



The Actuary

The Newsletter of the Society of Actuaries

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MAY, 1972

"GROW OLD ALONG WITH ME"

by J. Darrison Sillesky

The 1971 White House Conference on Aging required only four days to draft, polish, print, and distribute to the 3,500 participating delegates a 176-page report on the concerns and the needs of the aged. This was the culmination of a distillation process that began about a year earlier when roughly 250,000 local representatives deliberated in thousands of community conferences to provide grass roots recommendations.

The Conference was called by President Nixon. Its purposes were: (1) to develop a national policy on older Americans, (2) to involve older people in helping solve their own problems, and (3) to involve national organizations in the problems of the aging. The first of these purposes was further defined: (a) to develop specific objectives feasible at the present time, (b) to develop short-range action plans, and (c) to establish long-range goals.

There were 14 topical sessions. Nine dealt with needs identified as Education, Employment and Retirement, Physical and Mental Health, Housing, Income, Nutrition, Retirement Roles and Activities, Spiritual Well-Being, and Transportation. The remaining five sections discussed ways of meeting these needs in terms of Facilities, Programs and Services, Government and Non-Government Organizations, Planning, Research and Demonstration, and Training.

Background papers on each of the major topics were commissioned from experts in the various fields. These extensive studies were summarized into workbooks organized around the principal "issues" that had surfaced in the community conferences and from other sources. Thus, the work of the delegates

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COMMITTEES

Editor's Note: This is the second report on the operations of the Society's Committees. Mr. Fibiger is Chairman of the Education and Examination Committee.

Education and Examination Committee

by John A. Fibiger

Most readers of *The Actuary* have already come in contact with the Education and Examination (E&E) Committee, which is responsible for administering the examinations of the Society of Actuaries and selecting and preparing the related study material. The educational and examination work for a particular examination Part is handled by a Part Committee, working under the direction of the Part Chairman. There are 11 such committees (the work for Parts 1 and 2 is done by one committee).

The Part Committees operate under the direction of seven General Officers who have overall responsibility for the E&E Committee's work. Also among the nearly 200 people on the Committee are individuals whose responsibility is limited to preparation of multiple choice examination questions, and Consultants who, as individuals of recognized competence on a particular topic, review drafts of educational and examination material and suggest revisions of the Course of Reading.

The work for an examination for a given year begins more than one year before the examination with a review of existing educational material by the Part Chairman, the Consultants to the Part, and the Part Committee members. From this review comes a recommendation as to changes in the Course of Reading, which is submitted for review to the

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SOME IMPLICATIONS OF TRENDS IN EDP

by John Kirkman

In December 1971 the Committee on Computers and Data Processing of the Actuaries Club of New York sponsored a panel presentation on the current trends in Electronic Data Processing (EDP). This was followed by a workshop in February 1972. Following are some of the problems discussed at these meetings and some solutions that computer users have developed.

The Changing Personnel Mix

The first problem is personnel. With turnover and retirements, simple insurance and pension administration knowledge within current clerical staffs is disappearing. It is not sensible, however, to make computer programs the sole repository for this working knowledge. In fact, higher competence within remaining clerical staffs is needed to deal with computer input and output and to handle "exception cases" varianced by the EDP system. It is difficult to hire and train clerical talent of this calibre.

Some companies are solving problems in actuarial applications of the system by having actuarial students write and maintain the required programs. For applications involving the daily administration of individual policy records, however, only a smattering of suggestions was offered. These included the use of taped instructions to aid in training for routine clerical operations; systems of personnel rotation; one-shot monetary bonuses for success on LOMA examinations; development of expensive but highly desirable clerical procedure manuals to be used by personnel servicing an EDP system; and following the "Project Team Approach" to systems development where representatives of the cleri-

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The Actuary

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EDITORIAL

WE have felt for some while that the sequencing of the Associateship examinations should be given a fresh look. At present, many—perhaps most—entry-level students have not passed Part 2 as college students. A plausible exam pattern for such a person after joining a company is pass 2 in the fall, 3 in the spring, try 5 in the next fall, and try 4 in the following spring. Under this sequence, the student is a two-year employee before he has been exposed to Part 4.

Since life contingencies are the backbone for much of actuarial work, this student will be unable to contribute to many kinds of projects over this two-year period. Many insurance company or consulting firm employers find it a little difficult to create good assignments for a pre-Part 4 student.

