SOCIETY OF ACTUARIES

Article from:

The Actuary

November 1969 – volume 3 - Issue 9

The Actuary

The Newsletter of the Society of Actuaries

VOLUME 3, No. 9 NOVEMBER, 1969

TRUTH IN LENDING — AN ANALYSIS OF THE ACT

by Daniel S. Harris

Exhaustive publicity has been given the Truth in Lending Act. Banks have sent pamphlets to depositors informing them of the Act. Credit card holders have received notices. Finance companies, in their advertisements, have called attention to the Act. Magazines, periodicals and newspapers have published articles (in some cases, quite lively articles). The Truth in Lending Act, with its attendant regulations and interpretations, is complex and lengthy and not as simple as some of the publicity might imply.

Some General Features

What is the Truth in Lending Act?

Public Law 90-321, signed by President Johnson on May 29, 1968, is entitled the *Consumer Credit Protection Act.* Title I of P. L. 90-321 has the descriptive heading, "Consumer Credit Cost Disclosure" but the law also provides that Title I may be called the "Truth in Lending Act" and this is the popular name Title I has acquired.

This article will deal only with Title I and will refer to Title I and its attendant regulations and interpretations as the Act.

The Truth in Lending Act is now law, fully effective as of July 1, 1969.

What does the Act do?

Mainly, it tries to make creditors "tell it like it is." Where a consumer borrows, say, $100, and is required to repay $108 within a year in 12 equal monthly instalments, i.e., $9 a month, this can no longer be called an 8% add-on. The borrower must be told that the nominal annual rate (in this case, 12 times the

(*Continued on page* 4)

Social Security Notes

Robert J. Myers, *SMI Benefit Experience for 1966-68 as Shown on Payment Records,* Actuarial Note No. 55, pp. 4, Social Security Administration, Washington, August 1969.

This Actuarial Note presents an analysis of the tabulation of Supplementary Medical Insurance payment records in the 0.1% Actuarial Sample made for all such records processed through March 1969. Included are monthly data on number of records, reasonable charges, and reimbursement amounts.

The average reimbursement amount per payment record was $50 for 1966, $45 for 1967, and $47 for 1968, while the average monthly reimbursement amount per capita was $4.12 for 1966, $5.56 for 1967, and $4.80 for 1968 (the latter amount being relatively low because not all data had yet been recorded). These averages can be compared with the monthly income to the system from the enrollee premiums and matching government contributions ($6 per capita for July 1966 through March

(*Continued on page* 7)

MORTIMER SPIEGELMAN

The American Public Health Association recognized the great contribution that Mortimer Spiegelman had made in the public health field by holding a specially named session in his memory at their recent Annual Meeting. The subject of the session was "Methodological Issues in Health Statistics" and six papers were submitted, including one describing Mr. Spiegelman's contributions to public health statistics.

An audience of more than 100, including Mr. Spiegelman's two sisters, Miss Julia Spiegelman and Dr. Anna Spiegelman, and his former secretary, Miss Theresa Hilb, joined in this fitting tribute to the late Associate Editor of *The Actuary.*

EDUCATION AND EXAMINATION OF PROSPECTIVE ACTUARIES

by Edwin B. Lancaster

A good deal of activity is underway on both the education and examination of prospective actuaries. The tempo of activity no doubt arises from the fast approaching date of January 1, 1970. During 1970 admission to the American Academy of Actuaries is conditional upon passing examinations in subjects corresponding to the associateship syllabus of the Society of Actuaries or the Casualty Actuarial Society. Regardless of the reason for the pace of education and examinations review activity, it seems opportune to broadly review the Society of Actuaries' education and examination process. This review is in four sections.

Geographical Spread

While the Society's students obviously place substantial emphasis on passing the examinations, the Committees which administer the system regard it fundamentally as an educational process with the examinations occupying the secondary albeit necessary role. A unique characteristic of the Society's education process is that the student body is spread across the length and breadth of the North American continent. A state and provincial distribution of the undergraduate institutions of higher education attended by the May 1968 Parts 1 and 2 candidates shows the candidates coming from 41 states and 7 provinces. Some 75 percent of the candidates are from the United States and 25 percent from Canada.

The relatively small number of the

(*Continued on page* 6)

Truth in Lending

(Continued from page 1)

monthly effective rate) is 14.50% (the Act allows rounding to the nearest ¼%) and this is the Annual Percentage Rate (APR) that would be quoted. On a discount basis—say, where a consumer borrows $100 but receives only $92 and is required to repay the $100 over 12 months—this would be quoted under the Act as an APR of 15¾%, *not* as an 8% discount.

