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ADDRESS OF THE PRESIDENT, EDWARD A. LEW

REORDERING ACTUARIAL PRIORITIES

THERE is a manifest advantage in reviewing with you the affairs of the Society on its twenty-fifth anniversary, for we can still hear the record of those years speaking to us in a living voice. Our recollections have not yet been molded into souvenirs intended to serve present pride and future aspirations; many here have a sense of personal connection with the decisive events of the last two or three decades. There is little reason to look further back into the family album, for, in the words of the historian J. H. Plumb, "In Western societies we no longer prophesy the future by brooding over the past; it offers so little guidance. We limit the problem in time and use the computer, and get alternative answers" [13].

Let us turn briefly to the year the Society was born. The United States had only just assumed the responsibilities of a world power, after having been the motive force to total victory in a conflict of unprecedented scope. Despite the huge drain imposed on it by the war, the country had by 1949 successfully reconverted to a peacetime economy, with prices stabilized and wages and profits higher; moreover, the nation had embarked on a generous program of relief and reconstruction for friend and foe. Events in Canada had taken a similar course, influenced by the fortunes of its neighbor. These accomplishments not unnaturally created a feeling of self-confidence and authority that put only the impossible off as a task for tomorrow.

Our first President, Mr. Edmund M. McConney, concluded his address with the glowing words, "To-morrow is represented with golden opportunity. The problems ahead are not beyond the scope of the human mind if we face them courageously. The frontiers of mind and heart are endless. We can . . . we must . . . find the way forward . . . as free men, unafraid . . . on the journey to the endless horizon" [12].

Confidence in our ability to find solutions does not rest on the achievements of the past alone. It is sustained partly by ongoing triumphs of reason and ingenuity, exemplified in recent years by computer technology,

mass communications, and greatly increased productivity in agriculture and key industries, but mostly by the inner conviction that the future depends on ourselves. It is with this conviction that we must tackle the harsh uncertainties of today's world.

For new and formidable problems have lately emerged to perplex the body politic—gross imbalances between demand and supply of basic goods and services, growing scarcities of energy and other resources, and environmental pollution, to mention only the more pressing predicaments. These are worldwide afflictions, and their gravity was recently emphasized by Henry Kissinger before the United Nations: "The world has dealt with its economy as if its constant advance was inexorable. . . . We continue to deal with economic issues on a national, regional, or bloc basis at the precise moment when our interdependence is multiplying. Strains on the fabric and institutions of the world economy threaten to engulf us all in a general depression."

A number of adverse developments, notably inability to control inflation, weakening of the sense of individual responsibility, and growing distrust of traditional institutions, bear especially hard on private life insurance and pension plans. It is essential that actuaries working in these fields reorder their priorities at this time and address themselves foremost to the problems of real investment returns and of risk shifting under conditions of inflation. We must plan to provide for real investment returns in the long run as effectively as we have done for claims in the distant future. We must all become expert in the broader aspects of risk shifting, whether through insurance or other mechanisms, regardless of inflation. We must also orient our thinking as never before to the likelihood of far-reaching economic and social transfigurations.

INFLATION AND INVESTMENT RETURN

In virtually all countries, actuaries find themselves in a greatly altered and seemingly unstable economic climate. Economists, too, are nonplussed by inflation accelerating in the face of restrictive monetary and fiscal policies. Lack of consensus among economists cannot, however, exempt actuaries from the responsibility of formulating their own approaches to counteract the impact of inflation on insurance and pensions. The actuary's primary responsibilities lie not only in the design and pricing of insurance and pensions but also in determining the adequacy of the funds held for the future payment of insurance and annuity obligations. In their paper "The Structure of a Life Office," R. J. Kirton and A. T. Haynes declared plainly, "Life insurance provides cover against the risk of death or survivance and it provides an investment service in-

volving guarantees of future capital security and long term yield" [11]. Historically, American actuaries have concentrated their efforts largely on the contingency of death, which has become a comparatively stable element since World War II, and have given scant attention to the fundamental issues involved in the investment service provided by life insurance. Should not the actuarial profession have engaged instead more intensively in studies bearing on the guarantees of future capital security and long-term investment yields under conditions of inflation, which contingencies currently pose the critical questions for the future of permanent life insurance and pensions?

In the years following World War II, there was good reason for actuaries to concentrate on the likelihood of a continued downtrend in mortality, if only because of the sharp drop in death rates during the late 1940's, stemming from the introduction of antibiotics, advances in surgery, and other postwar improvements in medical and hospital services. At that time, interest rates were on a gradual rise from their artificial wartime lows, and there was more apprehension about depressed business conditions and unemployment than about the possibility of serious inflation. The passage of the Full Employment Act of 1946 signaled a redirection of government policy to foster growth and high employment at the risk of inflation. With this objective in view, public expenditures were increased, despite the rapidly growing demand for goods and services generated by the postwar revolution in rising consumer expectations.