One simple remedy that suggests itself is to split life contingencies (at, say, Chapter 6) and to exchange basic life contingencies (presently in Part 4) for numerical analysis (presently in Part 3). By keeping Part 3 a multiple choice exam, we could still give it twice a year. By having numerical analysis on Part 4 we could ask some essay questions on the material, which might improve the testing process.

One could also consider more radical surgery. Perhaps the Associateship syllabus could be cut down to four exams. Alternatively, we might consider having Part 2 give probability, compound interest and basic life contingencies; Part 3 would pick up statistics and numerical analysis; and Part 4 would be advanced life contingencies. Naturally, any tinkering with Part 2 would open up Casualty Society questions because of the joint sponsorship aspect.

We feel that a careful review of these and other alternative sequences could lead to an improved entry system that would bring new students into real actuarial work a good deal sooner. Any change in this direction would be better for the students, the employers, and the Society.

TO BE CONTINUED

Editor's Note: This is another in the series of articles from the Committee on Continuing Education. The rule is one article to one subject to give the non-specialist in that subject up-to-date general information and to encourage further research in the subject if the reader is so minded. Comments will be welcomed by the Committee and by the Editor.

The International Monetary Crisis

by Richard S. Wolf

Recently much has been written concerning the International Monetary Fund (IMF), the U.S. balance of payments deficits, devaluation of the dollar, "closing the gold window" and the 10% surcharge on goods imported to the U.S. All of these topics are linked to what most people consider to be an international monetary crisis. At this point a brief discussion of these topics and the crisis seems appropriate.

The International Monetary Fund

The IMF was formed in 1944 as a result of meetings at Bretton Woods, New Hampshire, and subsequent agreements that were made as a result of those meetings. The IMF now consists of over 100 member countries. The main purpose of the IMF is to maintain stability of the international monetary markets, by allowing nations to establish official currency exchange rates (in terms of gold or any "gold convertible currency"). Until the "closing of the gold window" in August of 1971 the U.S. dollar was a "gold convertible currency" defined such that one ounce of gold was equivalent to \$35 (\$38 after subsequent devaluation). It was agreed that the true exchange rates would not be allowed to move more than 1% above or below the official exchange rates.

The forces of supply and demand tend to determine the price for something whether it is goods and services or a nation's currency. Thus, to stabilize the price of its currency, a nation buys or sells its currency to influence this supply and demand relationship. For example, in May of 1971, when those with large dollar holdings were expecting the value of the dollar to decrease relative to the German mark and therefore were trying to "unload" dollars, the German Central

BOOK REVIEW

Martin S. Feldstein, Ph.D., *The Rising Cost of Hospital Care*, pp. 88, Information Resources Press, Washington, D. C., 1971, \$4.25.

by D. W. Pettengill

Martin S. Feldstein, Harvard Professor of Economics, on behalf of the National Center for Health Services Research and Development, has made a study of why hospital costs have risen so much and so rapidly. Anyone who is interested in putting the rapid rise of hospital costs into perspective would be well advised to spend the short time required to read this brief essay on Professor Feldstein's findings and conclusions.

In general, the study proceeds from an analysis of *how* and *how much* hospital costs have risen to *why* they have risen. Professor Feldstein emphasizes that the cost per day of hospital care has risen so much more than the general level of prices for two reasons: first, a day of hospital care is a product that has been continually changing; second, hospital wage rates have been rising more rapidly than the general level of wages.

These two phenomena, in turn, are primarily the result of increased patient demand for hospital services, which has been intensified by increased insurance coverage and to which hospitals have responded by introducing more expensive technology and raising hospital wages.

Parkinson's Law seems to operate in this area, as witness Dr. Feldstein's comments to the effect that increasing the supply of hospital facilities and personnel will not serve to stabilize prices in the classical economic sense. On the contrary, more funds to increase the supply of facilities and personnel are likely to accelerate the increase in total spending on hospital care.

The general excellence of this essay is marred by the final paragraph, in which the author forgets his own prior observation that "the growth of insurance coverage is not an independent factor but is in part a response to the rapid increase in hospital charges" and argues that "the essence of the hospital cost problem is that our current methods of hospital insurance have encouraged hospitals to raise wage rates and to increase the sophistication and expensiveness of their product more rapidly than the public actually wants. The challenge to gov-

NFWHPP

Sir:

One actuarial specialty which has evolved in recent years is the work done by insurance company and consulting actuaries for Jointly Trusteed (Union-Management) Pension Funds. The assets controlled by these funds are a staggering amount and continue to increase at a phenomenal rate.

