

# A NEW CONCEPT OF THE ECONOMIC VALUE OF LIFE VALUE AND THE HUMAN LIFE VALUE: A RATIONALE FOR TERM INSURANCE AS THE CORNERSTONE OF INSURANCE MARKETING

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## ABSTRACT

The concept of insurable value of a human life, despite its central importance to life insurance, is not carefully developed in the literature. This article attempts to clarify the concept of insurable value and to carefully distinguish it from the related concept of economic or human life value. The article then states a method of measuring insurable value and of relating this measure to the life insurance product. Finally, the article traces some of the marketing implications of the proposed view of insurable value. Many of these implications relate to the issue of the role of investment life insurance and the uses of term insurance.

The measurement of insurable value is central to life insurance from both a theoretical and marketing point of view.

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Whether attempting to program the needs of a specific individual or to design a policy for mass marketing, the insurer must base its marketing philosophy on some underlying measurement of insurable value.

To the extent that the controlling measurement of insurable value is unsound, the resulting marketing philosophy is also likely to be unsound. Since insurable value theory and the related theory of human life value is in a deplorable state, sometimes more generously described as an "underdeveloped" state, it would not be surprising to discover some resulting distortions in marketing philosophy.

This paper is an attempt to clarify the concept of insurable value, to distinguish it from the concept of economic (or human life) value, to describe a more satisfactory method of measuring insurable value for marketing purposes and its con-

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gruence with insurance theory, and to trace a new insurer marketing philosophy that should flow from a more realistic method of measuring insurable value.

The basic approach of the authors of this article is to develop the concepts at issue rather than to demonstrate mathematical and actuarial dexterity. Many of the refinements of the concept of insurable value have merely provided technical embroidery over underlying misconceptions and complications that have served more to obscure than to elucidate.

Much of the traditional concept of human life value is derived from the writings of Solomon S. Huebner. His impact on the literature of life insurance and the theory and practice of life insurance can hardly be overestimated. All subsequent students of the subject are indebted to his pioneer efforts. Even the criticism of some of his views which follows is in a sense a tribute to Huebner and his pervasive influence in insurance thinking. Because of his stature, acceptance of some of his ideas has lingered on beyond their usefulness.

## A Redefinition of Terms

### *Human Life Value Versus Insurable Value*

Insurance relies on the concept of insurable value. For example, in property insurance, insurable value is a central concept for insurance planning. Surprisingly enough, in life insurance literature and planning no reference is made to the concept of insurable value. Instead of insurable value, there is emphasis on human life value.<sup>1</sup> The apparent reason for this omission is a confusion between what are

<sup>1</sup> Huebner's term, "human life value," is subject to criticism. It implies the dollar valuation of human life, a grotesque absurdity. In fact, it is the valuation of the earning capacity of a human life, not the human life itself. The "human life value" vocabulary is so well entrenched in life insurance literature that the authors here propose no alternative. Variants include "the

two separate concepts—human life value and insurable value.

Human life value, or related variations, as defined traditionally, is the economic value of a human being, measured by the capitalized monetary value of future earnings.<sup>2</sup> This traditional view measures the expected value of the individual's productive efforts. This value omits that portion of income expected to be forfeited because of premature death, since, by definition, it is computed on the basis of the income forthcoming to the individual for each year in which he is expected to live. In other words the computation measures only the expected flow of income to the individual during his active life.

Insurable value, on the other hand, should measure income forfeitable because of death, rather than income expected to be earned upon survival. The insurable value of life and human life value are two different concepts, which have often been considered to be equivalent.

McGill, in a recently revised and authoritative text, also uses the concepts synonymously. He argues that human life value involves the capitalization of earning power, discounted "against the possibility of its [earning power] not being earned."<sup>3</sup> He cites Dublin and Lotka, who

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money value of a man," "human capital," "value of a man," and "living capital."

<sup>2</sup> William Farr's classic definition has been described as follows: "The scheme set up by Farr computes the value of a typical individual of given earning capacity as the present worth of his net future earnings, that is, his future earnings minus his personal cost of living, allowance being made for deaths in accordance with an appropriate life table. Farr's method remains to this day the fundamental standard on which any sound estimate of the value of a man to his dependents must be based, and is the method adopted by the present writers in their computation relating to modern conditions of life." Louis I. Dublin and Alfred J. Lotka, *The Money Value of a Man*, rev. ed. (New York: Ronald Press, 1946), p. 12.

<sup>3</sup> Dan M. McGill, *Life Insurance*, rev. ed.

discount for death and all other factors that might interrupt the income stream, as the source of the "technically accurate" method of deriving this value. McGill, using a procedure that does not discount for mortality, approximates the "technically accurate method" in order to arrive at what he calls the "economic value of a human life for purposes of insuring this value against loss by reason of death." Thus, McGill implies that human life value is equivalent to insurable value.

Even such distinguished technicians as Dublin and Lotka confuse human life value and insurable value. They indicate insurable value is equivalent to human life value (or what they refer to as "money value of a man").<sup>4</sup> Using a meticulous measure of human life value, based on mortality and interest assumptions, they arrive at insurable value which should, but does not, avoid the discount for mortality.

The most recent comprehensive treatment of the subject, a dissertation entitled *Human Life Value Concepts* fails to distinguish between insurable value and human life value.<sup>5</sup> The author of that dissertation defines human life value, for life insurance purposes, as the present value of an individual's stream of income (less self-maintenance) discounted for interest and all factors except mortality which might prevent the earning of income.<sup>6</sup> The merits of this definition will not be discussed at this point. However,

(Homewood, Ill.: Richard D. Irwin, Inc., 1967), pp. 6-7. McGill does indicate that "one should not discount the projected flow of income to the family for the probability of death of the life involved." (p. 7).

<sup>4</sup> Louis I. Dublin and Alfred J. Lotka, *The Money Value of a Man*, rev. ed. (New York: Ronald Press Co., 1946), pp. 146-147.

<sup>5</sup> Alfred E. Hofflander, Jr., *Human Life Value Concepts* (Philadelphia: University of Pennsylvania Dissertation, 1964).

<sup>6</sup> Alfred E. Hofflander, Jr., "The Human Life Value: A Theoretical Model," *Journal of Risk and Insurance* (December, 1966), p. 531.

it should be noted that no effort was made to differentiate between "human life value" and "insurable value."

### The Traditional View

Huebner began his discussion of the application of human life value concept to life insurance in his 1915 text, *Life Insurance*, and subsequently restated and elaborated the discussion in his later speeches and texts, including *Economics of Life Insurance* in 1927. His notions still control the thinking of most insurance writers.

Huebner capitalized a person's contribution to his family over the period to retirement age, or if shorter, to the end of life expectancy.<sup>7</sup> The current version of his life insurance text, four editions and 49 years later, follows essentially the same approach. Only the annual income is updated from \$500 in 1915 to \$3000 in 1964. McGill's *Life Insurance*, as an example, also follows the same approach, as indicated earlier.

Most life insurance authors can be criticized on the same grounds:

First, they all rely on a static analysis, by quoting a fixed face value at any given age. This is unsound as it leads to the recommendation of a purchase of a fixed amount of insurance, which becomes redundant at later ages and is likely to be financially prohibitive at early ages.<sup>7a</sup> The

<sup>7</sup> It may be inferred that Huebner was actually trying to discount for mortality in arriving at human life value. Otherwise, he would not have been concerned with life expectancy. Huebner originally projected income throughout the person's life expectancy. Later, he projected income for life expectancy, or age 65, whichever is shorter. On the basis of a retirement age of 65, and in accordance with the most recent mortality tables, the life expectancy always exceeds the difference between age 65 and the individual's attained age. In practice, life expectancy is immaterial, but by an accident of the mortality table, and not Huebner's logic. In any event, the use of life expectancy to discount for mortality provides an inaccurate estimation.