A few voices were raised in warning. In December, 1945, Colin Clark [4] reached the conclusion (apparently concurred in by Keynes) that all government expenditures—not merely deficit borrowing—were likely to produce strong inflationary pressures if they exceeded one-fourth of the national income. The mounting tide of government spending was fueled by relatively high levels of taxation. In September, 1951, the *Economist* commented, "Redistributive taxation has sapped the sources of saving; the growth of state planning has put control in the hands of men whose occupational temptation must always be to hand out more claims to wealth than the economy can in fact redeem" [6].

In these circumstances, more and more people came to believe that inflation was inevitable in the longer run. This view led the Teachers Insurance and Annuity Association to bring out in 1952 through an affiliate, the College Retirement Equities Fund, a variable annuity contract under which payments were tied to the value of a selected equity portfolio, in the hope of providing pensions that would increase when prices rose. The special legislation authorizing these variable annuities re-

stricted their sale virtually to the academic profession, perhaps with the notion that such more sophisticated purchasers would understand that they themselves rather than the insurer bore the risk of offsetting the inroads of inflation. A much wider public also felt strongly about the need to protect their savings against inflation, and mutual funds grew greatly in popularity by catering to this want. The creeping inflation of the 1950's and early 1960's was for some years outstripped by a broad advance in the value of equities, and it seemed to many that a hedge against inflation had been discovered. It was not until 1971, according to the University of Michigan consumer surveys, that a sizable portion of the American public became aware of the vulnerability of equities as a safeguard against inflation.

Despite generally prosperous business conditions and relatively low levels of unemployment, governments could not resist the temptation to use inflationary financing as a short-term expedient for postponing difficult political decisions, and, accordingly, national deficits continued to be the rule. Coercive pressure groups clamored for more public expenditures in the pursuit of their own special interests. Inflationary wage settlements and costly welfare-state programs were defended on humanitarian grounds, even though the burden of the resulting inflation fell preponderantly on persons living on fixed incomes, actual and potential beneficiaries of life insurance and pensions, most savers and creditors, as well as on wage earners whose bargaining strength was relatively weak. Advocates of greater government intervention in economic affairs pressed the view that the monetary and fiscal powers at the disposal of the government as well as the know-how of economists had advanced to the point where effective measures were at hand to control business recessions without inducing inflation.

Recent efforts to curb inflation without bringing on a business recession clearly belie the ability of government to deal with inflation effectively. The intellectual disarray of the economists who took part in President Ford's recent economic summit suggests a fundamental lack of understanding of the economics of uncertainty. This basic weakness of economic knowledge was underlined by Kenneth J. Arrow in his presidential address before the American Economic Association in December, 1973; he referred to it as being in good part a "difficulty in modelling the ignorance of the economic agent" [1]. There was, nevertheless, a measure of agreement at President Ford's conference, for instance, that, in trying to restimulate demand, government had expanded the money supply too much and too erratically. There was agreement that the threat of increased unemployment had not operated to dampen inflation or strikes

as it had done in the past, perhaps because the government by pre-empting a dominant portion of the national income had made it difficult for the marketplace to function as a corrective mechanism. Also liberal unemployment and welfare benefits apparently had raised the point at which unemployment begins to affect the rate of inflation significantly. There was even some agreement that price and wage controls have only limited value at best as a temporary expedient. But there was no consensus on the courses of action needed to return us to creeping inflation, let alone price stability.

In only four of the past forty years has the consumer price index in the United States registered drops, while the average increase in this index has exceeded 4 per cent per annum over the forty-year period. Such persistence of inflation in the face of diverse anti-inflationary policies and general condemnation of inflation suggests that it is ingrained in our political and economic institutions. In November, 1973, James Tobin remarked pointedly, "A prudent man would require very long odds indeed to bet that inflation will be conquered in the next ten or twenty years" [17]. This year's inflation in the United States may approximate 12 per cent, which will certainly outrange current yields on investments suitable for life insurance and pension funds. Such an overrun of interest rates by inflation calls for a careful review of the considerations that would justify viewing the present rate of inflation as a temporary phenomenon, reflecting merely the accidental conjunction of unmet costs of the Vietnam war, the Great Society legislation, and the moon landings program; fiscal mismanagement by the federal government; widespread crop failures; and soaring oil prices. We must ask the question whether we can reasonably look forward to a distinctly lower rate of inflation in the years ahead.