The National Foundation of Health Welfare and Pension Plans, a non-profit organization, was founded in 1954, with the purpose of assisting in the education of those responsible for the operation of Jointly Trusteed Employee Benefit Plans. The Foundation has an Actuaries Committee to advise these educational endeavors and each annual meeting includes an Actuaries Forum.

We need help from more actuaries so that our profession can continue to make a meaningful contribution to the National Foundation. For further information please get in touch with Juan B. Rael, Jr., One Embarcadero Center, Suite 2112, San Francisco, Cal. 94111.

James Atwood
James A. Curtis
John B. Moore
Rodger Patrick
Juan B. Rael, Jr.

Actuaries Committee

* * * *

Hands Across the Sea

Sir:

Dette brevet er for å fortelle deg at minst en Amerikansk aktuar håper å snakke Norsk i Oslo på den nittende Internationale Kongressen.

Roy Berg

ernment policy is to find new methods of organization and financing that will make the future development of hospital care more responsive to the true preferences of the people."

Professor Feldstein ignores the fact that the hospital is the physician's workshop and that some of the expansion of hospital equipment and services is directly attributable to the desire of the physician to have the finest workshop. Community pride is also a factor. Finally, there is considerable doubt as to what are the "true preferences" of the people. "Spare no expense" is a not uncommon cry of the sick. □

LETTERS

ACT in U.K.

Sir:

I was most interested to read about David R. W. Jamieson's "ACT" in the January issue of *The Actuary*.

In the United Kingdom there is available a column manipulation language called ACT, which has been specifically designed for actuarial application by G. T. Humphrey, an actuary.

The language is very easy to learn and requires little computer knowledge; furthermore it is also available on a time sharing system for accessing by remote terminal and I have successfully used ACT on this basis.

F. Roger Atkins

* * * *

Jacoby Quotes Jacoby

Sir:

How about a couple of actual quotes from Jacoby?

They are:

"The race is not always to the swift nor the battle to the strong, but that's the way to bet."

"It was said of Horatius: 'And how can man die better than facing fearful odds?' That may be a good way to die but it's not the way to bet."

Oswald Jacoby

* * * *

Facts

Sir:

In the March issue the *Facts and Foibles* article invited solutions to the problem propounded by Ibn El Bana. I am glad to respond.

11,111,111,111,111,111 has divisors 2071723 and 5363222357.

(see Yates, Samuel, Factors of Repunits," *Journal of Recreational Mathematics*, Vol. 3, No. 2, April 1970.

John E. Morrill
Department of Mathematics
DePauw University

A list of *Errata* in the volume *The Fundamentals of Pension Mathematics* is now available and can be obtained on request from Barnett N. Berin, F.S.A., Vice President & Actuary, Benefit Consulting Division, Frank B. Hall & Company, 88 Pine Street, New York, N. Y. 10005.

ARCH

Various Authors, *Arch Volume 1972.1*, Society of Actuaries, Committee on Research, pp. 80.

by Peter L. Hutchings

Evidently the security loadings in the registration fees for the Society's Research Conferences (at New Haven, Michigan, etc.) were redundant; the Research Committee has used the excess to capitalize a risk venture called ARCH. This enterprise consists of Xerox copies of various presentations, papers, and whatnots of a theoretical bent.

The CH part stands for clearing house—the editors hope to provide “speedy dissemination of current thinking and aids to research rather than the publishing of thoroughly edited papers.” ARCH will be a randomodical; whenever the editors have enough material, they will do an issue.

One subscribes by depositing a small sum with David G. Halmstad, Secretary, Committee on Research, Society of Actuaries, Area 22Z, Metropolitan Life Insurance Company, One Madison Avenue, New York, N.Y. 10010. You will stop getting issues when $8I + P$ exceeds 100D, where I is the number of issues received . . . P the number of pages . . . and D is your deposit in dollars. (The 8 is only a semiconstant, since it represents postage.) This reviewer suggests a free first issue to whoever can get Dave's address below eight lines; other free first issues will go to those Society members who have attended a research conference.

The first issue is a delight; Gordon Shellard, Dr. Paul Strickler of the Swiss Reinsurance Company, James C. Hickman, T.N.E. Greville, Paul Kahn, and John A. Beekman are represented on topics from the life table to ruin function approximations. Most any actuary can find one or more pieces of interest, although one can also expect a paper or two to be a bit beyond him. We urge our readers to send in \$1.87, or \$2.58, or some other strange sum and try an issue or two. Meantime our congratulations to the Committee on Research and the directing editors, Russell M. Collins, Jr., and David G. Halmstad.