<sup>7a</sup> The present approach could take into consideration the decreasing nature of human life

concept should be translated into a dynamic expression, which will not be redundant as the value declines over the years, and which will be a financial possibility for most income producers, even in the early years. In order to avoid this redundancy in the conventional analysis, the value must be recomputed each year and is, in fact, only valid if the insured is assumed to be dead on the valuation date.

Second, they give no guidance as to the kind of insurance that should be purchased in terms of their analysis of insurable values. If the measure is to have practical value, it would be more useful if it pointed to or converted into the kind of policy that should be purchased.

Third, they imply that human life values are necessarily equivalent to insurable values. As already noted, such implication is erroneous.

Fourth, they imply that the calculation of insurable value should discount for mortality since it is based on the notion of human life value.

### A Practical View

There is proposed below a method of expressing insurable value that overcomes the deficiencies catalogued above. Furthermore, it has the virtue of simplicity, unlike some traditional notions, which are unusable.<sup>7b</sup>

### A Basic Formulation

The best way to measure an individual's insurable value is to calculate the income he forfeits in case of death. That forfeiture may be expressed in terms of the income he forfeits from the time of death to retirement age. For example, assume

value but only by static analysis at each age. In practice, even this static analysis is not used and the possibility of applying term insurance is neglected.

<sup>7b</sup> Textbooks often discuss the human life value, but then ignore it in favor of the needs approach.

an individual provides dependent with \$6000 per year, with contemplated retirement at age 65. His insurable value can be expressed simply as \$6000 per year from date of death to date of retirement. This value decreases over time, disappearing at age 65. This is similar to the property insurance situation in which insurable value decreases as a result of continuing depreciation. From an economic point of view, the human being is assumed to be fully depreciated at age 65.

Huebner used the concept of depreciation of property values but arrived at the wrong conclusion. He argued that human life value must be capitalized by a combination of increasing investment and decreasing insurance.<sup>8</sup> The investment, according to Huebner, should equal the face value of the insurance at 65, the time of full depreciation. He compared the investment portion of life insurance to a sinking fund, the insurance portion to a callable arrangement. Huebner concluded: "When the sinking fund reaches the face of the contract, the callable side is reduced to zero, because no more decreasing term insurance is needed to protect the savings period. In other words, the full face of the policy has been realized, and insurance is no longer needed to protect the installment plan of thrift."

From this argument it follows that the human life value should be converted to cash value and that there should be enough in cash values to buy a completely new machine at age 65. This is an excellent argument for investment life insurance, but for the fact that the human machine is not replaced. Once it produces its earning power, it has fully realized its economic purpose.<sup>9</sup>

<sup>8</sup> Solomon S. Huebner, "Human Life Values—Role of Life Insurance," *Life and Health Insurance Handbook*, 2nd ed., Davis W. Gregg, Editor (Homewood, Ill.: Richard D. Irwin, Inc., 1964.), p. 15.

<sup>9</sup> Adam Smith made a more persuasive analogy between man and a machine. *The Wealth of*

This Huebnerian analysis is further evidence of confusion concerning the human life value, and confusion that errs on the side of investment life insurance. It is strange that Huebner did not advocate cash value property insurance as a mechanism to build up a depreciation reserve. This proposal would make more sense in the property insurance context than in the life context.<sup>9a</sup> It is also surprising that he did not advocate the application of the term approach used in the property insurance field to life insurance, where it would, in fact, be appropriate because, as noted above, a replacement fund is not needed.

Huebner begins by justifying life insurance on the basis of the human life value and ends by justifying insurance merely as a device to protect insurance cash values—"to protect the installment plan of thrift." This and related misconceptions may have distorted life insurance marketing and indeed "changed an industry."

### *A More Precise Formulation of Insurable Value*

The method here proposed can be

*Nations*, ed. Edwin Cannan (New York: Modern Library, 1937), p. 101. Perhaps Huebner incorrectly extended the following analogy of Smith's: "When any expensive machine is erected, the extraordinary work to be performed by it before it is worn out, it must be expected, will replace the capital laid out upon it, with at least the ordinary profits. A man educated at the expense of much labour and time to any of those employments which require extraordinary dexterity and skill, may be compared to one of those expensive machines. The work which he learns to perform, it must be expected, over and above the usual wages of common labour, will replace to him the whole expense of his education, with at least the ordinary profits of an equally valuable capital. It must do this too in a reasonable time, regard being had to the very uncertain duration of human life, in the same manner as to the more certain duration of the machine."

<sup>9a</sup> Disability income insurance is still another case where the cash value approach would make more sense than it does in life insurance.

stated in terms of a simple but more dynamic relationship that encompasses insurable value and can be used to determine its net single premium:

$$I(a_{\overline{n}|i}) - I(a_{x:\overline{n}|i}) \quad (1)$$

In the above expression,  $I$  is the annual income sought to be protected;<sup>10</sup>  $a_{\overline{n}|i}$  is the value of an annuity certain at a given interest rate,  $i$ , and for a given number of years,  $n$ , running to retirement.<sup>11</sup> The product  $(I(a_{\overline{n}|i}))$  will hereafter be referred to as the "maximum earnings potential" (MEP). It represents the amount that can be earned if the possibility of death before retirement age is ignored.<sup>12</sup>

The expression  $(I(a_{x:\overline{n}|i}))$  is the present value of the annual income ( $I$ ) sought to be protected times the temporary life annuity to date of retirement, again at a given interest rate,  $i$ , and at age  $x$ . The product  $(I(a_{x:\overline{n}|i}))$ <sup>13</sup> will hereafter be referred to as the capitalized value of earning capacity (CVEC). It represents the human life value in the sense that it is, and should be, used in insurance literature. It not only discounts for interest but also for mortality.

<sup>10</sup> The net income sought to be protected is generally the family's share of the income stream. That share could be a claim to savings or consumption. However, it could be a lesser amount, if insurance to value is not desired, or another share if income is sought to be protected for other purposes (such as donation to a charity). Huebner failed to recognize the possibility that an individual might not want to insure to value.

<sup>11</sup> This expression  $a_{\overline{n}|i}$  involves no life contingencies and can be found in any volume of financial compound interest and annuity tables. It is often labeled "Present worth of 1 per period: What \$1 payable periodically is worth today."

<sup>12</sup> To simplify the analysis, other contingencies such as disability and unemployment are assumed to be inoperable. Other perils, however, could easily be incorporated into the analysis.

<sup>13</sup>  $a_{x:\overline{n}|i}$  is the present value of a contingent life annuity immediate of \$1 payable to a person  $x$  years of age as long as he lives but not exceeding  $n$  years.

Translated into a simpler style of formulation, the expression in (1) becomes:

$$(MEP) - (CVEC) \quad (2)$$

Expression (1), or in the other form (2), generates the sum required to provide the net single premium for the amount of insurance equal to insurable value based on the amount of I. The net single premium would provide an amount, I, from date of death, regardless of when it occurs, until retirement age. The net single premium can be levelled to provide an annual premium to age 65, or to some other period.

The life insurance coverage for which these expressions yield the net single premium is in fact a form of decreasing insurance which is the equivalent of a family income rider granting coverage to age 65. That rider is merely decreasing term insurance with a built-in settlement provision providing level annual payments of a given percent of the face of the policy to which it is attached, to equal the needed annual income. The coverage granted by a family income rider is sometimes sold as a separate policy.

