Actuaries have long known that the mechanics of a side fund, with deductions for decreasing term insurance, parallel the mathematical structures of the reserve and cash value in traditional products. Applying this analysis to universal life, both the reserve and the cash surrender value have been expressed in terms of a side fund, or account value. We call this description the "Classical UL Model."

This creature called universal life has evolved from a combination of term insurance and a flexible premium annuity to a range of differing products with various design features.

Since the one common bond in all such products is the unknown cash value, throughout this paper we will refer to these products as "indeterminate cash value" products

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(ICVs).

3. THE CLASSICAL UL MODEL

It is appropriate to begin with a review of the methods currently in use
to explain the mechanics of ICVs. We call this description the "Classical
UL Model," although the label may seem a little unusual for something
so new. The Classical Model is a mathematical description of universal
life in which minimum reserves and cash values are expressed retrospectively
in terms of the account value. This paradigm is described in the
next few pages. A more detailed derivation can be found in Appendix A.

The heart of the boilerplate proof lies in showing that term with an
annuity exhibits behavior identical with that of the amount at risk and
reserve of a traditional policy

As an example, let us structure term plus
a flexible premium deferred annuity to simulate a whole life policy with
a death benefit of $1 payable at the end of the year of death

Shadow fund: The amount that the BGA must exceed at any time to
generate guaranteed future benefits in excess of any secondary benefit
guarantees

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However, the insurer may not feel confident

guaranteeing the 5 percent rate period by period. A period-by-period

guarantee of only 3 percent may be more suitable, but for marketing

reasons the insurer may not want to charge the redundant premium that

will ensure that the BGA will support benefits with a 3 percent guarantee
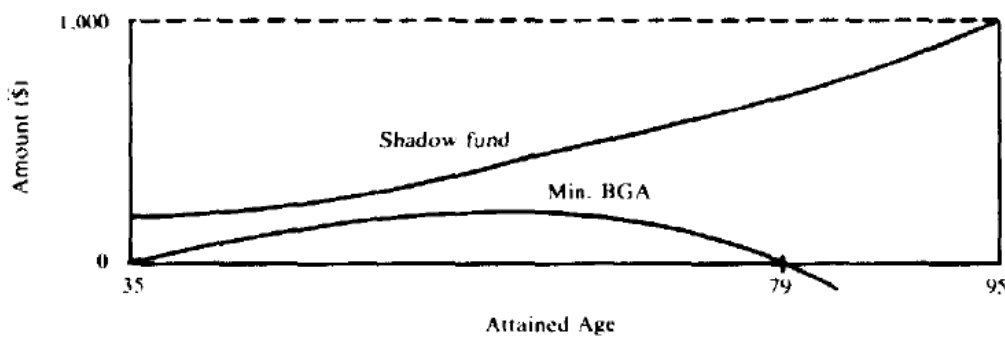


FIG. 7.2.—Comparison of minimum benefit generating account and shadow fund, by attained age.

Again, this method can be applied only after the policy has matured

and the actual gross premium structure is known. At the time cash values

must be determined, however, the future gross premium structure is not

available information.

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What are the implications of this for our cash-value methods? Since we cannot accurately predict the future gross premium structure, we desire a method that is least sensitive to incorrect prediction--in other words, a method that is reasonably insensitive to future premium assumptions.

Note that the Classical UL Model does, in fact, always produce the "correct" cash value. Under the Classical Model there is an identity between the BGF premium and a modified net premium." Thus, the Classical UL Model is completely insensitive to future premium assumptions

We stress again that the restrictions imposed by the Classical Model are severe. It is for this reason that we need a more general cash-value approach. Since most 1CVs are designed under the Classical Model (with some variation), we require that any cash-value technique produce results identical with those produced by the Classical Model in those cases where all the prerequisites for the Classical Model apply.

## 8.3. Determination of PVFB, APVFB, and PVNLP

We will discuss three general methods of calculating cash values. These can be characterized as follows:

We will discuss the basis for choosing an assumed premium after method 2 has been introduced, since the subject is relevant to both method 1 and

method 2

Once again we will examine the sensitivity of the cash value to the assumed premium.

Strong arguments can be made in favor of a or c, <u>but the planned premium has obvious disadvantages</u>

In addition, the administration of planned premium records and illustrations might be expensive.

For these reasons we find <u>the planned premium approach unacceptable.</u>

Under most flexible premium ICVs there is no minimum premium due at any time after issue." For these contracts, a lenient interpretation of the law would require that no net (adjusted) premiums be calculated

A strong case can be made for method E4. Since ICVs are largely marketed in lieu of more traditional permanent insurance, a comparable E' would seem in order. This method maintains the greatest parity with traditional forms of insurance.

Again, any method put into use (short of disallowing any E') requires <u>some interpretation of current law.</u> The authors favor method E4 for the reasons cited.