Actuarial Meetings

- June 8-9, Actuaries' Club of Southwest
- June 8, Baltimore Actuaries Club
- June 21, Seattle Actuarial Club
- July 13, Baltimore Actuaries Club

STANDARD REINSURANCE MORTALITY EXPERIENCE

by Charles Wilson

Editor's Note: This report was given at the November 1971 Annual Meeting of the Actuaries' Club of the Southwest. We welcome the chance to present this study of one company's experience and we hope this will encourage the submission of other individual company statistical studies.

Since 1963 the Republic National Life Insurance Company has been compiling certain mortality experience data on Standard Yearly Renewable Term business. A Yearly Renewable Term Cession is one on which the company has accepted the mortality risk on the net amount at risk of that part of a policy which exceeds the ceding company's life retention limits.

This type of business from the Reinsurer's standpoint is subject to three types of decrement which result in low persistency. The three decrements are the original policy lapses, the decrease in net amount at risk due to the build up in reserves on permanent policy cessions, and recapture should the ceding company raise its life retention.

As a result of these three factors the Standard Yearly Renewable Term exposure is heavily weighted toward the earlier durations as the following figures indicate. The exposure is for calendar years 1963 through 1970.

Policy Year	Amount of Exposure
1	\$ 2,675,729,400
2	2,456,343,700
3-5	4,640,085,700
After 5	2,094,529,200
	\$11,866,688,000

The exposure is determined by use of valuation records which do not allow separation by sex or separation by medical or non medical classes. The nature of the business would suggest that it is predominantly on male lives and is largely medically underwritten at least at ages above 30.

Table I shows the relationship between the actual mortality over the period to Table X₁₈ Mortality. (TSA IX p. 38).

TABLE I

Policy Year of Death	Actual	Expected X ₁₈ Select	Percentage of Actual to X ₁₈
First Policy Year	\$ 4,108,979	\$ 3,408,512	120.6%
Second Policy Year	3,503,662	4,083,129	85.8%
Third-Fifth Policy Year	12,428,884	12,226,862	101.7%
After Fifth Policy Year	10,606,731	12,256,205	86.5%
All Years Combined	\$ 30,648,256	\$ 31,974,708	95.9%

As you can see the percentage has varied from a high of 120.6% in the first policy year to a low of 85.8% in the second year. This may possibly be explained by looking at the overall mortality rates per 1,000 which are shown in Table II.

TABLE II

Mortality Rate per 1,000 — Years 1963-1970

All Ages Combined	POLICY YEARS			
	1st Year	2nd Year	3rd-5th Year	After 5th Year
Accident	.83	.60	1.18	1.03
Sickness	.71	.83	1.50	4.03
TOTAL	1.54	1.43	2.68	5.06

These figures indicate that there may be some anti-selection in the first policy year, especially in view of the fact that the insureds in the second policy year are on the average one year older than those in the first policy year. The first year excess claims are predominantly in the accident portion of the first year death rate.

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Standard Reinsurance Mortality Experience

(Continued from page 4)

The poor first year experience might be expected considering the heterogeneity of underwriting and sales practices of the hundreds of companies whose business goes to make up the experience.

One favorable aspect of the mortality experience has been the age zero mortality which is shown as Table III. There was an exposure of \$21,138,000 at age 0.

TABLE III
Mortality Rate per 1,000
Age 0

Accident	.48
Other	.78
TOTAL	1.26
Table X ₁₅	6.33

Probably the reason that the mortality is lower than the 6.33 of Table X₁₅ is that the company experience is on ages a few months older than the age of one day assumed by X₁₅. Many client companies do not issue insurance on an infant under 14 days old.

Another significant result of the study is the high death rates due to accidental causes at nearly all ages. The death rates due to accidental causes are probably inflated due to the fact that we have used no exclusions that a typical accidental death benefit would contain. Also there is no investigation to see that the death which was reported as accidental is actually an accident, unless the policy was still within the contestable period at date of death.

Table IV shows the mortality rates due to accidental causes for the most significant ages.

