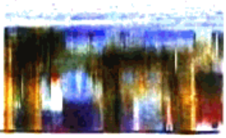
STUDIES IN THE THEORY OF RISK AND INSURANCE

A Challenge to the Conventional Wisdom

KAILIN TUAN



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PREFACE

Risk is uncertainty, and uncertainty is one of the fundamental facts of life. More than anyone else, I personally appreciate the deep meaning of this axiom.

In the Spring of 1949, I left Shanghai to Hong Kong and after a sojourn there, continued to sail across the Pacific Ocean to San Francisco. From there I traveled by train over the American continent to Philadelphia. As planned, I started to pursue my graduate study at the Wharton School of Finance & Commerce, University of Pennsylvania. I intended to stay there for a few years and after the completion of my study, I hoped to return to my native land with a youthful ambition and mission for the reconstruction of China. Yet, the sunsequent turn of events-the emergence of the new regie after the Chinese communists' triumph in the civil war and the Sino—American conflict because of the Korean war in 1950 — had forced me to remain in America far beyond a "sojourn" but for the whole life!

Uncertainly but facing the reality, I have strived to overcome cultural barriers and difficulties during the ensuing years to pursue an acameic career in an alien environment to which I have gradually adapted. By the late 1950s I have become the first and only Chinese (and an Asian) teaching the typical American subject-Insurance (not the study of risk and risk management yet)—in a typical American liberal arts college, the Upsala College (of Swedish heritage) in East Orange, New Jersey.

In retrospect, I certainly enjoyed the serene life of a young college professor on a campus of suburban setting but close to the metropolitan city of New York. Yet before long and by the mid-1960s, American campuses everywhere and the American society as a whole encountered widespread demonstrations and turmoil because of the anti-Vietnam war movement. Across the Pacific millions of Young Red Guards maddenly launched the Cultural Revolution all over China. Consequently and uneasily, tranquility had gradually diminished in many people's life and mind including myself.

Fundamentally, since the end of the World War Ⅱ in 1945, vast technological changes had finally exerted their impacts on the prewar structure of the American society and economy. In the process, many new kinds of risk had emerged during the two decades between 1945-1965. Such risks are dynamic in nature, which threten the safety and life of many people simultaneously and often destroy economic activities and properties devastaingly. The demand for insurance protection and services by the American public was ever high, yet the insurance businesses were very slow and even unable to respond to meet the demands during those years of rapid, unrushing changes. The pervasive restructure of American society and the economy has produced a far-reaching impact on the effective operation of the insurance business, for the industry does stand more squarly in the waves of change than any other type of business. Thus, by the late 1960s, the American insurance business was in crisis.

Amid the crisis, leaders in the American insurance industry were searching answeres and solutions. Unfortunately their efforts were in vain as they tried to defuse the crisis under the existing framework. As the crisis intensified, it casted serious doubts in my mind on the subject I was teaching and the validity of the underlying theory of insurance. Ultimately, I discovered that the root of the crisis lied in the incompatibility between the traditional, static theory of insurance in dealing with a host of emerging dynamic risks. With this realization and aweakening, I endavored to develop a new body of thoughts and to formulate a system of functionable methods for the distribution of losses in order to revitalize the device of insurance. After repeated refinement through classroom discussions, I prepared and presented a paper entitled *Theoretical Model for the Distribution of Losses* at the annual meeting of the Western Association of Insurance Professors, at Long Beach, California, August 22, 1969 and subsequently at the annual meeting of the American Risk and Insurance Association at Cincinnati, Ohio, August 25, 1969.

In the first part of the paper, I challenged the conventional wisdom of insurance which had been developed and evolved in the United States between 1900-1930. Essentially, the core of the conventional wisdom of insurance consists a body of knowledge that utilized the mathematical theory of probability as the theoretical foundation of insurance. After further deliberation and research, I expanded this part of the paper into a major essay, "If There Were No Losses..., ... There Would Be No Insurance" which had been serialized in the Property/Liability edition of Best's Review, September, 1970 to January, 1971 issues. To this day, this Essay has been assigned reading for doctoral students of risk and insurance preparing for their comprehensive examination in many major universities.