If we respond that a lesser but still significant degree of inflation is likely to persist, actuaries should be prepared for economic uncertainties that will affect both capital values and long-term yields adversely, for inflation is basically a capital levy on savings and investments of the kind exemplified by life insurance and pensions. The impact of such a capital levy must be kept in mind in designing and pricing life insurance, pensions, and other forms of coverage, and in passing judgment on the adequacy of the funds needed to meet future obligations under conditions of inflation. In certifying to the solvency of a fund, actuaries will have not only to evaluate the liabilities but also to appraise the corresponding assets conservatively, taking into account the effects of inflation on capital values and the liquidity needed to meet increased demands for cash and loan values. In Great Britain and other countries, actuaries have long

been accustomed to making valuations that encompass liabilities and assets together, but they have not had to deal with problems arising from guaranteed cash values and from loan values on which the interest rate charged may not legally exceed 5 or 6 per cent.

The actuarial profession will have to join in the quest for new forms of investment that will provide a real return on insurance and pension funds in times of inflation. I am glad to be able to announce that the Society of Actuaries has taken action to update and expand the actuary's education and training in the areas of investment performance and valuation of assets under inflation. The Society's Education and Examination Committee has been directed to revise the syllabus for the restructured Fellowship examinations appropriately and in the meantime to add such selected articles and papers to the course of readings as may help to fill current gaps. Furthermore, the Society's Committee on Continuing Education and Research on Economics and Finance has been similarly instructed to assemble pertinent information on inflation and long-range investment returns under inflation for dissemination to the Society's membership.

SHIFTING OF RISKS

The social benefits of risk shifting have long been recognized not only in the use people have made of insurance but also in related arrangements such as forward contracts. As far back as 1738, Daniel Bernoulli [3] perceived clearly that it was the individual's subjective evaluation of a risk which motivated him to try to transfer it, that such subjective evaluation was related to his financial circumstances, and that with few exceptions people were decidedly risk-averse. About a century later, T. Barrois [2], using the concept of a utility function, developed a mathematical expression for the value of insurance to an individual. The social usefulness of insurance was also emphasized by Adam Smith in *The Wealth of Nations:* "The trade of insurance gives great security to the fortunes of private people, and by dividing among a great many, so that the loss which could ruin an individual, makes it all light and easy to carry upon the whole society. In order to give this security, however, it is necessary that insurers should have a very large capital" [14].

As a practical matter, the shifting of risks through insurance has had to be restricted to a limited number of readily identifiable contingencies and to circumstances where the risk transfer works to the advantage of both parties. Insurance when viewed as an undertaking to deliver money or services at some future time, contingent on the happening of a specified event, in return for a series of money payments beginning forthwith

will not be satisfactory to the insured if the settlement promised appears likely to be worth less than his expectations. Nor will the insurance mechanism work if the actuarial value of the settlements is likely to exceed the corresponding value of the payments by the insured. The value of risk shifting for the insured depends strongly on his subjective utility, whereas its value for the insurer can be determined more objectively [15].

The trend toward a higher proportion of term insurance and the attempts to develop variable life insurance indicate a decline in the utility of fixed-dollar permanent life insurance as a means of shifting the financial risk of premature death. The development of variable annuities and growing recourse to other supposedly inflation-proof investments, such as some types of real estate, suggest similarly that the utility of fixed-dollar pensions as a means of shifting the risk of reduced income upon retirement may also be in doubt.

If the utilities of fixed-dollar life insurance and pensions are to be preserved at close to their former levels, it will be necessary to devise investment media that guarantee relatively undiminished purchasing power at time of settlement. This is a prodigious task even for the Newtons of finance, but actuaries will have to participate in this endeavor in order that the investments made by insurers match their liabilities more fittingly.

Bonds that call for periodic changes in the coupon rate related to the yields in a short-term money market represent an approach to this problem that is contingent on short-term yields staying ahead of the rate of inflation. A more fundamental solution has been urged by a number of economists and others who propose that the government issue low-interest bonds of guaranteed purchasing power to life insurance companies, pension funds, and small savers. One school of thought, which includes some conservatives such as Milton Friedman [8], argues that selective indexing would actually strengthen the ability of the government to control inflation, but another body of opinion [7] insists that such measures would merely speed up the inflationary process by tempering its injustices and so removing one of the brakes on the tendency to perpetual inflation. In my judgment, if our society is to remain responsible and stable, the living standards of widows and orphans, pensioners, and small savers will have to be protected, perhaps by making available to them indexed securities in limited amounts. The indexing of social security benefits in relation to the consumer price index in both the United States and Canada and the somewhat similar indexing of pensions for federal and dominion government employees already make for

invidious comparisons with fixed-dollar permanent life insurance and fixed-dollar private pensions and raise pointed questions about the practicability of indexing the latter.

In the case of long-term risks as well as those involving payments over a prolonged period of time, the attractiveness of risk shifting under conditions of inflation can obviously be greatly enhanced by providing for indexed settlements. Indexed settlements would also be helpful in liability insurance when claims are not paid until some time after loss has occurred or when the benefits offered are in the form of services; this would apply also, of course, to medical care insurance.