TABLE IV

Mortality Rate per 1,000 for Deaths due to Accidental Causes

Attained Age	1st Year	2nd Year	3rd-5th Year	After 5th Year	1951-1956 Experience*
13-17	.85	.56	.29	.36	.37
18-22	1.13	1.53	1.88	1.31	.58
23-27	1.04	.53	.79	.87	.38
28-32	.82	.84	2.39	.96	.29
33-37	.84	.32	.64	.92	.29
All Ages Combined (0-87)	.83	.60	1.18	1.03	

* TSA 1958 Report

International Monetary Crisis

(Continued from page 2)

Bank was exchanging marks for dollars to maintain a satisfactory exchange rate. They finally reached the point where the cost of maintaining this exchange rate was too great. (Although the IMF helps a country with temporary balance of payments deficits to maintain its currency value, when it becomes apparent that new exchange rates are needed, the IMF permits it to revalue its currency a more realistic level.)

The Gold Reserve Act of 1934 set the official price of gold at \$35 per ounce. With each monetary crisis since then, there has been speculation and pressure to increase the price of gold (i.e., de-

value the dollar). In March of 1968 the U.S. and other major nations agreed to the two-tier system under which the monetary price of gold would be pegged at \$35 per ounce but the price of gold for other uses would be allowed to fluctuate. The present price of gold (for other than monetary uses) has recently gone as high as \$58 per ounce. Part of this rise in price is due to commercial demand for the metal.

Paper gold, or special drawing rights (SDR's), was created in recent years to provide a means of payments (other than with gold) among national governments. This represents an attempt to use something other than gold as a reserve basis for international exchange.

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SOCIAL SECURITY NOTES

Benefit Loads in Relation to Coverage and Reserves for Railroad Retirement and Other Major Retirement and Social Insurance Plans, 1950-70. Railroad Retirement Board, its Actuarial Note No. 3-72, April 1972.

This note presents selected statistics and analytical ratios for (1) all private pension plans, (2) railroad retirement, (3) Social Security, (4) Federal civil service retirement, and (5) State and local retirement plans. Chronological data are given for active membership, beneficiaries, benefit payments, and assets. For 1970 alone, the note gives some breakdowns of overall figures and certain analytical ratios. Perhaps the most noteworthy is the astronomically high ratio of beneficiaries to active members (1.58) for railroad retirement. By comparison, the ratio is 0.36 for OASDI and 0.16 for private plans combined.

Free copies may be obtained from the Railroad Retirement Board, Chicago, Ill. 60611.

* * * *

Two Decades of Employee Benefit Plans, 1950-70: A Review, Walter W. Kolodrubetz. An article in the Social Security Bulletin for April 1972.

This article presents a wealth of information on the growth of employee benefit plans between 1950 and 1970. The emphasis is on plans for workers in private industry, but certain public plans not directly underwritten by governmental bodies (such as group life insurance and health insurance for Federal employees) are also included. The article deals mostly with health insurance, but there is a special table (No. 7) with data on private pension and profit-sharing plans.

Single copies are on sale by the Superintendent of Documents, Washington, D. C. 20402. 35 cents.

* * * *

Social Security Programs throughout the World, 1971. DHEW Publication No. (SSA) 72-11802, pp. XXIX plus 249.

This new edition of international social security summaries describes the programs in effect (or only on the books) in 125 countries as of January 1971. The programs dealt with are: (1) Old-age, invalidity and survivor, (2) Sickness and maternity, (3) Work injury, (4) Unemployment, and (5) Family allowances. The introduction discusses recent developments and makes comparisons between countries while the text proper describes the individual programs in tabular form.

Available at \$2.25 from Superintendent of Documents, Washington, D. C. 20402.

"Grow Old along with Me"

(Continued from page 1)

was channeled into formulation of national policy to deal with the stated issues, but with freedom to deal with additional issues of their own formulation. The workbooks are still available at modest cost from the Superintendent of Documents and are worthy of careful study.

The 3,500 delegates appeared to have been drawn in large measure from organizations of older persons and from organizations accustomed to working closely with older persons. The recommendations reflected this orientation by being concerned more with the need to overcome the problems of the aged than with the costs of the needed programs. The full report is worth reading. Highlighting a few of the recommendations may stimulate individual investigation.

The WHCOA recommended, as an immediate goal, that older people should have total cash income in accordance with the "American standard of living." The minimum standard of income adequacy now was defined as the B.L.S. intermediate budget for an elderly couple (\$4,500 in Spring 1970) adjusted annually for both cost of living and standards of living. By 1974 the minimum income should be \$7,114 to provide a "comfortable" standard of living for the elderly couple. Financing would be provided in part from Social Security and in part by payments from general revenue. Several changes were recommended for the Social Security System including partial financing from general revenues.