Meanwhile, I turned to the preparation for the publication in 1972 of my major academic work, *Modern Insurance Theory and Education* in three volumes. Among the various purposes suggested for the book, I emphasized that " the book aims to introduce a new conceptual framework to the study of insurance and economic security".

For this I suggested a new term, "Macro-Insurance Study" which denotes the kind of study in the interrelationship between the mechanism of insurance and the operation of the insurance business on the one hand and the external environment (social-economic-political framework of a society) within which the insurance mechanism and institution (public as well as private) operates. As a consequence of the publishing of this 3-volumes work, I hoped, a new era of Macro-Insurance Study may be ushered into being.

This novel concept and approach was further expanded and elaberated in the following years by my writings, among them the two major papers:

1. Macro-Environmental Hazards: A New Look at the Causes of Loss, published in Best's Review, May, 1974 issue.
   (an earlier, shorter version of this paper was published under the title, "A Preliminary Note on the Study of Hazards" in the Journal of Risk and Insurance in 1972.)
2. Macro-Insurance Study: Insurance and Its Environment, published in the World Insurance Forum, Best's Review, May, 1976 issue.
   (this issue of the World Insurance Forum includes another article, "Objectives and Activities of the Geneva Association".
   The official name for the Geneva Association is the International Association for the Study of Insurance Economics, established in 1974 and headquartered in Geneva. The Association had reproduced this whole issue of the World Insurance Forum for distribution to its members and insurance executives throughout Europe.)

Since their publication, these theoretical essaies, together with my other writings in the period between 1969-1976 have generated worldwide interests and responses on a wide and broad spectrum beyond expectation. Requests for reprints came from England, Germany, Japan, Canada, and South American countries, in addition to those from within the United States. These articles had been either reprinted in American insurance publications, and foreign insurance magazines in European countries (England, France, Netherland, Germany, Grace) and Asian countries (Japan, the Philippines, Pakistan, SariLanka, India) or been translated into foreign languages for publication in those countries. Moreover, two international insurance organizations saw fit to take action in popularizing the Macro—Insurance concept. Besides the above mentioned Geneva Association, the Asia Insurance Institute (now the Insurance Institute for Asia and the Pacific, an UNCTAD sponsored insurance institute based in Manila) had reissued in 1974 the complete set of the 3-volumes work, *Modern Insurance Theory and Education* for distribution in the Philippines and other Asian countries.

All these papers have been translated into Chinese by insurance academicians and professionals for publication in insurance/business journals in Taiwan. Unfortunately, however, these epical essaies were unknown in those volatile years of Cultural Revolution to the Chinese academicians in China as they were forced to close their eyès to the outside world and to be "xia-fang"ed to do manual labor on the farms. While the Chinese insurance business has been reestablished since 1980, but today even, the traditional, conventional wisdom of insurance is alien to the vast number of insurance practicioners inside China, let along the fresher concept of Marco-insurance study.

Amid the promotion of the socialist market economy in China and the re-emergence of the insurance business since 1980, insurance studies and education have also been reintroduced since 1985 into the curriculum of Chinese colleges and universities. By publishing these theoretical essaies in collection for a new generation of Chinese audience, even quarter a century late after their original publication, the author sincerely wishes that this book will contribute to the revitalization of insurance as a viable social and economic institution in China as well as to the modernization of insurance studies and education throughout the Middle Kingdom.

KAILIN TUAN

Cherry Hill, New Jersey, USA
and
Tianjin, China

February, 1995

FOREWORD I *

John C. Burridge

When an entire industry enters into a new era, hardly anyone is aware of it because the changes doesn't come on a signal or with an announcement. Only after the changes the new era brings become increasingly repetitious do those affected realize that things are no longer as they were. Even then, they may accept the changes without realizing that it isn't change they are dealing with, it is a whole new way of doing business, a new concept.

