The Nature and Causes of Variation in Insurance Policy Yields: Whole Life and Universal Life

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Abstract: This study examines policy (Linton) yields of two popular forms of cash-value life insurance (whole life and universal life) for the period 1988 to 1998. Several hypotheses and statements by professionals suggest that WL likely would dominate UL in terms of policy yield. However, results indicate that universal life policy yields were significantly higher than whole life policy yields for five-year and ten-year holding periods. In addition, the variation in policy yields is greater than that found in previous research. The analysis provides information on the nature, extent, and causes of variation in policy performance, both within and across policy type. The study's findings are relevant to consumers, financial service professionals, insurers, and regulators. [Keywords: life insurance, policy yield, options package, whole life, universal life]

INTRODUCTION

The advent of new products naturally leads to the question of the relative performance of traditional products versus the "cutting-edge" products of the day. For example, universal life in the 1980s and variable life in the 1990s became the policies of choice (as opposed to whole life) for millions of insurance buyers. Decreasing mortality rates, an extremely competitive term insurance market, and claims of superior

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Journal of Insurance Issues, 2000, **23**, 1, pp. 30–47.

performance for new types of policies suggest that it is prudent to periodically evaluate the performance of existing policies versus alternative policies and other financial instruments.

Whole life and universal life provide distinct packages of options, and such distinctions augur differences in expected policy performance. For example, ceteris paribus (premium, age, health, etc.), WL might be expected to provide higher cash values than universal life. Previous research has not addressed a central issue related to policy performance—the extent of variation in policy yields (Linton yields) across policy type. Given that roughly $80 billion will be allocated to ordinary life insurance purchases in 2000, the paramount importance of an understanding of variation in policy yields across policy type is evident.[1]

The paper has two primary goals. First, given that WL and UL offer distinct packages of options, the paper provides a theoretical discussion and hypotheses for why whole life or universal life might produce a higher policy yield. Secondly, the paper provides empirical evidence on policy yields (average policy yields and variance of policy yields) for a sample of whole life and universal life insurance policies. A review of related literature follows. The paper then discusses testable hypotheses, describes the methodology, and presents results. The study ends with a discussion of results, implications, and conclusions.

REVIEW OF LITERATURE ON LIFE INSURANCE POLICY COST OR YIELD

Life insurance cost disclosure received considerable attention in the 1905 Armstrong Investigation. Since then, the Federal Trade Commission Report (1979) on life insurance cost disclosure suggests that most consumers are uninformed about life insurance costs and are unable to compare the costs or performance of alternative life insurance policies. Auxier (1976) reports that a "rather sophisticated group" of college students "demonstrated little ability to discriminate correctly among policies on a cost basis...." Cho (1997) discusses limitations of the surrender cost and net payment indexes that are provided with life insurance illustrations and policies.

Among the various methods discussed by Black and Skipper (2000, p. 290) to compare relative costs of life insurance is the "Comparative Interest Rate" method, commonly known as the "Linton Yield." As a tool to compare one policy to another or to evaluate the investment performance of a life insurance policy, yield (rate of return) methods received considerable attention in the mid-1980s and 1990s. Mehr and Gustavson (1987)

report that "early in 1986 the NAIC's Yield Index Advisory Committee submitted its report on the feasibility of developing an index that would be useful to prospective purchasers of interest-sensitive life policies.…The committee recommended that if such a requirement were enacted, the best index would be the Linton Yield." Hunt (1995) notes that: "The NAIC adopted a 'Yield Index' model regulation in 1989." Bartlett (1995) reviews the yield method as a form of life insurance cost disclosure.

Linton (1964) conducted empirical analysis on policy yields, reporting 20-year policy yields ranging from 3.3 to 5.4 percent. Ferrari (1968) reports 20-year policy yields of 5.2 percent. The Federal Trade Commission (1979) suggests that "whole life" policies provide an average "return" of only 1.3 percent.[2] Carson and Forster (1997) report that ten-year policy yields for a homogeneous sample of universal life policies range from –1.5 percent to 8.0 percent.

Other research has examined the investment value of cash value life insurance. These studies include Belth (1966), Myers and Pritchett (1983), Warshawski (1985), Broverman (1986), D'Arcy and Lee (1987), and Cherin and Hutchins (1987). Although various studies have examined policy yields across alternative forms of cash value insurance over various time periods, no previous study provides information concurrently examining policy yields within and across policy types based on similar time periods and assumptions.