Recommendations included immediate increases in the benefits of Medicare-Medicaid, but only as a temporary step toward a comprehensive national health security program including the aged as well as the rest of the population. "There should be no deductibles, co-payments, or co-insurance."

In the pension area, concern was registered with respect to fiduciary responsibility, disclosure, vesting, funding, portability, and reinsurance protection. Much concern was expressed about the need for flexible retirement ages, opportunities to work beyond age 65, pre-retirement counseling, and assistance in obtaining work at older ages both below and above age 65. Housing and health were other areas that received a great deal of attention.

At the closing session, President Nix-

International Monetary Crisis

(Continued from page 5)

U.S. Balance of Payments

Very simply stated, the U.S. balance of payments statistics measure the differences between the dollar value of receipts from foreigners as opposed to payments to foreigners. For about the last twelve years, the U.S. has continually had a balance of payments deficit primarily because of such factors as:

1. Rising economies of countries such as West Germany and Japan (with the aid of unrealistic exchange rates) have developed products very competitive with corresponding U.S. products; and
2. Increasing U.S. expenditures abroad as a result of military acts, travel, foreign aid, and for capital investment.

In a sense the present balance of payments deficit has evolved because of our willingness to help other countries (to ultimately strengthen our international position) and our unwillingness to devalue (and possibly lose face).

The table below illustrates how our balance of payments position has worsened over the years to a point where the 1971 deficit will substantially exceed the total of U.S. gold holdings.

Balance of Payments on Official Standard Basis
(in billions)

Year	Amount	Year	Amount
1960	-\$3.4	1967	-\$3.4
1964	-1.5	1968	-1.6
1965	-1.3	1969	-2.7
1966	-0.3	1970	-9.8
	1971*		-23.3

*For first three quarters (\$-5.5 in first quarter, \$-5.7 in second quarter and \$-12.1 in third quarter).

on expressed a personal commitment to make 1972 a year of action on behalf of 21 million older Americans. He dedicated a portion of his State of the Union message to "Action for the Aging" and appointed Arthur Flemming Special Consultant to the President on Aging. A new Cabinet-level Domestic Council Committee on Aging has the recommendations of the WHCOA at the top of its agenda and has established follow-up procedures to assure continuing attention by the many types and levels of government and private organizations in a position to implement the recommendations. □

U.S. Gold Holdings

During the last few years, U.S. gold holdings have steadily decreased because of the U.S. balance of payments deficit causing more dollars to be held by foreign governments later to be redeemed for gold. The September 28, 1971 edition of the Wall Street Journal reported U.S. gold holdings at the end of August, 1971 at \$10.21 billion, the lowest since the \$9.12 billion amount at the end of 1935. The level of holdings stood at \$21.75 billion at the end of 1955 and \$17.80 billion at the end of 1960.

August 15, 1971 Presidential Actions

Inflation at home, balance of payments deficit and the sharp drops in U.S. gold holdings set the stage for President Nixon's August 15, 1971 actions. From the U.S. standpoint it was apparent that the U.S. payments deficits must be corrected by keeping U.S. inflation under control and by determining realistic currency exchange rates which may be more easily supported. To accomplish the currency revaluation, the U.S. sought to have the other countries adjust their currencies upward rather than devalue the dollar, (thus increasing the price and importance of gold). The "closing of the gold window" represents an attempt to move away from the gold as the international reserve standard (i.e., to demonetize gold).

Subsequent Devaluation

Devaluation (resulting in one ounce of gold being equivalent to \$38) along with revaluation of other currencies is in the process of being implemented and should go a long way towards solving the imbalances of the monetary crisis.

Further Information

1. A book, *The Gold War*, by Gordon Weil and Ian Davidson, describes the mechanics of the international monetary system and is excellent background reading for the present monetary crisis.
2. Another source of material is the Survey of American Business, a monthly publication by the U.S. Commerce Department.
3. The U.S. Department of Commerce also issues a series of pamphlets, entitled "Do You Know Your Economic ABC's?", describing in laymen terms various topics involving the U.S. economy. One such pamphlet is on the U.S. balance of payments.
4. *Money and Banking* by Charles L. Prather. □

Committees

(Continued from page 1)

Education Chairman of the E&E Committee and the particular Vice-Chairman for Education who is assigned to work with the Part involved.