### Some Illustrations of Insurable Value

The method and meaning of the proposed approach to the calculation of insurable value can be illustrated in detail by the individual, age 35, with an annual income of \$6000 to be insured till age 65. All calculations assume an interest rate of 3 percent and are based on the 1958 C.S.O. Table. Although a fixed income and interest rate have been used to simplify the illustration, the system is adaptable to any income and interest-rate pattern.

Table 1 presents the three key values—MEP (insurable value), CVEC, and MEP-CVEC (the net single premium for an amount of insurance equal to insurable

TABLE 1  
MEP, CVEC AND NET SINGLE PREMIUM FOR A \$1 ANNUAL COVERAGE OF INSURABLE VALUE LIFE INSURANCE\*

| x  | MEP                              | CVEC                               | NSP = MEP-CVEC  |
|----|----------------------------------|------------------------------------|---|
|    | $a_{\overline{65-x} } \cdot .03$ | $a_{\overline{x:65-x} } \cdot .03$ | $a_{\overline{65-x} } \cdot .03 - a_{\overline{x:65-x} } \cdot .03$ |
| 0  | 28.45                            | 27.98                              | 0.47  |
| 5  | 27.68                            | 26.31                              | 1.37  |
| 10 | 26.77                            | 25.37                              | 1.40  |
| 15 | 25.73                            | 24.28                              | 1.45  |
| 20 | 24.52                            | 23.06                              | 1.46  |
| 25 | 23.11                            | 21.65                              | 1.46  |
| 30 | 21.49                            | 20.01                              | 1.48  |
| 35 | 19.60                            | 18.13                              | 1.46  |
| 40 | 17.41                            | 15.98                              | 1.43  |
| 45 | 14.88                            | 13.56                              | 1.32  |
| 50 | 11.94                            | 10.85                              | 1.09  |
| 55 | 8.53                             | 7.80                               | 0.73  |
| 60 | 4.58                             | 4.28                               | 0.30  |
| 65 | 0.00                             | 0.00                               | 0.00  |

\* 1958, C. S. O., 3 percent.

value). The values presented are for an annual insurable value (I) of \$1.00. This can be applied to any I, to produce any of the three variables.

Table 2 presents an actual illustration for given ages, from 0 to 65, when I is equal to \$6000.

### A View of the Relationship of the Variables

The proposed method of viewing insurable value naturally suggests decreasing term insurance. The net single premium for the decreasing term insurance required is MEP-CVEC. This is a dynamic concept which provides the correct amount of insurance to age 65, if the assumptions on which it is based hold true.

In terms of a static analysis, MEP represents insurable value at a given age. For example, MEP at age 35 ( $MEP_{35}$ ) would be larger than the MEP at age 36 ( $MEP_{36}$ ). In other words, at any point within the working period  $MEP_x > MEP_{x+1}$ . CVEC represents a person's earning capacity, on the average, if the effects of mortality are recognized. CVEC would be more appropriate when considering the obligation of a tort-feasor to the dependents of the insured; MEP,

MEP, CVEC, NSP AND OTHER PREMIUMS FOR SELECTED AGES  
FOR \$6000 ANNUAL INCOME\*

| Age | MEP:<br>Maximum<br>Earnings<br>Potential:<br>Insurable<br>Value | CVEC:<br>Capitalized<br>Value of<br>Earning<br>Capacity | NSP at<br>given<br>Age | Net Annual<br>Level<br>Premium<br>Payable<br>to Age 65 | Estimated<br>Gross<br>Annual<br>Level<br>Premium<br>Payable to<br>Age 65 | Net Annual<br>Level<br>Premium<br>Payable<br>to Age 61 | Estimated<br>Gross Level<br>Annual<br>Premium<br>Payable to<br>Age 61 |
|-----|---|---|------------------------|--|--|--|---|
| 0   | \$170,700   | \$167,880   | \$2,820                | 134.40   | 155.90   | 102.99   | 119.47  |
| 5   | 166,080   | 157,860   | 8,220                  | 302.21   | 350.56   | 308.33   | 357.66  |
| 10  | 160,620   | 152,220   | 8,400                  | 320.12   | 371.74   | 328.00   | 380.48  |
| 15  | 154,380   | 145,680   | 8,700                  | 346.20   | 401.59   | 356.70   | 413.77  |
| 20  | 147,120   | 138,360   | 8,760                  | 366.99   | 425.71   | 380.70   | 441.61  |
| 25  | 138,660   | 129,900   | 8,760                  | 390.55   | 453.04   | 408.77   | 474.17  |
| 30  | 128,940   | 120,060   | 8,880                  | 427.75   | 496.19   | 453.29   | 525.82  |
| 35  | 117,600   | 108,780   | 8,820                  | 468.15   | 543.05   | 505.15   | 585.97  |
| 40  | 104,460   | 95,880  | 8,580                  | 515.94   | 598.49   | 571.62   | 663.08  |
| 45  | 89,280  | 81,360  | 7,920                  | 559.72   | 649.28   | 648.12   | 751.81  |
| 50  | 71,640  | 65,100  | 6,540                  | 576.21   | 658.40   | 722.65   | 838.28  |
| 55  | 51,180  | 46,800  | 4,380                  | 534.80   | 620.37   | 812.61   | 942.63  |
| 60  | 27,480  | 25,680  | 1,800                  | 398.23   | 461.95   | 1,800.00   | 2,088.00  |
| 65  | 0   | 0   | 0                      | 0  | 0  | 0  | 0   |

\* 1958, C. S. O., 3 percent.

when considering the amount to be insured.<sup>14</sup>

The classic problem of renewable term insurance, expounded on at great length by most life insurance texts, might have been avoided, if there had been a dynamic rather than a static approach to insurable value.

Insurers wrote renewable term on a level rather than a decreasing basis. They assumed, in other words, that  $MEP_{35}$  would be insured for life. This assumption built increasing costs and adverse selection into the insurance arrangement. Both of these problems could have been avoided by approaching  $MEP_x$  as a dynamic concept, and writing renewable term for the appropriate MEP at each age  $x$ . Their policies should have provided, not level term equal to  $MEP_{35}$ , but de-

creasing term, at each year as follows:  $MEP_{35}$ ;  $MEP_{36}$ ;  $MEP_{37}$ ; etc. In other words, the concept of yearly renewable term insurance for the whole of life for decreasing amounts would have been technically feasible.

Instead of this more forthright approach, of simply decreasing the term amount, insurers built on an increasing layer of investment over a decreasing layer of term insurance. That is, instead of yearly renewable term for decreasing MEP amounts, the insurers adopted advance funded yearly level renewable term insurance.

At age 65 the human machine is assumed to be fully depreciated, and no earning capacity remains. Beyond age 65, however, insurance can be justified only as an investment alternative, intended to budget for special needs or to provide special incidental advantages.

The difference between MEP and CVEC yields the premium necessary to be sure MEP is available on death, as already noted. It represents the cost of insuring the MEP against death. It is comparatively small because of the rela-

<sup>14</sup> The appropriateness of CVEC in the case of a tort claimant can be explained in several ways. CVEC provides full indemnity as no premium is paid. In the insurance situation, MEP less NSP, nets CVEC. The tort-feasor must indemnify for human life value, not insurable value. Indemnification for insurable value would require the assumption that plaintiff would have been certain to live to 65, an assumption clearly contrary to fact and violative of the principle of indemnity.

tively low probability of dying before age 65, only a few die, and on the average each person will realize his CVEC.

