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TIME SERIES ANALYSIS AT WATERLOO

by David G. Halmstad

The Society's Committee on Research and the Department of Statistics of the University of Waterloo jointly sponsored the seventh of the Committee's annual Research Conferences on September 28-30, 1972 in Waterloo, Ontario.

This year's topic, Time Series Analysis, covered the more recent advances in statistical analysis of time series, particularly in economic data. While actuaries are accustomed to the use of forecasts of economic series (such as the level of interest rates), remarkable progress in statistical analysis of such series has not received actuarial attention.

Professor George C. Tiao of the University of Wisconsin introduced the participants to Box-Jenkins time series methods and models, and did so in exceptionally clear and direct style. Robert B. Miller, also from Wisconsin, followed with several case studies of actuarial data, including indices of paid claim costs and frequencies. Frank Reynolds of the University of Waterloo added case studies of life insurance data for cash flow and insurance sales series. Richard Ziock and Jack McGuinness also discussed the role of time series analysis and forecasting in insurance.

Eugene F. Fama of the University of Chicago discussed his recent and important work on the balance between risk and return within the efficient market theory. The importance of Prof. Fama's portfolio model work was supplemented by a recent study by Der-Ann Hsu, now at Princeton University, on the behavior of stock prices. James C. Hickman added some important comments on long-term interest rates, and Messrs. Ziock and Reynolds added studies of bond and

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To All Our Readers,

A Happy New Year!

The Editors

INSURANCE SALE NEEDS SALESMAN

by Thomas Mitchell

Life insurance will continue to be sold on a one-on-one basis between the client and salesman, according to the panel at the annual meeting of the Actuaries Club of Indiana, Kentucky, and Ohio, held on October 4, in Fort Wayne, Ind. Ralph Waldo, President of Columbus Mutual Life, Richard Phillips, Agent for Fort Wayne for Lincoln National, and Charles Williams, FSA, comprised the panel on the future of life insurance marketing.

Mr. Phillips stated that the agent's job was to communicate and explain ideas, not sell policies. The industry is not able to keep enough good agents. Even with the elaborate testing, there are still unknown factors. The agent's basic earnings are from first-year commissions, which creates problems for the agent in servicing policies, especially after a long time in the business. A successful agent eventually needs a partner and clerical help.

Mr. Phillips was enthusiastic about the trend to a corporate form of life insurance shop. A corporate form creates a value to the agent's estate through the redeemable net worth of the corporation. To the client, it offers continuity of service. It is a good way of bringing new men into the business. The old practice of the general agent assigning orphaned business to new agents does not create as strong a relationship.

ACTUARIAL EXAMINATIONS IN THE PHILIPPINES

by R. L. Bergstresser

In *The Actuary*, April, 1969, I submitted a short article about the Actuarial Society of the Philippines and its activities. Up to that time, the ASP had no program of examinations, but recognized membership in foreign actuarial bodies, or else evaluated a person's college actuarial studies and practical experience as a basis for membership. In 1969 we embarked on a formal program of our own exams, leading to Associateship and then to Fellowship.

One basic decision was not to require an exam in the basic mathematical subjects, e.g., General Mathematics, Accounting, Probability, Statistics, Finite Differences, and Compound Interest. We decided to list these as recommended foundational subjects, which the applicant would need in order to pass our exams in Life Contingencies and in Construction-Graduation. Some applicants with practical experience in actuarial work may have sufficient background in these subjects to take the exams mentioned; others may have to take some college courses for the necessary background. We felt also that with our small membership our members' efforts would be fully occupied in developing a study-examination program for the later exams. Our exams on Life Contingencies and Construction-Graduation will reveal whether or not an applicant is equipped with the basic mathematical knowledge.

Our formal examination requirements for Associateship consist of two exams:

Part 1: Life Contingencies, including continuous functions of compound interest.

Actuarial Exams

Part 2: Construction and Graduation of Mortality Tables (insurance and population tables).

Three further exams lead to Fellowship:

Part 3. Application of actuarial mathematics:

    (a) Selection of risks

    (b) Gross Premiums

    (c) Valuation of liabilities

    (d) Non-forfeiture Values

Part 4. Actuarial Management:

    (a) Expense analysis

    (b) Life insurance accounting

    (c) Investment of life insurance funds

    (d) Life Insurance law

Part 5: Actuarial principles in special lines of insurance:

    (a) Group life insurance

    (b) Accident and Health insurance (Individual and Group)

    (c) Pension plans

    (d) Social insurance

We have prepared a syllabus of readings, modeled largely after the *Society of Actuaries* readings, and we provide review sessions on four Saturdays prior to the exams.

At present we have a Committee for the Education and Examination functions combined, with a single over-all chairman, and a sub-committee for each part; each sub-committee has three members except for Part 1 which has six. (Part 1 is offered twice a year; the other parts once a year). Each sub-committee is responsible for revision of the syllabus, for conducting the review sessions, and for preparing and conducting the exams.

As a result of the exams given in 1970-1972, we have qualified eight new Associates, and several of these have passed one or two of the Fellowship exams. □

AH MEMORIES!

Note: The following poem will bring back happy (?) memories to the senior Fellows and elder statesmen.

Hall and Knight
OR
$$z+b+x = y+b+z$$

E. V. RIEU

When he was young his cousins used to say of Mr. Knight:
'This boy will write an Algebra—or looks as if he might'
And sure enough, when Mr. Knight had grown to be a man,
He purchased pen and paper and an inkpot, and began.

But he very soon discovered that he couldn't write at all,
And his heart was filled with yearnings for a certain Mr. Hall;
Till, after many years of doubt, he sent his friend a card:
'Have tried to write an Algebra, but find it very hard.'

Now Mr. Hall himself had tried to write a book for schools,
But suffered from a handicap: he didn't know the rules.
So when he heard from Mr. Knight and understood his gist,
He answered him by telegram: 'Delighted to assist.'

So Mr. Hall and Mr. Knight they took a house together,
And they worked away at algebra in any kind of weather,
Determined not to give it up until they had evolved
A problem so constructed that it never could be solved.

'How hard it is,' said Mr. Knight, 'to hide the fact from youth
That x and y are equal: it is such an obvious truth!'
'It is,' said Mr. Hall, 'but if we gave a b to each,
We'd put the problem well beyond our little victims' reach.'

'Or are you anxious, Mr. Knight, lest any boy should see
The utter superfluity of this repeated b?'
'I scarcely fear it,' he replied, and scratched his grizzled head,
'But perhaps it *would* be safer if to b we added z.*'

'A brilliant stroke!' said Hall, and added z to either side:
Then looked at his accomplice with a flush of happy pride.
And Knight, he winked at Hall (a very pardonable lapse),
And they printed off the Algebra and sold it to the chaps.

*Pronounced "Zed"

Salesman

Mr. Williams, discussing consumerism, pointed out the difference between the consumer and the often self-appointed consumerist. The consumerists reflect the more educated and questioning consumer who wants more service and has higher expectations than yesterday.

Mr. Williams' company has assigned an actuary full time to the agency department. The actuarial department provides assumptions and profit objectives, but the agency department determines the priorities. This has given outstanding results in creation of new products, resulting in greatly increased premium income, but it takes a creative and persuasive actuary.

Mr. Waldo, giving the overview as president of a company, congratulated those assembled for having the finest union in the world. He felt the insurance market would not change drastically, and questioned certain past changes in marketing such as the family plan, and entry into property and casualty by many companies. He also decried recent actions by state insurance departments as being harmful to the insurance business by putting handicaps on good agents. □