It is only by <u>rebundling the product</u>, by looking

prospectively at guaranteed benefits, that we can calculate those values
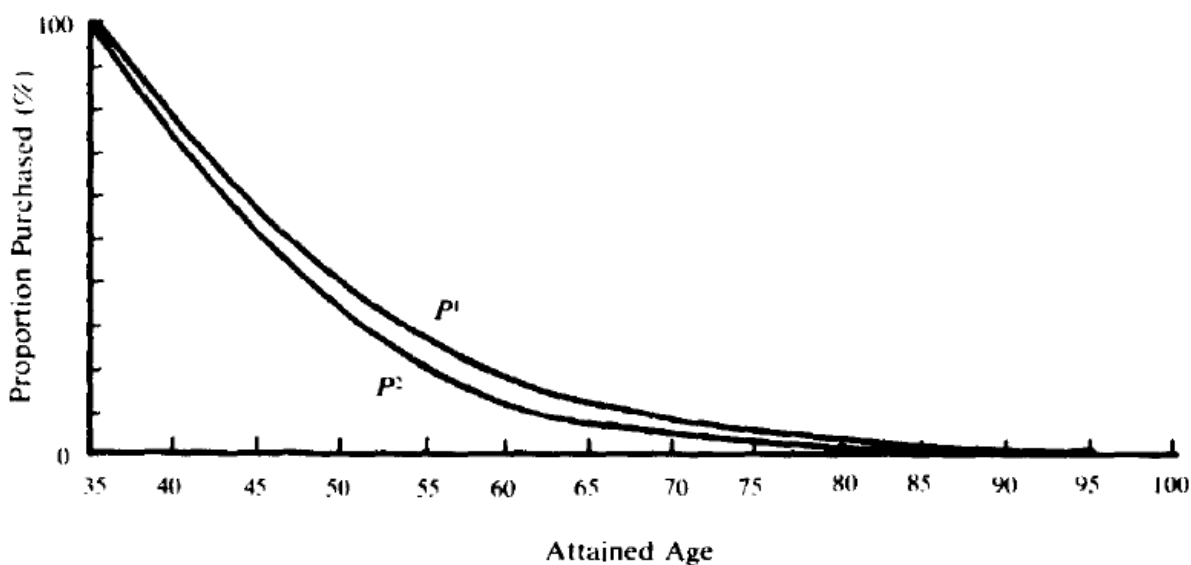
required by existing law



FIG. C2.—Proportion of age 35 benefits purchased by future net premiums, by attained age

In addition, the absolute value of this amount will grow with the size

of the assumed premium, thus occasioning the sensitivity to the premium

assumption.

This analysis requires that the form and incidence of benefits being

purchased by the net premiums are substantially similar to those of whole

life. For other forms of coverage, the relationships between net premiums

will change.

Nonforfeiture values .--There is one conceptual change in the new nonforfeiture

law that may have an effect on ICVs. The passage is quoted below:

In the case of policies which cause, on a basis guaranteed in the policy,

unscheduled changes in benefits or premiums, or which provide an option

for changes in benefits or premiums other than a change to a new policy, the

adjusted premiums and present values shall initially be calculated on the

assumption that future benefits and premiums do not change from those

stipulated at the date of issue of the policy. At the time of any such change

in the benefits or premiums, the future adjusted premiums, nonforfeiture net

level premiums and present values shall be recalculated on the assumption

that future benefits and premiums do not change from those stipulated by the

policy immediately after the change. [1980 SNFL, sec. 5c.]


The above passage was originally written into the law to accommodate

adjustable life policies. Briefly, it states that unscheduled policy changes

allow for a recalculation of adjusted premiums, including an adjustment

to E

When applied to ICVs, this concept can produce some illogical results.

For example, when future benefits are increased (through the extension

of a liberal interest guarantee, for instance) the minimum cash value decreases.

This happens because the present value of the increase in adjusted

premiums is greater than the present value of the increase in benefits (due

to an increased E'). The authors feel that this effect is inappropriate for

ICVs.

Nevertheless, the generalized model can be applied while incorporating

this concept. As a example, formula (7. !) would be rewritten as


(2) benefits and pattern of premium not misleading


In actual practice, inconsistencies can develop when minimum cash values and nonforfeiture benefits are defined prospectively but actual cash values are determined retrospectively with net premiums defined in terms of gross premiums. In a prospective calculation we start with the guaranteed benefit and solve for the net premiums. Prospectively, for a given amount of guaranteed benefit, the higher the interest rate used, the lower the cash values. In a retrospective calculation, we start with the net premium and solve for the guaranteed benefits. Retrospectively, for a given amount of net premium, the higher the interest, the higher the cash values. Similar observations could be made with respect to the loading (difference between gross and net premiums) and the mortality rates, with opposite effects as the loading and the mortality rates are varied.