What doesn't the Act do?

Only *consumer* credit is covered. Thus business credit (except for agricultural purposes) is excluded, perhaps because businessmen are presumed to know what they are doing in credit matters and do not need the protection of the Act. The Act also excludes non-real property credit transactions in excess of $25,000—apparently because such a large transaction not involving real property is presumed to be a business loan not a consumer loan, or because consumers involved in credit transactions of this magnitude are also presumed to know what they are doing.

Thus, much credit is excluded but, lest anyone be disturbed about all the exclusions, let him be comforted by what the inclusions encompass—namely, more than half a million creditors and more than one hundred billion dollars of consumer credit.

The Act does *not* prohibit high finance charges. It is concerned with *disclosure*—informing the debtor what he is paying for his loan, i.e., what the finance charge and APR are. The Act even specifies the size type required for any printed disclosure of the finance charges or rates. The Act requires disclosure of the finance charge and other items in advertising and at the time of the actual extension of credit.

What is the Finance Charge?

Basically, the finance charge is the sum of all credit charges paid by the consumer. It includes any interest charges but may include many other charges. Some other charges included are service or carrying charges, points, fee for a credit report and, perhaps of special interest to actuaries, premiums for involuntary credit life, accident, health or loss of income insurance. Some items—e.g., taxes not included in the purchase price—are excluded from the finance charge, if properly disclosed and itemized.

What is the FRB Role?

The Act provides that the Federal Reserve Board ". . . shall prescribe regulations to carry out the purposes of this title . . . " Judging by the voluminous material issued, the members of the Board have accepted their mandate with zest. A proposed Regulation (the Board has reported that they received more than 1,200 responses to that proposed Regulation) was followed by the final Regulation (including two Supplements) and known as Regulation Z.

The Board has also issued two volumes. One volume contains extensive tables showing the finance charges and rates for regular and two types of irregular transactions. The other contains extensive values to assist in calculating the finance charges and rates for all other irregular transactions.

Members of the Board have testified before Congress and have spoken to various groups concerning Truth in Lending. In addition, the Board has issued press releases, corrections, amendments and interpretations to Regulation Z. Some flow of material affecting Regulation Z continues.

Does Act apply if no Finance Charge?

The answer, surprisingly, is "Yes" according to the Board. Part of the Board's definition of consumer credit is that it is payable in more than four instalments, and if payment of the price of a consumer product is in more than four instalments, the Act applies. "Amount of down payment required" is an example of an item, other than the finance charge, that must be disclosed.

Some Actuarial Aspects

Nominal Rate

Nominal annual rates of finance charge (as pointed out by Commissioner James Hunt in the October 1968 issue of *The Actuary*) and *not* effective rates are specified in the Act. Since the avowed purpose of the Act is to allow a consumer to compare the various credit terms available, this does not appear to be the proper basis for the quotation of a rate. Obviously, 1% at the end of each month is a higher charge than 6% at the end of each six months, yet, under the Act, both would be quoted as a 12% annual percentage rate of finance charge. The promoters of the Act might have been influenced by the thought that many laymen would be confused that 1% a month is not 12% a year and were willing to settle in this instance for "Approximate Truth in Lending."

Open-End Credit

In accounts permitting open credit, e.g. charge accounts or credit card accounts, finance charges may be computed periodically.

The calculation for this APR is quite simple. The rate applicable for a particular balance for a particular period is multiplied by the number of periods in a year. For example, if on a charge account the charges are 2½% a month on outstanding balances under $100 and 2¼% on balances between $100 and $200, etc., the annual percentage rates quoted are 30% for balances under $100, 27% for balances between $100 and $200, etc.

Other than Open-End Credit

In accounts other than open-end credit, the two prescribed methods for obtaining annual rates are the actuarial method and the United States Rule. In place of either of these, tables issued by the Board may be used. The two methods and the Board's methods are discussed below.

Actuarial Method

The actuarial method is simply the familiar equation of value (also known as the discounted cash flow method), where the rate of finance charge to the debtor (often thought of as the yield to the creditor) is determined by equating at any point in time (the Act chooses time zero) the present value of advances by the creditor to the present value of payments by the debtor. Thus, the formula is:

(Continued on page 5)

Truth in Lending

(*Continued from page 4*)

APR = ki

where i = Rate of Finance Charge per interval, k = number of intervals in a year and i is determined from

$$\sum_{t=1}^{n} A_t (1+i)^{-t} = \sum_{z=1}^{m} P_z (1+i)^{-z}$$

where A_t = advances at time t

P_z = payments at time z

n = number of advances

m = number of payments

and where time is measured in intervals from the outset of the transaction.