Out of this process come decisions as to any changes in the references for the Part published in the "Requirements for Admission" booklet, and any changes to be made in the Study Notes for the examination. New Study Note material may be prepared by one of the members of a Part Committee, or by someone not on the Committee who has particular expertise in the topic covered by the Study Note. Drafts of Study Notes are also reviewed thoroughly by the General Officers assigned to educational matters.

For all essay examinations, the Part Chairman calls on his Committee Members to submit possible questions for the examination about eight months before the examination is given. After these are received, a draft examination and alternative questions are circulated for review to the Part Committee members and Consultants. After receiving comments, the Part Chairman prepares a revised draft of the proposed examination. This draft and possible alternative questions are submitted to the General Officers for review. The final text of the examination is then set at a meeting of the Part Chairmen with the General Officers and the Society's Executive Director. A similar procedure is followed for multiple choice questions on Parts 4-8, except that these questions are generally prepared by specially assigned item writers rather than by Part Committee members who have responsibilities for both suggesting and grading of essay questions.

On Parts 1-3, Part Committee members are involved only in examination preparation and the review of educational material, because there are no essay papers to grade. The Part 1 and 2 examinations are developed in connection with the Educational Testing Service, to utilize the experience of ETS in drafting test questions and to keep the examinations related to material currently included in college and university courses.

Once the text of the examination is determined, a final copy is prepared by the Part Chairman, and then reviewed for correctness by the Examination

Actuarial Science or Puzzling Pool

unearthed by E. R. Vogt

"Oh Actuary,
Quite contrary,
How does your Pool really grow?"

"From cradle to bier
With a loss each year
In an ever increasing flow."

"Oh Actuary,
Extr'ordinary,
Who covers these losses each year?"

"The insurance Pool
According to Rule
Must lose to stay in the clear."

"Oh Actuary,
Final query,
Why doesn't the Pool run dry?"

"To get a plus
Subtract each loss
And the Pool will grow by-and-by."

Chairman, the Examination Vice-Chairman, and the Society's Executive Director before it is printed.

After the examinations are given, the candidates' papers are sent to the appropriate Part Chairman. Multiple choice answer sheets are forwarded to the Educational Testing Service for machine scoring, while essay answers are distributed for the first reading, which is done "at home." Each committee member receives candidates' papers for only one essay question.

The final grading of essay papers is done at a central grading session which all Part Committee members attend. Prior to this session, scores on the first reading are sent to the Part Chairman who combines them with the multiple choice scores and determines a tentative pass mark. On the basis of this tentative mark, it is determined which candidates have clearly passed or failed, regardless of any change in score which might result from an additional reading. A list of candidates whose papers are to be read a second time is prepared and candidates' papers are exchanged so that each committee member grades a different question in the second reading.

After this reading, the Part Chairman determines an adjusted tentative pass mark, and papers of candidates whose scores are close to this pass mark are carefully examined. Any discrepancies in scores on the first two readings are resolved, either by consultation between

the Part Chairman and the two graders involved, or by a third reading of the papers by a third reader for each question. The paper may also be read in its entirety by the Part Chairman.

After grading is completed, the Part Chairman sends to the General Officers a recommendation as to the pass mark, together with data supporting his recommendation. The final pass mark is then determined by consultation among the General Officers, and the information about results is prepared and mailed by the Office of the Society.

On the basis of the grading outline used in marking the candidates' papers, Illustrative Solutions are prepared for use by future candidates for the Part. The final step in the examination year is the analysis of the performance of candidates on each question for use in developing future examinations.

Committees Need Help

With nearly 10% of the Fellows of the Society active in one form or another of Education and Examination Committee work, there exists a continuing requirement for staffing the Part Committees and finding individuals willing to write multiple choice items or educational material. Service on the Education and Examination Committee is considered to be an honor. The normal term for members of a Part Committee is considered to be at least three years, although many Committee members serve longer and it is not uncommon to find members of the General Officers with 10-15 years of service on the E&E Committee. Any Fellow interested in serving in the educational work of the Society, either on a Part Committee or as an author of study material, should contact the General Chairman of the E&E Committee or the Executive Director of the Society to determine if there is an unfilled need in the area of his or her particular specialty.

The Society of Actuaries is perhaps unique among professional organizations, both in the maintenance of its own educational and examination system and in the relatively high percentage of fully qualified professionals who are serving in this effort. Great credit and thanks are due to the many members of the E&E Committee who labor so effectively and diligently in the maintenance and improvement of this system. □

Trends in EDP

(Continued from page 1)

cal servicing area share with EDP personnel the responsibility of defining, coding, testing, and implementing the desired EDP system.