The fact that an industry can undergo change and be largely unconscious of it is a phenomenon in and of itself, and it can only happen if most persons in positions of leadership are failing to recognize what is happening and failing, in fact, to exercise their leadership responsibilities. How else could the entire insurance industry-property/liability and life/health alike-have drifted through the social and economic upheavals of the 1950's and 1960's still believing that insurance was an "institution" which would go on forever, relatively unaffected?

Of course, it could not be unaffected, and change worked on the industry as it worked on every other aspect of life in this country. But the insurance industry, unknowingly, resisted participation in that

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* This is the Foreword to Volume Ⅱ of the Modern Insurance Theory and Education.

Now retired, John C. Burridge, a Senior Vice President of the A. M. Best Company and the Managing Editor of Best's Review at the time of writing this Foreword.

A. M Best Company is the agency that has poineered the analysis of the financial conditions of insurance companies in America.

change by clinging to traditions which had lost their relevancy.

Many outside the industry saw this gap of comprehension. One consequence was an increasing inability of insurance to attract the sort of manpower that would be helpful in turning the situation around. Another consequence was that decisions about the nature and uses of insurance began to be made by non-insurance people who weren't going to wait for the industry to wake up and reorganize itself. And a third consequence is that today the insurance industry is threatened with becoming a minor private enterprise institution, stripped of its important coverages which have social implications-automobile, workmen's compensation, accident and health. In some of the remaining lines of business, the industry may have to accept a junior partnership with the government, if the way those lines are managed doesn't live up to the government's interpretation of public expectations. Fire insurance, crime insurance, disaster insurance, for example, are moving fast in this direction.

Insights into the causes and development of the current condition of the insurance industry are offered in the papers Professor Kailin Tuan has put together in this volume. It is valuable reading for insurance men, and equally valuable for scholars. Insurance men should be familiar with many of the papers; a number of them are texts of addresses given at insurance meetings, all have been published in insurance journals. Collectively, they ought to produce, rather quickly, a new awareness in those who still hope to find a way of stopping where we are, or even putting on the brakes.

For me, the great revelation of how the industry slid into its troubles came with the reading of Professor Tuan's long essay with the unrevealing title, "If There Were No Losses... There Would Be No Insurance". He pointed out that insurance teaching, the rock on which companies conduct their underwriting operations, had become inbred; new textbooks were rewrites of basic books written forty years or more ago. The industry was pervaded with rehashes of a static philosophy. It was a self-perpetuating system, and while the world swirled around the industry, insurance made some necessary catch-up adjustments but never questioned the nature of the system itself.

This is the answer to how we arrived at the present dilemma; it was by adhering to a philosophy which gradually was becoming obsolete.

Not everyone was accepting the situation, as the papers in this book clearly reveal. Urgings that the business move to take a hand in its own future began to come more frequently and more insistently as we entered the 1970's, but by and large the audience has been unresponsive. Within the insurance system there are many "students of the business" but not many students of how the business relates to its customers and the world in which they live.

Consumer demands have irritated insurance people from the time, before the introduction of the extended cover endorsement, the little old lady wrote a manager in the midwest to ask whether the company would consider insuring her home against windstorm. Insurance men have used that story for years as an illustration of how the business does respond and write coverages which at one time seemed preposterous. But the story has its aspect of failure, too; of failure to act on internal initiative and to recognize the social responsibility which is inherent in insurance and which calls for keeping up with the needs of the population without outside stimulus. Even today only a handful of companies have active research and product development departments, and collectively the industry has nothing in this area. Most insurance men think research is statistics.

When one becomes devoted to a belief that he and his company (and his industry) are doing the best possible job that can be done, particularly in view of the criticism of a non-comprehending public and obstinate regulators, maybe he doesn't understand the problem. The authors of the papers in this book have attempted to bring an awareness to insurance practitioners-an awareness of their isolation, of their opportunities, of their collective power for progress. The messages date back into the 1960's but the individual voices of the authors haven't been effective enough. Perhaps putting them together, as Professor Tuan has done, will give them the impact to cause the reader to see that insurance has already moved into a new era and the new era demands new thinking.

