,971	(−) 5,812	(−) 1.2
1961-65	12-31-66	539,237	(−) 6,195	(−) 1.1
1962-66	12-31-67	585,483	(−) 50,373	(−) 8.6
1963-67	12-31-68	633,348	(−) 69,530	(−)11.0
1964-68	12-31-69	671,377	(−)105,403	(−)15.7
1965-69	12-31-70	705,344	(−)132,664	(−)18.8

* (−) indicates loss reserve inadequacy

Thus, during the nine calendar years from 1961 to 1970, the industry appears to have understated their losses to a substantial extent. Based on the reserve margins for the five policy years, this understatement amounted to about $193,000,000, or 3.8% of earned premiums for the nine years.

SOME OBSERVATIONS

It is obvious that during the sixties less adequate loss reserves acquired a fair amount of popularity, if not respectability. This should not be surprising as, in the short run, most of the practical forces affecting the operations of an insurance company make an under-reserved position preferable to an over-reserved position. Examples:

(1) The underwriting department is not unhappy as low loss reserves make their underwriting performance look better than it is.

(2) The field operations and agents are happy because lower loss ratios make for higher contingent commissions and profit sharing. In addition, the lower rates resulting from inadequate loss reserves put them into a more competitive position to secure larger volumes of business.

(3) The operating results are improved and this makes for happy managements and stockholders.

(4) From the point of view of our regulators, the situation also has a few good points: (a) The companies will request fewer and smaller rate increases. (b) Under-reserved losses increase surplus, thus increase capacity.

(5) Inadequate loss reserves are also said to be advantageous from a loss adjusting point of view by supposedly reducing the amount of settlement.

To be sure, there is a disadvantage in indulging in a progressive erosion of your loss reserves. The danger is that in the long run such a company will become insolvent. It is obvious from our study that the long run may be very long indeed, thus it does not go very far in reducing the influence of short-term considerations.

EXHIBIT I

New York Auto Bodily Injury
Development of Loss Experience by Policy Year

Experience as of the End of Calendar Year	% TO EARNED PREMIUM			Loss Development after the end of Calendar Yr.**	
	Paid Loss	O/S Loss	Incurred Loss	Amount	% of O/S
Pol. Yr. 1953					
1954	22.707	31.979	54.686	2.673	8.36
1955	36.611	17.674	54.285	2.272	12.86
1956	43.366	10.038	53.404	1.391	13.86
1957	47.359	5.528	52.887	.874	15.81
1958	49.390	2.936	52.326	.313	10.66
1959	50.430	1.583	52.013		
Pol. Yr. 1954					
1955	23.951	34.873	58.824	1.828	5.24
1956	40.669	18.802	59.471	2.475	13.16
1957	48.107	10.720	58.827	1.831	17.08
1958	52.124	5.701	57.825	.829	14.54
1959	54.149	3.195	57.344	.348	10.89
1960	55.134	1.862	56.996		
Pol. Yr. 1955					
1956	28.588	39.392	67.980	2.350	5.97
1957	46.629	22.373	69.002	3.372	15.07
1958	55.108	12.622	67.730	2.100	16.64
1959	59.634	7.253	66.887	1.257	17.33
1960	61.737	4.378	66.115	.485	11.08
1961	63.001	2.629	· 65.630		
Pol. Yr. 1956					
1957	28.011	42.958	70.969	3.566	8.30
1958	45.826	25.408	71.234	3.831	15.08
1959	54.708	15.601	70.309	2.906	18.63
1960	59.713	9.622	69.335	1.932	20.08
1961	62.488	5.889	68.377	.974	16.54
1962	64.124	3.279	67.403		