Expression (2) can be stated as an equation:

$$\text{NSP} = (\text{MEP}) - (\text{CVEC}) \quad (3)$$

The left hand side stands for the net single premium to protect insurable value. By manipulating the equation, the following can be obtained:

$$(\text{CVEC}) = (\text{MEP}) - (\text{NSP}) \quad (4)$$

CVEC is less than MEP because of mortality. NSP is the sum needed to insure that mortality. In Table 1, NSP is comparatively small because mortality places only a comparatively small dent in the MEP.

To fully understand the relationship of the three variables, they can be considered from a strictly individual viewpoint, from the viewpoint of an individual who is participating in an insurance group, and from a purely insurer viewpoint.

From a strictly individual point of view, MEP is what the individual should earn if he can work until age 65. NSP and CVEC have little meaning unless the individual participates in a group.

From the viewpoint of an individual participating in an insuring group, CVEC is what each member of the group, on the average, can be expected to earn if those in the group continue to work until death or age 65. CVEC has little meaning from the individual viewpoint, as an individual cannot reasonably expect to earn exactly CVEC. NSP is what the individual must pay to the group to insure his own MEP against death.

From the viewpoint of the insurer, it has promised that each individual will continue to accrue his MEP, if dead. It works on the assumption that those who live will work and thus continue to accrue their MEP. Therefore, it can assume that each member of the group will earn its

CVEC. In order to be able to assure that every insured receives its MEP, it only needs to have enough funds on hand to make up the difference between the group's MEP and CVEC. This is the NSP.

From the viewpoint of the insurer, it is not the MEP that is expected to be lost. The insurer can expect that the group will earn the group's CVEC. All that is expected to be lost is the difference between MEP and CVEC (i.e., MEP-CVEC). From the insurer's point of view, the group's MEP is theoretically exposed to loss, but only the group's (MEP-CVEC) is expected to be lost.

The interaction of the three variables, NSP, CVEC, and MEP, also demonstrates the method of the insurance technique.

By insuring each person's MEP, the insurer makes certain everyone will receive at least his CVEC. If insurance is assumed to be expenseless, it can provide everyone with his MEP for a premium, equal to MEP-CVEC. Although the insurer will complete the income stream to total the MEP to anyone who dies, an estate of a deceased insured will net only the CVEC as it must pay a premium of NSP. All participants receive their MEP, pay an NSP, and net a CVEC.

These results demonstrate why insurance may be considered communism by contract. If the insured group instead were merely a communal society that pooled income (and mortality were the only income diminishing factor), they would pool incomes and divide, to each receive CVEC. They would pay no premium. But by the communal arrangement, they would sacrifice the right to earn more than the CVEC, and the prospect of earning less. They would pay no NSP; but would really sacrifice the right to earn more than CVEC, i.e., they would sacrifice their right to the NSP.

Finally, the three variables can be seen in their relationship by Table 3.

In summary, under the proposed sys-



TABLE 3

COMPARISON OF ELEMENTS AFFECTING INSURABLE VALUE UNDER TWO DIFFERENT METHODS

|                          | <i>Dublin and Lotka Method of Valuation</i> | <i>Method Proposed in this Article</i> |
|--------------------------|---|--|
| Insurable Value          | CVEC  | MEP                                    |
| Premium                  | Not Given                                   | NSP                                    |
| Net to Insured or Estate | CVEC-Premium                                | CVEC                                   |

tem, by insuring MEP, CVEC is made certain. MEP is paid, but premium subtraction nets CVEC. This is a logical result, with insurance, in the final analysis averaging to provide the average expected income.

The MEP comes in either by actual earnings (it is assumed all who live earn) or by insurer payments.

### Results of the Two Approaches

Like the property-liability insurance business, the proposed approach to insurable value places emphasis on risk distribution and the payment of losses. The traditionalists de-emphasize risk distribution and losses, in favor of investment, the "essence of life insurance," according to Huebner. This contrast is made apparent by comparing losses to premiums in ordinary life insurance with the comparable ratio in lines which do not emphasize investment. All comparisons use 1965 figures and include dividends.

In group life, death claims are \$1.8 billion while premiums are \$2.9.<sup>15</sup> In group accident and health, benefits are \$4.0 billion while premiums are \$4.3.<sup>16</sup> In all accident and health, both individual and group, benefits were \$4.9 billion as against premiums of \$6.3.<sup>17</sup> In contrast, ordinary life insurance paid death benefits of \$2.6 billion while generating premiums of 11.3

<sup>15</sup> Life Insurance Fact Book, 1966, pp. 40 and 51.

<sup>16</sup> *Ibid.*, pp. 46 and 51.

<sup>17</sup> *Ibid.*, pp. 46 and 51.

billion.<sup>18</sup> The ratio of losses to premiums is summarized in Table 4.

TABLE 4  
RATIO OF LOSSES TO PREMIUMS IN VARIOUS LINES

|                           |     |
|---------------------------|-----|
| Ordinary Life             | 23% |
| Group Life                | 62% |
| Accident and Health       | 77% |
| Group Accident and Health | 93% |

There are several distortions in this 23 percent loss-to-premium ordinary life ratio. One distortion which makes it larger than it should be is caused by the inclusion of investment proceeds in death pay-outs.<sup>19</sup> Hence, the 23 percent ratio overstates the extent to which the life business is concerned with death losses.

Still another way to view the risk element in life insurance is to compare living benefits as a percentage of total benefits. This ratio has never been below 51.4 and has been as high as 62.7, according to available data from 1940 to the present. In 1965 it was 57.7.<sup>20</sup> This figure indicates death benefits have not exceeded 48.6 percent of all benefits at any time since 1940.

An interesting feature of life company operations which throws some light on the predominance of the investment element in life insurance is the relationship of death claims to investment income. Available data from 1940 to the present indicate that investment income has exceeded death benefits at an increasing rate. The excess has been as low as \$236 million in 1940 and as high as \$1.9 billion in 1965.<sup>21</sup>

The more remote comparison between property-liability and life insurance can be made to illustrate further the emphasis

<sup>18</sup> *Ibid.*, pp. 40 and 51.

<sup>19</sup> There is also a distortion in the group figures. They include in premium experience rating refunds, which would result in higher ratios than those presented.

<sup>20</sup> *Ibid.*, p. 43. Living payments include matured endowments, disability payments, annuity payments, surrender values and policy dividends.

<sup>21</sup> *Ibid.*, pp. 50 and 40.

on investment rather than life insurance. In 1965, the property-liability insurance industry had incurred losses of \$12.9 billion against premiums earned of \$18.4 billion. This is a 70 percent ratio which far exceeds the 23 percent ratio of ordinary life insurance.

Even the property-liability business is sometimes accused of dollar trading. At worst it is involved in short-term dollar trading on the loss side, rather than long-term dollar trading on the investment side, as in the life insurance business.

Insurance terminologists are fond of saying that insurance against death should be called death insurance instead of life insurance. Out of tenderness for the feelings of consumers, they prefer the latter. In fact, life insurance is properly named, as it is concerned mainly with living values. It would be a misnomer to call life insurance death insurance in view of the nature of its present operation.

### *Magic of Compound Interest Versus Magic of Pooling*

The traditionalists, wedded to investment life insurance, are most concerned with the mortality risk at the end of the mortality table. But at advanced ages, insurance is no longer feasible and budgeting or investment must take precedence. Hence, the major emphasis of the traditional view is not pooling the risk of a group of insureds but reshuffling premiums over time so an overcharge of the premiums in the early years of the policy, plus compound interest, balances spiraling mortality costs for the latter years. This is emphasis on the so-called magic of compound interest, not on what could very well be called the magic of pooling.