Morristown, New Jersey
August, 1971

FOREWORD II [*]

J. Carroll Bateman

These are parlous times. These are dangerous times for our nation; they are contentious times for traditional institutions in our society; they are trying times for business in general; they are crucial times for the business of insurance-and, most important of all, they are unsettling times for people.

While life and health insurers have had their share of troubles, for the property and casualty insurance business the decade of the Sixties was a near-disaster. In a period of rapid economic expansion, with high levels of profitability for most businesses, property and casualty insurance experienced a hand-to-mouth existence. No one outside the business-except perhaps the investor-would believe it, but it was true. The major line, auto insurance, which accounts for more than 40 per cent of the property and casualty premium volume, consistently created substantial underwriting losses as the result of more accidents, higher medical and hospital costs for the injured, higher and often padded bills for auto repairs, heavier costs for litigation and the repressive effects of rate regulatory laws.

The deterioration of core areas in our major cities-combined with

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[*] This is the Foreword to Volume II of the book, Modern Insurance Theory and Education

Now deceased, J. Carroll Bateman was the founding president of the Insurance Information Institute in America. Supported by the insurance industry, I. I. I. is the public relations agency of the business in providing insurance information to the general public. During his tenure, Bateman was the leading spokesman for the American insurance business.

the increase in crime, vandalism and willful destruction-exerted an equally unhappy impact on the property coverages. Numerous unprecedented natural catastrophes have taken their toll in recent years. Altogether, it has been a depressing era. It also was a period of rapid change.

The Greek philosopher, Heraclitus, once said, "The only certainty is change", but human beings never really seem to accept that fact. Indeed, we often act as though it isn't true. When change is imminent, we resist. When it occurs, we are uncomfortable.

Right now the whole property and liability insurance business is uncomfortable-as are all who are associated with it-because it is involved in some cf the most chaotic changes it has ever undergone.

The changes. it is experiencing are so rapid and diverse, so much at cross currents, that it is almost impossible to clarify the situation and state it in simple, general terms.

While 1971 promises to show some improvement in property and casualty underwriting results, the crystal ball still is clouded. Facetiously, one might take an optimistic view of the future on the grounds that things couldn't have gotten any worse, so they will have to get better. There is a certain validity to the concept of cycles. But perhaps there are even sounder reasons for optimism.

Let us lift our eyes above the level of present problems and gain a little perspective. Let us try to gain an understanding of the currents of social history that relate to this matter of financial security for the individual and his family-for after all, that is what insurance is mostly about.

Almost half a century ago, a Spanish philosopher whose name is little known outside of academic circles looked about him in European cities and observed what was then a relatively new phenomenon: "Towns are full of people, houses full of tenants, hotels full of guests, trains full of travelers, cafes full of customers, parks full of promenaders, consulting-rooms of famous doctors full of patients, theatres full of spectators, and beaches full of bathers." Out of this observation of what he called the newly developing "agglomeration" of people, Jose' Ortega y Gasset speculated that the era of "mass man" had arrived, and that this development would exert profound effects on the intellectual, political, moral, economic and religious aspects of society.

Among Ortega's predictions—some of which have proved to be surprisingly accurate—was this one:

"Suppose that in the public life of a country some difficulty, conflict or problem presents itself, the mass man will tend to demand that the state intervene immediately and undertake a solution directly with its immense and unassailable resources.... When the mass suffers any ill-fortune or simply feels some strong appetite, its great temptation is that permanent, sure possibility of obtaining everything-without effort, struggle, doubt or risk-merely by touching a button and setting the mighty machine in motion."