Although some proponents claimed that the disclosure of the expenses

would force the commission down, as the universal life product developed

and insurers needed to pay normal commissions to market it, the initial

expenses were covered up somewhat by replacing up-front loads with

rear-end surrender charges based on amortizing the initial expense allowances

125 percent of a one-year term premium. For flexible premium policies, this means determining a plan either based on that generated by assuming planned premiums and guaranteed cost factors or by assuming a level benefit level premium endowment plan for the maximum period during which premium may be paid. The authors prefer the endowment plan approach, which in turn has been endorsed by industry groups. This may prevent some manipulation on the part of agents and insureds but produces the same initial expense allowance regardless of the plan generated. This is contrary to the variance of initial allowance by plan in the present SNFL. The planned premium approach has been incorporated in guidelines by some states, such as New York and New Jersey.

One wonders

whether such a charge in universal life policies could be understood

by the policyholder.

To use a cash-value rate less than the guaranteed accumulation rate

could result in both cash values and reserves, and possibly to premium

deficiency reserves, in excess of the accumulation value. Insurers would

want to avoid such results.

Although there is precedent for a secondary guarantee of benefits, one

wonders whether this may be misleading or misunderstood in the universal

life area,

> While it is possible to justify use of higher extended term insurance rates in years in which no premiums are paid, it is awkward in practice. Perhaps it may be possible for flexible premium universal life policies to continue standard mortality deductions for a specified period of time, such as five years, during which no premiums are paid. Then, for policies less than a stated amount of accumulation value, or less than a stated amount per $1,000 of insurance, the insured would be notified that unless additional premiums are paid the policy will be placed in a nonforfeiture extended term insurance status and that mortality deductions will be on an appropriate extended term insurance table.

On universal life policies on which no more premiums are paid, deductions

for the rider benefits can be justified as being in the form of automatic
withdrawal from the cash value to provide such benefits. Also,

such a procedure is more favorable to the insured than the use of the

automatic premium loan provision to pay direct premiums.

The following section of the model law is quoted from the NAIC Proceedings,

1981, Vol. I:

The same is true of a typical policy, where the BGA is the "cash value."

The benefits generated by the cash-value account include loans, surrenders,

extended term and reduced paid-up benefits, and annuity benefits.

The E(-95 benefits are a guaranteed renewable policy atguaranteed premiums

with a guaranteed death benefit and a guaranteed maturity value

THOMAS G. KABELE:

A flexible premium universal life plan may be even more "'consumeroriented"

than companies realize. In many states the companies must tell

the consumer how much extended term coverage he has, or at least whether

his term coverage will expire during the next year, If the coverage period

exceeds one year, and if he is "'well," the policyholder can skip his premium.

If he is "'sick," and has little cash value, he can kick in an additional

premium. If he is sick, and has excessive cash value, he can withdraw

most of it and actually increase the net amount at risk (on some policies).

Of course, the universal life company can recoup the adverse mortality

costs by increasing its mortality charge, or even reducing excess interest

margins

Chalke and Davlin point out that a policy that provides whole life benefits

assuming 10 percent interest is not a whole life plan if the guaranteed

cash value is only 4 percent. Such a plan is term insurance only for a

period of years.

In these cases the policy may

expire when the person needs coverage the most

On some forms it is not even clear whether the company must accept

the "planned premiums." In these cases the consumer is really buying

single premium term, and not E6~ 95.

(There is a slight benefit to the cash-value additions,

since the term insurance charges are reduced.)

## Recommended Design Changes

I would like to see several changes in product design. The companies should be required to accept the greater of the "planned premium" or the current year's mortality cost. The maximum mortality charges at advanced ages should be reduced, or else the company should be required to pay a significant maturity value at age 95. The cash-value addition option should be prohibited unless the policyholder and the beneficiary both sign a waiver. Flexibly priced products should be subject to the 10 percent profit limit, or at least a profit limitation should be disclosed to consumers. The companies should tighten the requirements on "stop-and-go" premiums and not permit cash withdrawals that do not reduce the face amount.

I am sure that many universal life contracts have solved the above problems, but on other contracts there may be uncertainties.

LARRY SILKES:

*Life insurance, because it is a nontangible product, is extremely susceptible*

*to being perceived as whatever people think it to be.*

The current

conception of permanent life insurance is that it is really decreasing term

plus a side fund

I hope to demonstrate that there is an

alternative view of life insurance, that of a term policy plus a fund that is

forfeitable at death.

Which

policy would the company be willing to pay more to have lapsed? Simply

ignoring the short-term guarantee denies economic reality

Since most universal life

first-year commissions are not based on any requirement that subsequent

premiums be paid,

Universal life plans

generate profit irrespective of the premium flow. It is not clear to us that

the amortization must be within the premium payment period

In regard to flexible premium policies, Mr. Sommer outlines a method

he terms the "arbitrary premium interpretation" of the law

In fact, the method described relies on a prospective

proof by virtue of the fact that once an arbitrary pattern of

premiums is chosen, a CRVM reserve is calculated according to the SVL,

based on the benefits produced by that premium pattern.

From this it can hardly be said that insurance

plans with a prefunding element are detrimental to the consumer