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MONETARY VALUES FOR ORDINARY DISABILITY BENEFITS

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GUY W. PICKERING:

Mr. Cueto and the New York Life have made a very fine contribution in this paper with its accompanying tables.

The Home Life made similar calculations in order to arrive at new premium rates for the Disability Waiver Only benefit. The basic assumptions used by us were the same as those set forth in Mr. Cueto's paper for Benefit 5 with the following exceptions:

1. Tables of D_x on the CSO Table with $2\frac{1}{2}\%$ interest were used instead of $\bar{D}_x$ in calculating C_x^r.
2. Monthly termination rates were used in calculating disabled life annuities only during the first year of disability instead of during the first two years.
3. The disabled life annuities were calculated on the monthly basis instead of a continuous basis.
4. An adjustment was made for the final year of the premium-paying period to provide for waiver of instalment premiums during that year on people becoming disabled for the first time therein.

It will be noted that each of these four assumptions should result in increasing the net premium over that given in the paper under discussion.

TABLE 1

NET ANNUAL DISABILITY PREMIUMS TO WAIVE $100 FOR LIFE

Age at Issue	New York Life Basis	Home Life Basis	Excess of Home Life over New York Life
25	$1.24	$1.27	$.03
35	1.81	1.86	.05
45	2.97	3.06	.09
55	5.90	6.07	.17

The combined effect of all of these assumptions, however, is very small. The maximum excess in our net premiums over those shown in Mr. Cueto's tables occurs in the case of waiver of premiums for life. Our Table 1 shows the differences. It may be of interest to students to see that the combination of the four more conservative assumptions enumerated results in such a small increase in the net premium to waive $100.

(AUTHOR'S REVIEW OF DISCUSSION)

MANUEL R. CUETO:

Mr. Pickering's discussion is a valuable supplement to the paper in showing the maximum effect of the additional assumptions made by his company in calculating net premiums for Benefit 5.

Since the primary purpose of the paper was to furnish material which could be used to test reserves for disability benefits (active and disabled lives) in comparison with reserves based on tables currently in use, an approximate valuation based on main plans of insurance was made as of the end of 1953 for certain blocks of our outstanding business with disability benefits.

The results showed that the Period 2 values with $2\frac{1}{2}\%$ interest, as compared to the corresponding values according to the 165% modification of Class 3, produced substantial increases in aggregate active life reserves for disability income benefits. The increases amounted to about 91% for Benefits 2, 3 and 4 combined. In this connection it should be mentioned that the data used in the test involved policies 20 or more years in force which, of course, included a large proportion of paid-up life insurance.

It is of interest to note that these data represented a closed block of business mainly concentrated at higher attained ages and hence with exposure to becoming disabled limited to a relatively small number of years before the limiting age of coverage is reached. It was, therefore, felt desirable to make a test of disability reserves based on Period 4 values, even though the rates of disablement for this period were the most favorable obtained in the 1952 Intercompany Study.

Accordingly, a second calculation of reserves for disability income benefits was made using Period 4 values. It was found that the aggregate active life reserves on this basis also gave increases over those according to the 165% modification of Class 3, although such increases were not as large as those according to Period 2. The increases in reserves were about 39% for Benefits 2, 3 and 4 combined. Active life reserves based on Period 4 for Benefits 2 to 4, inclusive, therefore represent a higher standard than the 165% modification of Class 3 values. Since we are currently experiencing rates of disablement similar to those for Period 4, the higher standard may very well be considered appropriate for use in valuing the disability income benefits in a closed block of business 20 or more years in force with only a limited number of years remaining of exposure to disability.

In this connection, complete tables of monetary values have been prepared for Period 4 similar to those for Period 2. All of these values have been included in a set of two volumes which is at present being printed by the Society.

An approximate valuation was also made of our outstanding business with waiver of premium benefits only, *i.e.*, Benefit 5. The figures showed that Period 2 values for this benefit, as compared to corresponding values according to the 150% modification of Class 3, resulted in a decrease in the aggregate active life reserves of about 23%.

When the results for Benefit 5 were combined with those for Benefits 2 to 4, inclusive, according to Period 2 values, the over-all increase in the aggregate reserves was about 68%. On the other hand, when Period 4 results for Benefits 2 to 4, inclusive, were combined with Period 2 results for Benefit 5, the over-all increase in the total reserves was about 26%.

A test valuation of our disabled life data according to the new table on the basis of age at date of disability showed an increase in the aggregate disabled life reserves of about 3% over the corresponding reserves on the Class 3 basis.