The case of multiple yields presented by this writer in the September 1968 issue of *The Actuary* and discussed in subsequent issues is covered in the Act, but in my opinion, *not* sufficiently. The Act states that multiple yields may be obtained in the case of multiple advances and the average time of the advances should be determined and the sum of all the advances should be considered to be one advance issued at that time (i.e., applying to the advances the Method of Equated Time presented by Dr. Myers in the February 1968 issue of *The Actuary*). This would not seem to eliminate the problem as is evident from the example presented by Dr. Hickman in the October 1968 issue of *The Actuary* where only one advance was involved. Multiple yields can occur in transactions without multiple advances.

Commissioner Hunt, in the October 1968 issue of *The Actuary*, raised the as yet unanswered question as to how the term "actuarial method" came to be used. Any method employing an actuarial calculation presumably is an actuarial method. The Act's definition of such a calculation apparently includes one where the principles of compound interest are applied.

The United States Rule

The United States Rule provides that the annual percentage rates shall be determined by computing the finance charge ". . . on the unpaid balance for the actual time the balance remains unpaid and if the amount of a payment is insufficient to pay the accumulated finance charge, the unpaid accumulated finance charge continues to accumulate to be paid from the proceeds of subsequent payments and is *not* added to the amount financed" (italics mine). Thus, the United States Rule seems to be the same as the actuarial method, except that the principles of simple interest rather than compound interest are used.

Federal Reserve Board Tables

Two volumes were prepared by the Federal Reserve Board and are available from the Board at $1 each. These volumes, indeed, represent an interesting actuarial aspect of the Act. They provide the values required to obtain the APR for single advance transactions where equal payments are made at equal intervals. The volumes also give the method for obtaining the APR for irregular transactions by a practical approach utilizing various types of averages and interpolations, and in addition contain examples, formulae and some comments on the accuracy of the methods.

The tables for regular transactions in Volume I are straightforward from an actuarial viewpoint. The tables show for each APR the value of $\frac{100n}{a_{\overline{n}|i}} - 100$ where n = number of payments, APR = ki, and i = the effective rate per interval. Tables were prepared for both weekly and monthly intervals — i.e., k = 12 for monthly and 52 for weekly.

The two types of irregular transactions presented in Volume I are (a) an odd first period, and (b) an odd first payment not exceeding 2¼ times a regular payment and/or an odd final payment.

Volume II deals with all other irregular transactions and contains Monthly and Weekly tables of Factors for each APR called Factors A, B and C.

A = Number of Payments

B = Equivalent Single Payment Point

C = Finance charge per 1,000 (related to payments *not* to advances, as in Vol. I).

Thus,

$$A - a_{\overline{A}|i} = A - A(1+i)^{-B} = C\left(\frac{A}{1000}\right)$$

where i = effective rate per interval and APR is 12 i for monthly and is 52 i for weekly.

These three factors are the basis for the manipulations in Volume II to allow the determination of the APR in *any* irregular transaction.

Space does not permit the presentation of examples of irregular transactions showing the derivation of the formulae. Such examples have been prepared by this writer and are available from him upon request.

The Act attempts to devise a standard approach for determining the APR. In complex transactions, however, it seems that many creditors will find it difficult to calculate the APR without aid.

The law should be of interest to actuaries not only for its actuarial aspects but for what it may presage in the area of a "Truth in Price of Insurance" law. Dr. Belth pointed out at a Society of Actuaries meeting that the Congress took more than 3,000 pages of testimony on Truth in Lending with much of it devoted to the supposed impossibility of writing an Act that would really work. Whether the Act will really work remains to be seen. The Act may not provide the "absolute truth," but I believe that it provides far more truth than was previously available and was worthwhile legislation. ☐

APOLOGIES TO A.E. HOUSMAN

(*We are indebted to Ack-Ack and to the author Richard Drake for permission to print the following comment.*)

When I was one-and-twenty
I heard a wise man say,
"Give consultation and advice
But if you'd make it pay,
Become an Actuary
In A & H or Life."
But I was one-and-twenty,
And unconcerned with strife.

When I was one-and-twenty
I heard him say again,
"Annuities and Pensions
Can only bring you pain;
Their variable payments
Bring fixed and endless rue."
And I am one-and-forty,
And oh, 'tis true, 'tis true.