The proposed approach places first emphasis on the magic of pooling and the distribution of risk in those policy years where insurance is feasible. The main concern is the mortality table to age 65.<sup>22</sup>

<sup>22</sup> Age 65 is arbitrarily selected as the most

and the risk therein that can be distributed on an economically feasible and rational basis.

### *A Generalized Formulation*

The discussion up to now has assumed only death is to be insured. The risk of disability as a force that might destroy human life value has been ignored.

Once the risk of disability is acknowledged, the question of whether disability should be discounted in determining insurable value for life insurance purposes arises.

The question concerns the legitimacy of insuring the MEP against any one risk without discounting for the effect of the other risk. Prior to dealing with this problem consideration will be given to the desirability of acquiring protection against both contingencies.

The problem may be focused on from a theoretical and from a practical point of view. Theoretically, an individual can realize his MEP if he survives to retirement age and does not become disabled during his productive life span. Death and disability may destroy that MEP, and he could guarantee earning his MEP by insuring it against the risk of disability and death. The technical approach towards the provision of those benefits would depend on whether the contingencies are considered dependent or independent. Undoubtedly, they are not independent, since the probability of death may be increased by a previous disability. They may, however, be treated as independent without a serious distortion of facts. Under this assumption:

$$(MEP) - (CVEC)^{d,1} = (NSP)^{d,1} \quad (5)^{23}$$

commonly accepted retirement age. Demography and economics may alter that selection in the future, but the principle of exhaustible earning power will still be applicable.

<sup>23</sup> In expression (5),  $CVEC^{d,1}$  is the capitalized value of earning capacity discounted for death (d) and disability (i) on the assumption that these two variables are independent.  $NSP^{d,1}$  is the

The above formulation would provide a benefit of I as of the date of disability to retirement age or recovery or death if earlier, and a benefit of I as of the date of death, regardless of any prior disability, up to age 65.

Obviously, if the insured dies without suffering any income reducing disability, he is entitled to his death benefit. If he remains disabled to age 65, he would be entitled to a disability benefit. If he becomes disabled and dies afterwards, he would collect a disability benefit during his disability period and than a death benefit.

If the contingencies were considered to be dependent, it would be necessary to refine the analysis to provide for the contingencies of death prior to and after disability, and for the contingency of disability as such.

Under the generalized formulation (5), the insured receives his CVEC<sup>d,1</sup>, regardless of what contingencies befall him. He insures the MEP and receives the amount, MEP, less premiums of NSP<sup>d,1</sup>. After premiums, he nets CVEC<sup>d,1</sup>.

Only by insuring MEP against the perils of death and disability can the individual be assured of receipt of his CVEC<sup>d,1</sup>. If he insures only his CVEC<sup>d,1</sup> he will end with something less than this amount, after payment of premiums.

Formula (5) is an all-inclusive statement of insurable value for private income insurance. Income insurance plus medical expense insurance represents the complete life insurance portfolio for the individual.<sup>24</sup> Social insurance, including

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net single premium for a benefit of I payable during any period of disability before age 65 and payable from death to the date at which the person would have become 65.

<sup>24</sup> Annuities may be treated as life insurance for some purposes but they are not here so considered since they lack the element of indemnity. Annuities are not intended to provide indemnity upon the occurrence of a contingency but are merely devices to scientifically liquidate a capital sum that may be derived from I, from an in-

unemployment compensation, and new forms of private insurance could also be easily integrated into this system.

The all-inclusive system would provide complete insurance for full insurable value against all contingencies. To the extent that insurance is not supplied on this basis, there are likely to be areas of both over-insurance and under-insurance. To the extent this is so, there may be an incorrect allocation of insurance costs.

### Criticism of Current View

If death and disability are regarded as mutually exclusive independent events there is no reason why a man should not be able to insure his MEP against the risk of death regardless of the disability risk.

Similarly, there is no reason why he should be prevented from insuring his MEP against the peril of disability regardless of considerations concerning the probability that he might die before becoming disabled.

In both cases, he is concerned with insuring his capacity to produce his MEP, not his expected production.

Many life insurance writers discount the MEP for any uninsured peril. For example, Dublin and Lotka were previously criticized for subjecting insurable value to a discount for mortality and other factors. Dublin and Lotka discount for such factors as mortality, unemployment, disability, and other factors affecting the earning stream. They would discount for all factors other than mortality when life insurance is purchased.

Hofflander, in the most recent detailed treatment of the subject, offers the following formula for human life value for insurance purposes:<sup>25</sup>

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dennity provided by the insurance of I, or from other sources. Survival is a contingency but not one generally thought of as giving rise to an occasion for indemnity.

<sup>25</sup> Alfred E. Hofflander, "The Human Life

The purpose of determining the human life value for life insurance (for this work) is to find that single sum which, on the average, represents the amount necessary to replace that which an individual would normally provide for his family had he lived. The sum is the present value of an individual's stream of income (less self-maintenance).

Since this sum is to be used as a guide in determining the amount of life insurance to be purchased, it will be discounted for interest and all factors (except mortality) which might prevent the earning of the income.

Under his formulation, the owner of a \$5000 house would not obtain \$5000 in fire insurance. He would discount the \$5000 for all perils likely to destroy it other than fire (e.g., windstorm, hail, etc.) and insure that reduced amount.

The emphasis on the one-contingency model dates from the earliest days of life insurance history. The same product is still sold to cover the same narrow contingency. Non-life insurance has made progress toward the all-risk approach despite many technical and legal problems. Although we are aware that all-risk life income insurance has its problems, it may deserve closer consideration.

The one-contingency model is the approach that is now in fact used. It gives no assurance of providing insurance for full value against all contingencies. While the one-contingency model works in practice, an all-inclusive approach would provide obvious advantages to the insurer and insured alike.

### Further Refinements

The proposed approach to insurable value defines a maximum insurable value. The insured may wish to cut it down for a variety of reasons. He may, for example, prefer current consumption; he may prefer to discount for his wife's possibility of remarriage, [depending on her deprecia-

Value: A Theoretical Model," *Journal of Risk and Insurance* (December, 1966), p. 531.

tion situation;] or, he may reduce his insurance to a minimum because of lack of dependents. The needs approach, often used in practice, would be one method of scaling down insurable value.

Depending on circumstances, I (income sought to be insured) may decrease or increase over time. I may be subject to increase because of inflation, increase of wages, or other factors. A policy itself could be tailored to attempt to reflect any variation in the earning stream.

Any of the proposed variations can easily be accommodated by the proposed system.

### Marketing Implications

Both the traditional view of insurable value and the one proposed here have important marketing implications. And the two views often lead to fundamentally different marketing approaches.

### *Protection versus Investment*

The approach to insurable value proposed in this paper leads to an emphasis on protection, and on protection before retirement. The proposed measure of insurable value in fact produces the premium for a decreasing term insurance policy.

The traditional textbook presentation of Huebner's views is silent on the choice of protection versus investment, during the discussion of the calculation of the human life value. But in connection with the discussion of converting that value into insurance, investment life insurance is invariably stressed and favored.

Life insurance marketing practice has in fact placed heavy emphasis not on insuring the income flow, but amassing savings via cash-values in investment life insurance.

This article is not an attempt to condemn investment life insurance. It should be realized, however, that investment life insurance is merely insurance with an

investment adjunct. The authors have stressed this point in a previous article which can be considered a defense of investment life insurance.<sup>26</sup> Those who recommend or sell investment life insurance are dealing in the investment market and should have some appreciation of investment alternatives. Life insurance can provide not only an investment adjunct, but also an investment device to provide liquidity, tax avoidance, probate expense avoidance, creditor-rights protection, or other legitimate purpose. But other investment alternatives may also be able to provide other or like advantages.

