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Letters

Bond Yields

Sir:

In the course of some reflections on accounting theory, it occured to me that there is a way of looking at bond yields which I for one had not yet seen. Namely, the determination of a yield rate higher than a risk-free rate is equivalent to assuming probabilities of collection at less than unity combined with a risk-free interest rate.

Thus, if the market assigns a yield rate of j to a bond, and if a corresponding risk-free rate is i, the equation is:

$$Price = (Coupon)(p_1 v + p_2 v^2 + p_3 v^3 + \ldots + p_n v^n) + (Maturity Value) \cdot (p_n v^n)$$

and values of p_n can be determined. (There is, of course, no unique determination of p_n in the usual case). If p_n can be taken to be of the form $(1 + h)^{-n}$, the algebra is quite simple and the arithmetic is easy. If p_n can be taken to be of the form $1 - (n-1)\triangle$, the algebra is not so simple but the arithmetic solution is not difficult.

For a 20-year \$1000 bond bearing annual coupons of \$87.50, a yield rate of 9.5% versus a risk-free rate of 8.75% gives a value of 1.00690 for $1 + h$ and a value of .99280 for $1 - \triangle$.

Conversely, of course, if the probabilities of collection and the interest-free rate are stipulated, the "market" yield and therefore the risk element in that yield can readily be determined.

It is thought that this kind of process may give some additional perspective to the process of pricing bonds, or for that matter any process of valuing assets by discounting future cash flows.

Robert G. Espie

Note: The main idea of the above letter is also developed in an article by R. Ziock, "Discounting for Risk" that appeared in *ARCH* 1972, No. 2. An article by T. M. Hammonds and D. I. Padberg, "A Quantitative Measure of the Risk Factor in Investment Decisions" in *Journal, American Statistical Association*, Vol. 65 (1965), p. 602-608, develops related ideas.

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Actuaries in Literature

Sir:

Actuaries are seldom mentioned in literature and whenever we come across a reference to our profession we are all interested in it. The last time I was able to report something of this nature was when a reference was made equating actuaries to "Sewer Engineers." I am not sure whether we have advanced or not in this most recent reference. In a new book coming out which is the Canadian equivalent of the book of lists published some time ago in the United States, one of the lists contains the names of the five worst lovers. In order they are, Politicians, Lawyers, Accountants, Bankers, and Actuaries. While it is only a faint hope, at least we can say that there are four categories worse than we are.

Frederick J. Thompson

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A Surfeit of Initials

Sir:

Over the last ten or so years, I have heard a good deal of talk about reorganizing the actuarial profession. On the strength of this talk, I have occasionally tried to explain to lawyers, accountants, and doctors (whose professions are far larger and, it seems, fairly rationally run) that F.S.A., A.S.A., F.C.A.S., A.C.-A.S., F.C.A., M.C.A., A.C.A., F.F.A.A., A.F.A.A., M.A.A.A., A.A.A.A., (Choo?) F.S.P.A., M.S.P.A., and, more recently, E.A. were just temporary aberrations.

Usually the listener begins to giggle before the halfway point but recently I find that I am giggling first. Am I weird or is it the profession? Both?

Brian A. Jones

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PUBLICATIONS

The following publications were recently issued by the Health Insurance Institute, and the American Council of Life Insurance.

Source Book of Health Insurance Data—1977-1978

This 19th edition of the Source Book provides the latest available data on the major forms of health insurance, hospital, surgical, regular medical, major medical, disability, and dental insurance. Also included is information on medical care costs and morbidity in the United States. The Source Book is used as a reference by individuals and associations interested in health care and its financing.

New Group Health Insurance

This is the annual report of the surveys made by the Health Insurance Institute covering policies issued in 1978 and the five year trend 1973-1978.

Life Insurance Fact Book—1978

This is the well established annual publication serving the public as a central source of information about life insurance.

Single copies of these may be obtained without charge by writing to Statistical Services, Health Insurance Institute, and American Council of life insurance, 1850 K Street, N.W., Washington, D.C. 20006. ☐