There are, however, many important aspects of risk shifting which transcend inflation. They relate to such basic issues as the conditions for insurability, definition and estimation of risks, influence of coverage on the risk, various forms of antiselection, moral hazards, and the problem of adequate capitalization of risk ventures to which Adam Smith referred. These formulations of risk shifting deserve greater attention from actuaries merely because of the ubiquity of risks in our increasingly interdependent society and because of the indications of growing risk aversion on the part of the public.

Changing patterns of responsibility within the family, more exacting attitudes as to the social obligations of business and the professions, and the increasing concentration of population and valuable properties in metropolitan areas create a need for more innovative and more comprehensive arrangements for shifting a diversity of risks. Various segments of the public are looking for risk takers willing to assume all or part of the financial hazards incident to such events as divorce, unsatisfactory professional or product performance, probing for oil or minerals, and certain natural catastrophes. While only some of these and other risks may be susceptible to handling by means of the insurance mechanism, it is up to our profession above all others to explore in depth the feasibility of various alternative organizational solutions for risk bearing. Lloyd's of London has demonstrated that many risks regarded as uninsurable by insurance companies can be covered at appropriate rates with relevant restrictions.

The Casualty Actuarial Society has been giving a great deal of thought to the desirability of a basic textbook on casualty and property risks. The entry of many life insurance companies into casualty lines bids to bring the interests of life and casualty actuaries more closely together. I believe that the Casualty Actuarial Society and the Society of Actuaries could now perform a conspicuous service for the profession by undertaking a joint project to produce an authoritative treatise on Insurable Con-

tingencies that would cover all aspects of risk shifting which can be dealt with by the insurance mechanism.

ORIENTATION TO MORE FAR-REACHING CHANGES

The actuary's traditional wisdom has rested on consciously conservative estimates of future costs and on responding promptly to feedback from ongoing experience. While we have followed the prudent habit of asking, What must we do today to help shape a financially sound tomorrow? we have been prone to answer this question with the expectation of broad continuities.

Recent events have given force to the statement that we are living in an age of discontinuity [5]. There is relatively little in actuarial literature that speaks to the problem of discontinuities. The best we have done is to conduct studies aimed to identify a number of plausible futures with the aid of more elaborate models and bolder conceptions of input. This type of research has recently been carried on by the Joint Committee on the Theory of Risk of the Society of Actuaries and the Casualty Actuarial Society.

The time is ripe for greater awareness of potential discontinuities and their likely impact. The techniques used to detect discontinuities begin with the testing of recent trends for nonrandom variations and proceed to a search for latent or overlooked factors [16]; they include anticipating turning points where exponential growth is approaching physical limits and weighing possible interactions, the development of which might have drastic consequences. Such an interaction can be exemplified by a sharp drop in the stock market accompanied by high surrenders of equity-linked contracts. There is a growing feeling that commonsense expectations of what may follow, particularly with respect to inflation and investment returns, have been increasingly wrong and that it is extremely difficult to foresee the discontinuities arising from political intervention, altered value systems, and major technological breakthroughs. The life insurance business has recognized this problem explicitly by setting up the so-called Trend Analysis Program (TAP) in the Institute of Life Insurance to keep itself abreast of emerging social changes and as an early warning system [10].

It is imperative that actuaries continue to watch current trends and developments thoughtfully but with a definite orientation to more far-reaching changes. Many of the sanctions which have governed people's lives through their religious, political, and economic beliefs are on the wane. We must expect, therefore, that life insurance, pensions, and other risk-shifting arrangements will have to operate in the years ahead within

a social fabric much different from that reflected by past experience. To discern more of the future, we should discard some of the preconceptions rooted in past patterns and envisage how the fundamentals of our profession might be applied in a different social, political, and economic environment.

We can count on the future to be full of surprises but not on any blueprints to reveal them. We can, of course, put ourselves in a better position to influence the future by anticipating possible emergencies and so buying time to deal with them before they become intractable and by preparing ourselves to take advantage of potential opportunities before they slip away. We can improve on this approach by directing our efforts and knowledge aggressively to bring about more favorable outcomes with the means at our disposal, or, as more aptly expressed by the Nobel laureate Dennis Gabor, "The future cannot be predicted but futures can be invented. It was man's ability to invent which has made human society what it is. . . . The first step of the technological or social inventor is to visualize, by an act of imagination, a thing or a state of things which does not yet exist, and which to him appears in some ways desirable. He can then start rationally arguing backwards from the invention, and forward from the means at his disposal, until a way is found from the one to the other" [9].

I would repeat that futures can be invented, for all of you know that nearly two centuries ago fifty-five men met in Philadelphia to think about the future over the long, hot summer of 1787—and they realized a nation.

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