It should also be recognized that this article does not object to level-premium life insurance. Term insurance generally involves the level-premium approach. Implicit in any level-premium approach to life insurance is an investment element. But the investment element in term insurance increases to a maximum and then is exhausted by the end of the policy period. Because term insurance does not attempt to provide insurance for the whole of life, its investment element is relatively insignificant as compared to whole life and other policies with a richer investment blend. But the investment element in term insurance is substantial enough to generate cash values on the basis of minimum standards applied to other forms of life insurance.<sup>27</sup> Nonetheless, many term insurance policies are specifically and perhaps improperly exempted from the minimum cash value requirements of the non-forfeiture laws.<sup>28</sup>

<sup>26</sup> Juan B. Aponte and Herbert S. Denenberg, "Life Insurance and the Investment Texts," *Journal of Insurance* (December, 1963), pp. 595-608.

<sup>27</sup> Minimum cash values as defined in the non-forfeiture law for a 15-year term policy issued at age 53 would reach a maximum of \$35.57 per thousand at the end of ten years.

<sup>28</sup> E.g., Virginia exempts all term policies of twenty years or less. Virginia Insurance Law, section 38.1-459. New York's exemption of term is much more narrow. New York Insurance Law, section 208-a(9).

Term insurance, therefore, may involve cash values or at least overpayment generating policyholder equity.<sup>29</sup> However, for purposes of this discussion, investment life insurance will be deemed to include only whole life and endowment.

Perhaps the entire structure of life insurance marketing needs retooling, as it relies almost exclusively on a marketing force promoting an investment, yet basically untrained in matters of investment.

In making an investment use of life insurance, the insurance oriented salesman is generally more conversant with the advantages than the disadvantages of his recommendations. What is needed is an insurance-investment counselor who has no special financial interest in any investment alternative and is also conversant with all major alternatives. Today, the typical insurance salesman not only does not fully appreciate investment alternatives, but he often has little understanding of the investment element of life insurance. And his limited knowledge is strongly warped by his interest in the commission structure of his product.

### *Group and Term Insurance Sales*

The phenomenal growth of group life insurance is consistent with the proposed approach to insurable value. Group is mainly term insurance terminating at age 65. Furthermore, a substantial portion of group insurance not financed wholly or partially by employers, is decreasing term.

Even ordinary life policies (i.e., policies other than group and industrial) evidence a trend toward term insurance. In 1950, only 4.6 percent of ordinary insurance in force by amount was term, in 1957, 7.7 percent, and in 1962, 9.2.<sup>30</sup> When the term portion of combination policies is

<sup>29</sup> Some decreasing term policies involve underpayment in earlier years and overpayment in later years. This may suggest providing adequate insurance in earlier years through credit techniques.

<sup>30</sup> *Life Insurance Fact Book*, 1966, p. 25.

included as term insurance, the trend is even more pronounced.<sup>31</sup>

|      |      |
|------|------|
| 1950 | 4.6  |
| 1957 | 18.7 |
| 1962 | 21.3 |

Especially interesting is the sharp growth in family combination policies—including family income policies and family policies. The decreasing term portion of the family income policy is the essence of the approach to insurable value here proposed.

The kinds of policies suffering the sharpest declines are limited payment life, endowment policies, and retirement income policies. Straight life insurance has retained the same percentage of the market over the period in question—1950-1962.

These trends could be interpreted as evidencing industry interest in term insurance. In fact, they may be more logically interpreted as public demand for term insurance despite industry adherence to emphasis on investment life insurance.

Neither the industry nor the text writers have varied from their emphasis on investment life insurance. This is amply borne out by the texts already cited and industry pronouncements in the trade press.

### *Legitimacy of Indemnity and the Illegitimacy of Investment*

There are two fundamental approaches to life insurance marketing—what might be called that of the traditionalists and that of the termites. Although this dichotomy is an oversimplification, like that of conservative versus liberal, it is conceptually correct.

The traditionalists represent the Huebnerian viewpoint that emphasizes investment life insurance. In fact, Huebner

<sup>31</sup> Term in 1950 is understated, as term included in combination policies was then included as permanent. *Ibid.*

turned life insurance on its head and said, "The true concept of life insurance is investment." Most academicians and industry representatives follow Huebner and his investment emphasis. Their adherence to this accepted view justifies their being labelled as "traditionalists."

The tradition is not one of long standing in terms of the history of life insurance. As Stalson has pointed out. "The life insurance contract in its earliest form, for instance, covered only a short period of time and called for but one payment by the assured in consideration of the promise of a payment by the insurer in the event the former should die within the period covered by the contract."<sup>32</sup> Knight points out that seven-year term policies were the most popular kind of contract, followed by whole life in the 1809-1943 period.<sup>33</sup> Level premium life insurance came with the founding of the Old Equitable,<sup>34</sup> and cash-value investment life insurance as a consequence of the reforms of Elizur Wright.<sup>35</sup>

The history of life insurance, therefore,

<sup>32</sup> J. Owen Stalson, *Marketing Life Insurance* (Cambridge, Mass.: Harvard University Press, 1942), p. 412.

<sup>33</sup> Charles Kelly Knight, *The History of Life Insurance in the United States to 1870* (Philadelphia: University of Pennsylvania Dissertation, 1920), p. 101.

<sup>34</sup> *Ibid.*, p. 40. The Old Equitable's full name was The Society for Equitable Assurance on Lives and Survivorship. It was founded, according to Stalson, in 1762. As early as 1830, one English company used a schedule of surrender values. *Ibid.*, p. 317. Some companies granted cash loans voluntarily. *Ibid.*, p. 221. Maclean also traces the early importance of term. Joseph B. Maclean, *Life Insurance*, 9th ed. (New York: McGraw-Hill, 1957), p. 41. According to Knight, "no plan of life insurance, as it is understood today, had been put into operation by an organization in England prior to 1760. Charles Kelly Knight, *The History of Life Insurance in the United States to 1870* (Philadelphia: University of Pennsylvania Dissertation, 1920), p. 36.

<sup>35</sup> Contracts before 1865 generally did not carry cash surrender values, while those offered after 1885 almost certainly did. Stalson, *op. cit.*, p. 323.

can be seen in three phases—pure insurance without investment; investment insurance, but in which policyholders have no legal claim to the investment; and investment life insurance with cash-values.

Opposed to the traditionalists are the termites—emphasizing, as their title suggests, term insurance. Those articulating the termite approach have generally been critics of the industry, who believe that investment has no legitimate role in the insurance technique. They would recommend the purchase of term insurance, and investment alternatives other than life insurance. Many of the articulate termites are not without self-interest in their recommendations. Their main concern has often been the profit to be had from selling the insured an alternative investment-to buy term and invest the difference with them.

Neither the traditionalists nor the termites present a balanced viewpoint. But the traditionalists' views have prevailed, and as a result, those advocating emphasis on term insurance until 65, face difficult sledding. The termites have not stigmatized investment life insurance, but the traditionalists have stigmatized term insurance.