**(−) indicates adverse development

| Experience as | % TO EARNED PREMIUM | | | Loss Development after | |
| of the End of | | | Incurred | the end of Calendar Yr.** | |
Calendar Year	Paid Loss	O/S Loss	Loss	Amount	% of O/S
Pol. Yr. 1957					
1958	29.565	46.801	76.366	4.214	9.00
1959	48.232	28.883	77.115	4.963	17.18
1960	58.199	17.774	75.973	3.821	21.50
1961	63.474	11.432	74.906	2.754	24.09
1962	66.189	6.891	73.080	.928	13.47
1963	68.410	3.742	72.152		
Pol. Yr. 1958					
1959	26.928	45.527	72.455	4.090	8.98
1960	44.140	28.646	72.786	4.421	15.43
1961	53.481	18.359	71.840	3.475	18.93
1962	58.835	11.521	70.356	1.991	17.28
1963	62.606	6.680	69.286	.921	13.79
1964	64.571	3.794	68.365		
Pol. Yr. 1959					
1960	23.244	40.524	63.768	3.834	9.46
1961	37.816	26.376	64.192	4.258	16.14
1962	46.115	17.001	63.116	3.182	18.72
1963	51.256	10.675	61.931	1.997	18.71
1964	54.678	6.044	60.722	.788	13.04
1965	56.554	3.380	59.934		
Pol. Yr. 1960					
1961	19.383	35.446	54.829	3.067	8.65
1962	31.728	22.758	54.486	2.724	11.97
1963	38.635	15.028	53.663	1.901	12.65
1964	43.247	9.358	52.605	.843	9.01
1965	46.368	5.149	51.517	(−) .245	(−) 4.76
1966	48.634	3.128	51.762		
Pol. Yr. 1961					
1962	18.302	34.393	52.695	1.674	4.87
1963	29.788	23.480	53.268	2.247	9.57
1964	37.248	15.356	52.604	1.583	10.31
1965	41.938	10.010	51.948	.927	9.26
1966	45.899	6.146	52.045	1.024	16.66
1967	47.278	3.743	51.021		

**(−) indicates adverse development

Experience as of the End of Calendar Year	% TO EARNED PREMIUM			Loss Development after the end of Calendar Yr.**	
	Paid Loss	O/S Loss	Incurred Loss	Amount	% of O/S
Pol. Yr. 1962					
1963	18.934	35.191	54.125	.151	0.43
1964	30.732	23.783	54.515	.541	2.27
1965	38.783	16.233	55.016	1.042	6.42
1966	44.927	10.604	55.531	1.557	14.68
1967	47.808	6.434	54.242	.268	4.17
1968	50.255	3.719	53.974		
Pol. Yr. 1963					
1964	18.660	35.670	54.330	(−)1.266	(−) 3.55
1965	30.078	25.541	55.619	.023	0.09
1966	39.258	17.779	57.037	1.441	8.11
1967	44.244	11.616	55.860	.264	2.27
1968	48.404	7.306	55.710	.114	1.56
1969	51.410	4.186	55.596		
Pol. Yr. 1964					
1965	19.426	38.060	57.486	(−)2.785	(−)7.32
1966	32.886	27.325	60.211	(−) .060	(−) .22
1967	40.491	19.439	59.930	(−) .341	(−)1.75
1968	46.806	13.567	60.373	.102	0.75
1969	52.635	7.725	60.360	.089	1.15
1970	56.478	3.793	60.271		
Pol. Yr. 1965					
1966	19.366	39.326	58.692	(−)4.827*	(−)12.27
1967	32.416	28.967	61.383	(−)2.136*	(−) 7.37
1968	41.784	21.261	63.045	(−) .474*	(−) 2.23
1969	48.788	14.217	63.005	(−) .514*	(−) 3.62
1970	54.831	7.931	62.762	(−) .757*	(−) 9.54
1971	58.543*	4.976*	63.519*		
Pol. Yr. 1966					
1967	18.981	39.187	58.168	(−)6.880*	(−)17.56
1968	32.069	28.702	60.771	(−)4.277*	(−)14.90
1969	41.352	20.796	62.148	(−)2.900*	(−)13.94
1970	49.440	12.684	62.124	(−)2.924*	(−)23.05
1971	55.689*				
1972	59.727*	5.321*	65.048*		

**(−) indicates adverse development

Experience as of the End of Calendar Year	% TO EARNED PREMIUM			Loss Development after the end of Calendar Yr.**	
	Paid Loss	O/S Loss	Incurred Loss	Amount	% of O/S
Pol. Yr. 1967					
1968	18.927	40.691	59.618	(−)7.398*	(−)18.18
1969	31.879	29.863	61.742	(−)5.274*	(−)17.66
1970	42.221	21.423	63.644	(−)3.372*	(−)15.74
1971	50.218*				
1972	56.992*				
1973	61.398*	5.618*	67.016*		
Pol. Yr. 1968					
1969	18.447	41.251	59.698	(−)8.923*	(−)21.63
1970	31.931	31.526	63.457	(−)5.164*	(−)16.38
1971	42.155*				
1972	50.548*				
1973	57.797*				
1974	62.536*	6.085*	68.621*		
Pol. Yr. 1969	17.537	40.132	57.669	(−)8.974*	(−)22.36
1971	30.041*				
1972	39.984*				
1973	48.333*				
1974	55.675*				
1975	60.508*	6.135*	66.643*		

*Estimated
**(−)indicates adverse development