Now, isn't this exactly what has been happening in the field of personal financial security? Consider the social security program and its gradual but irresistible expansion. Consider Medicare and Medicaid, and the federally subsidized flood insurance program. Consider the federal government's writing of crime insurance in certain areas. Consider an extension of this principle: the government's effort, through the FAIR Plans, to require insurance companies to provide coverage for substandard properties in deteriorated center-city areas. Consider the statutory assigned risk plans which are designed to do the same for substandard auto insurance risks; consider that the commonwealth government of Puerto Rico is now writing automobile insurance coverage and that in some Eastern states certain politicians are urging similar programs.

The implementation of Ortega's theory in the United States certainly seems widespread. Taken by itself, this trend might appearominous for the business of private insurance. But there are at least three offsetting or counteracting factous which work in favor of the private enterprise insurance system.

First, in many of its programs the government needs and seeks the expertise and cooperation of the private enterprise insruance system. For example, in respect to Medicare and the Service Men's Group Life Insurance Program (enacted in 1965) for the Vietnam forces, life insurance companies have been brought into the administration of the programs. Similar developments have occurred in the property and casualty insurance field. Insurance companies and the federal government are cooperating in the pools to provide property and liability coverages for risks involved in the peaceful uses of nuclear energy; they are cooperating in the Foreign Credit Insurance Association program to provide insurance for credit extended to overseas consignees by American manufacturers; they are cooperating in the flood insurance program and the riot re-insuranece plan. Indeed, there are so many examples that Professor Kailin Tuan, professor of economics and insurance at Upsala College in New Jersey and editor of this volume, argues that we have now entered into an era of "cooperative" insurance, as contrasted to "private" insurance and "social" insurance.

(It is noteworthy that an expanding pattern of partnerships between the Federal Government and private enterprise is apparent in many other fields of business and what is happening in insurance may be just one aspect of this general trend. Courtney C. Brown, former dean at Columbia University, has written that in the United States we have risen above the traditional dichotomy between capitalism and socialism to a stage where partnership arrangements between government and business are the only practical means for dealing with some of our major problems.)

Secondly, history also demonstrates that, in an affluent society such as ours, there are always millions of people whose needs and wants exceed the basic levels of financial security provided by government, and who will look to private insurers to provide additional voluntary coverages. Government life insurance programs for servicemen in World Wars I and II encouraged, rather than inhibited, the sale of life insurance coverage after the wars were over; the social security program certainly has not inhibited the growth of private and group pension plans, but has spurred their development; and, despite the government-sponsored insurance plan in Puerto Rico, the administrator of the program reports that there is still a strong and increasing demand for excess and voluntary coverages from the private insurance companies.

Turning to a larger model than Puerto Rico, one finds that this same tendency is strongly apparent in the Scandinavian countries. Despite the fact that the government of Norway, Sweden and Denmark provide a much broader base of personal security for their citizens than is provided in the United States, the demand for additional insurance protection from private insurers has continued to grow since the inception of the various public programs there.

Indeed, in the decade of Sixties, Norway, Sweden and Denmark all exceeded the U. S. A. in their average annual growth of total premium volume for private insurance. Additionally, in terms of average per-capita premiums paid in 1969, Sweden ranked fifth among the countries of the world, Denmark seventh and Norway twelfth.

So, instead of superseding private insurance, social insurance in Scandinavia has served to spur a greater demand for it.

Thirdly, and perhaps most importantly, our growing population in the United States (it will not stabilize for some time yet), our burgeoning economy (despite the present temporary lull) and our developing technology, continue to create new and unprecedented opportunities for expanding our business into profitable areas.

While it may be unrealistic to expect that the average family or wage earner will increase substantially the percentage of personal income being devoted to financial security, the gross number of dollars going into insurance premiums paid to private enterprise insurance companies can be expected to climb in proportion to the increase in the Gross National Product.

From 1960 to 1970, our Gross National Product almost doubled—and so did the premiums for property and casualty insurance. By 1980, the GNP will probably be about $ 2 trillion, or more than double the figure for 1970, so we may expect a gross premium income for life, health and property and casualty insurance in the neighborhood of $ 120 billions by 1980 if the percentage of GNP allocated for private insur-