Huebner writes, in discussing term insurance:

It is a common assertion that the chief objection to this form of insurance is that the insured is apt to feel dissatisfied at the expiration of the contract, and that it is most difficult to make the average holder of such a policy, after he has paid ten or twenty premiums, appreciate the fact that he has already received full value in the form of protection for the premiums paid and is therefore not entitled to any refund.<sup>36</sup>

Huebner does not explain why the in-

<sup>36</sup> Solomon S. Huebner, *Life Insurance* (New York: D. Appleton and Company, 1921), p. 68. Essentially the same argument is repeated in later texts. Solomon S. Huebner and Kenneth Black, *Life Insurance*, 6th ed. (New York: Appleton-Century-Crofts, 1964), p. 82.

sured should find the fact of his survival so disappointing. The insured is not disappointed when his house doesn't burn down, or his automobile doesn't cause a tragedy,—yet at the termination of his non-life policy, he gets no refund!

Modern text writers and salesmen alike have continued to emphasize the psychological disappointment of survival arising from term insurance. McGill, for example, in arguing against renewable term, points to those who give up their insurance as premiums become too high, but receive "no tangible benefit for the sacrifice involved."<sup>37</sup>

Linton even gives an example:

In 1907 a man took out a ten-year renewable term policy. He carried it for three successive periods and then failed to renew. Within a year thereafter he died. The policy was found by his son, who expressed great indignation that the company should have collected a large amount of money over thirty years and then permitted the policy to go out of force without value.<sup>38</sup>

Term takes the rap in more subtle ways, as well. Term is described as "the *cheapest* form of life insurance" which may be purchased.<sup>39</sup> (emphasis supplied) And its crucial weakness must always be noted—"The great weakness of term insurance is that it builds up no cash values in the way permanent insurance does."<sup>40</sup>

The traditionalists have the termites on the defensive, and the traditionalist view generally prevails. Some of the same efforts exerted to sell investment life insur-

<sup>37</sup> Dan M. McGill, *Life Insurance*, rev. ed. (Homewood, Ill.: Richard D. Irwin, Inc., 1967), p. 32.

<sup>38</sup> M. Albert Linton, *Life Insurance Speaks for Itself*, rev. ed. (New York: Harper and Brothers, Publishers, 1939), p. 54.

<sup>39</sup> William T. Beadles, "Contracts—Term Insurance," *Life and Health Insurance Handbook*, ed. Davis W. Gregg, 2d ed. (Homewood, Ill.: Richard D. Irwin, Inc., 1964), p. 44.

<sup>40</sup> M. Albert Linton, *How Life Insurance Can Serve You* (New York: Harper and Brothers, 1958), p. 34. A cynic might add—Is this a weakness from the insured's or company's view?

ance and discredit term will have to be made if a more rational approach to insurance marketing is to be attained.

### *The Realistic versus the Ridiculous*

The emphasis on protection produces a realistic insurance picture. At age 35, with a \$6000 per year income to protect ( $I = \$6000$ ), the net single premium produced is \$8,820 or an annual premium of \$468. Even if that premium is loaded, by say 20 percent, it is still a reasonable outlay.

Permanent insurance to cover insurable value, analyzed on a static basis, would require an outlay of about \$2,352 annually.<sup>41</sup> This is about 40 percent of the \$6000 income, a ridiculous requirement. The \$468, even if loaded, produces a figure less than 10 per cent of the \$600 income. And, the rule of thumb, for whatever it's worth, that 10 percent of gross income should be spent on life insurance would be satisfied. The figure is even more realistic if it is assumed that gross income is in excess of the annual amount to be protected. If gross income were \$10,000, the indicated insurance would be only 5 percent of gross income.

The issue is not simply one of term versus investment life insurance. The approach to insurable value here proposed points not simply to term insurance, but more specifically to decreasing term insurance to age 65.

### *Dynamic versus Static Analysis*

The proposed approach to insurable value is dynamic. It yields the premium on an insurance policy, which, if purchased, will provide the appropriate capital sum regardless of when death occurs. In the absence of an increase in the annual sum sought to be protected ( $I$  in expression (1)), the calculated amount provides automatically adjusting values

<sup>41</sup> Of course, this figure includes an element of investment, but possibly at the sacrifice of adequate insurance.

from purchase to death or retirement.

The traditional approach provides an insurable value that is static and is immediately rendered obsolete by the passage of time. It is planned obsolescence worthy even of Detroit. Every year that passes makes the value redundant by the annual sum sought to be protected (i.e.,  $I$ ). The insured must be serviced virtually on an annual basis, requiring a constant stream of inefficient and expensive adjustments, even for a constant income,  $I$ .

### *Mass Marketing Emphasis versus Current Emphasis*

As indicated above, the insurance marketing emphasis following from the proposed approach to insurable value is decreasing term insurance to age 65. This is the basic insurance need of the mass market, but has been generally eschewed by the insurance industry.

Life insurance texts present arguments against the term emphasis which rely on historical and practical examples of doubtful relevance to the kind of term insurance here proposed to be emphasized. The text writers are virtually unanimously convinced that term insurance emphasis would break down the insurance process. Indeed, the process would break down if term is featured to age 95. But the example proves nothing of relevance for the term approach before age 65.

In making the case for "permanent" insurance rather than term, Magee argues companies featuring term have met the same difficulties as the early fraternal.<sup>42</sup> He specifically cites the disaster which befell an insurer that attempted "to provide lifetime insurance protection through term insurance." He finally admits that this problem of adverse selection can be controlled by age limits.

<sup>42</sup> John H. Magee, *Life Insurance*, 3d ed. (Homewood, Ill.: Richard D. Irwin, Inc., 1958), pp. 38-39.



Other text writers, such as Huebner and Black and McGill, also stress the problem of renewable term to the extremes of age.<sup>43</sup> These authors indicate the great majority of individuals need insurance which can be continued to death. They conclude this need gave rise to the development of level premium insurance.

The mass market, in fact, needs little or no insurance after 65. It may need savings, but these savings may take any form, of which insurance is only one alternative. Insurance to produce liquidity, tax advantages, and other incidental benefits is generally not a high priority in the mass market. What is needed is savings, and it is strictly an investment decision as to the form this savings should take.

In Huebner's world of 1915, before social insurance, before private and public pensions, before government deposit and savings insurance programs, and before a wide and flexible investment market backed by government monetary and fiscal measure intended to offset major economic set-backs, it may not have distorted reality too much to take a Huebnerian view of the importance of the savings element of life insurance. Huebner's conception of life insurance as the center of the investment process is now as outmoded as the view of the world before Copernicus.

### Implications for Theory

The approach to insurable value here proposed can be tested against what is generally considered to be sound insurance theory, and contrasted with test results from the traditional approach to human life value.

#### *Insurability Requires Chance of Loss to Be Small*

The emphasis on insurance to age 65 is consistent with views as to insurability and marketability expressed by insurance

<sup>43</sup> Huebner and Black, *op. cit.*, pp. 79-80, and McGill, *op. cit.*, pp. 29-32.

theorists. According to Mehr and Cammack:<sup>44</sup>

To be insurable, the chance of loss must be small. The cost of an insurance policy consists of the pure premium (amount actually needed to make loss payments) and the expense addition. If the chance of loss is much above 40 percent, the cost of the policy will exceed the amount the insurance company is obligated to pay under the contract.

The chance of loss must often be considerably less than 40 percent to be insurable. It was recently reported that the highest premium level to which even war-risk cargo insurance rose in World War II was 30 percent.<sup>45</sup> The insurance required by the proposed approach to insurable value requires no insurance beyond the point when it is no longer economically feasible.