There is a new breed, the EDP specialist. Whether they are programmers, systems men, schedulers, or machine operators, they are growing in number and importance. How they should be treated, how their professional competence is to be judged, and where their primary loyalties lie are questions not answered in the regular management manuals.

Relations with the Public

The second problem is public relations. Many corporations have upset the public as a result of allowing their EDP systems to make decisions based on machine logic. Before EDP these decisions were made by middle management personnel on a case-by-case basis. It was suggested that this problem is directly traceable to faulty systems' design. If a computer is used and one of the basic objectives is also to improve relations with the public, then an EDP system developed with that objective in mind will probably succeed. If, however, this public relations objective is not considered when designing the EDP system, the risk of bad public relations is greatly increased once the system is implemented. Clerical support surrounding the computer system must be trained with emphasis on the public relations aspect of their job. The computer is a scapegoat for all kinds of errors, even those attributable to humans! Blaming the computer is not good public relations.

Other points raised were: (1) some applications *do not* belong on the computer; (2) quite possibly the policyholders are somewhat at the mercy of another corporation's EDP system (e.g., a bank that processes the company's checks or drafts), and (3) no computer program is perfect.

The Molasses Effect

A company with a few computer systems working on an operational basis has the problem of keeping these systems up-to-date (maintenance), developing new systems for other but possibly related applications, and sometimes decid-

ing whether or not to integrate newly developed systems with existing systems. The simple time estimates generally made for the expected completion of each major job must usually be doubled, and sometimes tripled, to be realistic.

For system testing, one company controls the implementation of changes to its individual policy administration system by maintaining two "model office" sets of master and transaction records. The first is a standard sample which covers a good cross-section of the types of daily processing done in the system. The second is problem-oriented. A list of open problems is kept up-to-date through weekly meetings where priorities for the next test run are also set. Test cases are created for the second model office on those problems which will be tested in the next run and these test runs are made weekly. If the output of the second model office indicates that the changes have been made successfully, the first (standard) model office is run to be sure that these changes did not alter logic in the system which was previously correct. Changes which pass successfully through both model offices are then placed into production.

Factors outside a Company's Control

Even if the internal system were perfect there are outside influences which can disrupt the operations:

(1) Continuous level power supply—any interruption in the level of power supply, regardless of how long, will seriously affect any company's operation. Obvious solutions are (a) back-up generators to restore power and (b) enforcing the use of Checkpoint/Restart so that all jobs can be started up from the point of failure rather than completely restarted. For smaller installations one suggestion was to have more hardware in house than would be necessary were there no down time and to plan on a reasonable amount of time when the system will not be operating.

(2) Reliable telephone service—an essential for a teleprocessing system or a time sharing environment. If teleprocessing is being used in connection with the updating of individual policy records, speed is the only benefit it has provided over the method used in the past. Hence, the best back-up seems to be the method in use prior to telepro-

cessing. The U.S. mail usually goes through and, in the event of mail strike car service has been used by one large company.

(3) Prompt hardware maintenance and reliable basic software. For large installations, the EDP vendor will usually have service and field engineers on site around the clock. For the smaller and medium sized installations, such help may not be economically feasible. Possibly small users could band together to present their problems to the vendor as a group. Most vendors are very responsive to pressure and should be more sympathetic under these circumstances. Also, small companies could establish back-up arrangements with other corporations who have compatible EDP installations, so that when one system is down, the jobs can be run on the other's equipment.

The Eternal Vigilance Problem

Axiomatically, any degree of success with EDP has a tendency to go to people's heads.

If an EDP system has cranked out correct results for a reasonable period of time, it is assumed that it will do so forever. Spot checking stops and disaster follows shortly thereafter.

To obtain quick one-shot results, temporary extra outputs get built into the system. Unfortunately, someone forgets to have them removed.

Operations procedures become routine, then shabby, finally sloppy and costly.

General

The basic decision to use a computer implies that initial development funds and manpower are available. This is the start. What is often missing is a similar commitment of manpower and money to the continuing efforts required to keep the system working properly. There must be no letup in either (a) the education and training of servicing clerical forces necessary to monitor and maintain the EDP system(s), or (b) the developer and implementation of controls, both on application systems and the hardware/software complex on which they are run. Finally it is essential through research to stay abreast of the EDP field. □