Insurance at advanced ages is in fact not economically feasible. It only becomes marketable when so blended with investment that the operation of the insurance mechanism is totally obscured. But it is not economically feasible because of the plain facts of the mortality table. Most text writers, in denouncing renewable term insurance, point out that the premium soon becomes prohibitive. At age ninety, according to one writer, the net premium is \$288.14 per \$1000; at age 95, \$351.24; and finally at age 99, it is \$1000 per \$1000.<sup>45a</sup>

These writers never point out that the actuarially equivalents of the above net rates are necessarily charged under the whole-life level premium approach. In the case of renewable term, the absurdity of

<sup>44</sup> Robert I. Mehr and Emerson Cammack, *Principles of Insurance*, 3d ed. (Homewood, Ill.: Richard D. Irwin, Inc., 1961), p. 38. Others place the maximum chance of loss for insurability somewhat lower; Greene specifies 30 percent. Mark R. Greene, *Risk and Insurance* (Cincinnati: South-Western Publishing Co., 1962), p. 50.

<sup>45</sup> *Wall Street Journal*, May 26, 1967, p. 2.

<sup>45a</sup> The computation ignores interest and expenses.

paying such high costs is apparent to both insured and insurer. In the case of level-premium whole-life insurance, the absurdity is hidden by the technique employed. Costs are apparently reduced by interest returns on the accumulated reserves, but such interest returns are in fact a cost.

There is one further difference. In the case of renewable term, the premium would be paid in the year the protection was needed. In the case of level premium insurance, the premium would be paid in advance, at the time when the funds could probably better be spent for current protection. In fact, the level premium approach is a budgeting scheme, in which the premium is largely a deposit, and in which the insured may be paying in advance for economically unfeasible insurance, at a sacrifice to his current and real needs.

Those who attack renewable term at advanced ages are in effect attacking level premium investment insurance. For at advanced ages, any insurance contract become largely an investment and not an insurance device. It primarily involves not the sharing of risk, but rather the pooling of assets. And the assets are pooled in a complicated and expensive fashion that is neither sound insurance nor sound investment. It is not insurance with an incidental element of investment, but investment with an incidental element of insurance. At this point, Dr. Huebner was right—investment finally becomes the essence of life insurance, and the policy really serves to protect the investment account.

#### *Insurance Cannot Protect Against Certain Loss*

McGill notes that "The hazard under a contract providing protection for the whole of life is one 'converging to a certainty,' while the hazard under a term policy is a mere contingency—one that

may or may not occur."<sup>46</sup> Huebner and Black spell out the contrast between renewable term and whole life, by an example running to age 99.<sup>47</sup> The argument implies that the whole life contract has somehow succeeded in insuring the certainty of death, while the renewable term has failed to do so, at least on a practical basis. In fact, neither has "insured" certain death. They both have budgeted for it in a different and equally irrational fashion.

#### *Insurance and the Small-Loss and Large-Loss Principle*

Insurance should cover the large loss of financial significance and should avoid the small loss easily budgeted for or otherwise financed.

The traditional theory of human life value, with its resulting emphasis on whole-life insurance, in effect requires insurance of piddling sums at advanced ages. Whole life insurance, with its built-in combination of decreasing term and increasing investment, also builds in insurance of insignificant amounts at advanced ages.

What the traditionalists emphasize is, in fact, decreasing term to age 100 and rather insignificant amounts of term toward the end of the mortality table.

The emphasis of the proposed approach to insurable value places emphasis on large losses that should be insured, and avoids insurance on the high frequency, high severity loss characteristic of life insurance at advanced ages.

#### *Price Competition*

The marketing approach implied by an appropriate measure of insurable value would emphasize decreasing term to age 65. By widespread marketing of a stand-

<sup>46</sup> Dan M. McGill, *Life Insurance*, rev. ed. (Homewood, Ill.: Richard D. Irwin, Inc., 1967), p. 33.

<sup>47</sup> Huebner and Black, *op. cit.*, p. 10.

ardized term policy price competition would be greatly stimulated and rationalized.

Traditional approaches emphasize investment life insurance which raises a hopelessly complex problem of cost comparison. The simple methods of making cost comparisons on investment life insurance are inaccurate. The complex methods defy general understanding.

J. Owen Stalson, in his perceptive masterpiece on *Marketing Life Insurance* summarized the problem in a few short sentences:<sup>48</sup>

The marketing history of the business shows that the policyholder wants the protection of life insurance but dislikes to pay the cost. Nothing hides cost better than the policies—ordinary life, limited payment, and endowment policies—which provide for level premiums over a long period of time and accumulate reserves on which the company earns an income through investments. . . . The reserve policy, therefore, provides a constantly decreasing amount of actual protection (as reserve values increase and stand like demand deposit cash to the policyholders' credit with the company) for which a non-changing rate (reduced by dividends in a mutual company) is charged. The policyholder usually overlooks this aspect of his insurance situation.

The policy implied by the theory of insurable value here proposed is not only rational but comprehensible in terms of price comparisons with like policies.

### Summary and Comment

Perhaps the most striking feature of the actuarial and general insurance literature is its unquestioning acceptance, sometimes by silence, of the conventional wisdom of insurance. And much of this conventional wisdom remains unchanged since its initial formulation by S. S. Huebner in 1915. The actuaries have been content to serve as technicians without ever raising basic questions about the wisdom or purposes of the insurance business. On rare oc-

<sup>48</sup> Stalson, *op. cit.*, p. 644.

casions they may wax philosophical in defense of private insurance vis-a-vis social insurance, but their critical propensities rarely rise to the level of basic differences with the industry. Their treatment of most major issues leads the observer to wonder if there is any such thing as an independent actuarial profession. Perhaps academicians, important producers of scholarly general insurance literature, and largely untrained in actuarial science, are lulled into a false sense of security by the general silence of the actuarial profession.

This article is not an attempt to definitively resolve the host of issues it raises. Rather, it hopes to open discussion on some crucial issues now largely treated by silence. It is unfortunate that such issues are only treated by muckrakers, often irresponsible ones at that, and are largely ignored by those with the technical ability to handle them. The muckrakers may be irresponsible and uninformed in their attack, but despite these handicaps they are often on target. Even their stream of irresponsible criticism is left unanswered by academicians and actuaries. They sometimes appear to win by default.

This article has treated some of these major issues by handling the implications arising from a new approach to insurable value here proposed. That approach translates insurable value into the net single premium required to insure that value. The value to be insured is the appropriate portion of the income stream to age 65, but not discounted for mortality, disability, unemployment, or other interrupting factor.

The net single premium (NSP) required to insure that value can be obtained by the expression MEP-CVEC. MEP is the income stream sought to be insured (maximum earning potential). CVEC is that same income stream discounted for mortality. The difference yields the NSP which has certain advan-

tages in the formulation of insurable value—

(1) It is a dynamic expression which, once obtained, provides the insurable amount till age 65, without the necessity of recalculation each year.

(2) It points to the kind of insurance needed to replace the income stream. In fact, it is the NSP for a family income policy to age 65.

(3) It is stated in terms of insurable value, and is clearly distinguished from human life value. Insurable value should represent value from an insurance point of view. Human life value in economic literature generally represents not what a life should be insured for, but what it can be expected to yield economically, in view of factors such as mortality that may interrupt or decrease it. Insurable

value should provide an uninterrupted income stream.

Perhaps most fundamentally, the approach to insurable value here proposed has certain fundamental theoretical and marketing implications which are examined in detail.<sup>49</sup> These implications relate to the proper use of insurance, the proper balance between insurance and investment, the kind of insurance that should be stressed for the mass market, and other equally important issues.

Whether these ideas are accepted in academic, actuarial, and industry circles may be quite immaterial. The direction of an increasingly informed consumer demand seems to be toward a new view of the function of life insurance.

<sup>49</sup> Further implications will be examined in a later treatment by the authors of this article.