The issue of whether WL or UL provides a higher yield is especially interesting, given that some observers have been rather outspoken. For example, in a recent issue of the *Insurance Forum* (1998), a noted actuary (J. Hunt) states:

> The conclusion is inescapable that, especially in the last year or so, shareholder-owned companies have taken advantage of the inability of policyowners to measure how well or poorly their universal life policies are doing by lowering their currently credited interest rates faster than market changes and by not decreasing mortality charges to reflect mortality improvements. Consider the extremes in today's market: Northwestern Mutual currently credits 8.8 percent interest on nonborrowed values, while many universal life insurers credit 5.5 percent. The dividend interest rates of most other mutuals exceed 7 percent. If the public understood such disparities, universal life insurers would be driven from the market (Hunt, 1998, p. 42).

If dividend crediting rates (WL) and credited interest rates (UL) were the bellwethers of policy performance, such statements might suffice. However, previous research provides strong evidence that the correlation between cash values and credited interest rates is very low, often over ten-

year periods following policy issuance (Carson, 1996). The next section of the paper describes the hypotheses of the study.

HYPOTHESES

Although whole life and universal life insurance have many similarities, differences between the products suggest that one type of policy might provide higher policy (Linton) yields than the other type of policy. In essence, the packages of options (see Smith, 1982; Walden, 1985) provided by WL and UL are distinct and heterogeneous, and thus a significant difference in policy yields may exist.

For example, WL might be expected to provide higher yields than UL for several reasons. WL provides less flexibility compared to UL in terms of premiums, partial withdrawals, and amounts of coverage. Largely because of the lesser flexibility provided by WL, WL is less costly to administer than UL. The foregoing reasons suggest that WL might provide higher policy yields than UL to compensate for the reduced policy flexibility and because of lower administration costs.[3] Finally, WL might provide higher policy yields than UL to attract buyers who hope to be compensated for the lack of price transparency.[4]

On the other hand, UL might be expected to provide higher policy yields than WL for several reasons. UL is more price-transparent than WL. If UL provides greater price transparency than WL—enough transparency such that savvy consumers could identify a policy providing an unacceptably low value (policy yield)—then to attract buyers UL might need to provide yields that are relatively high—yields that may be higher than the yields provided by WL.[5] Related to the reasoning above, UL may have greater appeal to consumers who are more price-sensitive—i.e., to consumers who believe that UL's price transparency will lead it to provide higher policy yields than WL. The transparency of UL may make the policy more responsive to competitive market forces. Finally, some consumers may view UL as "higher-risk" coverage (since interest-rate risk via the UL credited interest rate may be perceived as being greater than the risk of lowered dividends in WL).[6] To compensate for this possible perception and to attract buyers, UL may need to provide a higher policy yield than WL. The foregoing reasons suggest that UL might be expected to provide higher policy yields than WL.

With respect to the variance in policy yields, a clientele-effect whereby consumers who are less price-sensitive purchase WL, coupled with the somewhat greater transparency of UL, may lead to more variance in WL yields than UL yields. Conversely, some insurers may more aggressively

Table 1. Theoretical Hypotheses for Policy Yields, Whole Life versus Universal Life

	Whole Life	Universal Life
H1: Expected Policy Yield		
Flexibility Hypothesis	*	
Administrative Cost Hypothesis	*	
Price-Transparency Hypothesis (hopeful)	*	
Price-Transparency Hypothesis (discriminating)		*
Price-Sensitivity Hypothesis		*
Perceived Product-Risk Hypothesis		*
H2: Expected Variance in Policy Yield		
Price-Transparency Hypothesis	**	
Price-Sensitivity Hypothesis	**	
Cost Recovery Hypothesis		**
New Product Hypothesis		**

* indicates a higher expected policy yield
** indicates a higher expected variance of policy yield

attempt to recoup policy issuance expenses via surrender charges in UL than with WL, thus leading to greater variance in UL yields. Since surrender charges decline over time, this effect likely would be more pronounced for shorter time horizons (e.g., five years vs. ten years). As UL became more popular with consumers throughout the 1980s, more companies introduced UL. However, as it was a relatively new product, greater variance in policy yields for UL might be expected.

Empirically testable hypotheses for these issues are:

H1: No significant difference exists for policy yields between whole life and universal life.

H2: No significant difference exists in the extent of variation in policy yields between whole life and universal life.

Table 1 provides specific hypotheses related to hypotheses 1 and 2.

The next section discusses the methodology, sample, and data used in the analysis.

METHODOLOGY, SAMPLE, AND DATA

Methodology

The life insurance policy yield method (Linton Yield) computes the net rate of compound interest that must be earned on an investment fund

(hypothetical or real), net of term insurance charges, so that at the end of a given time period the fund equals the policy surrender value. Murray (1976) states that rates of return are easier to explain and hold more intuitive meaning than other forms of cost disclosure.

To determine a rate-of-return figure, the yield method assumes costs of term insurance. Schwarzchild (1968) discusses the important effect of the term insurance rate used in any yield analysis in that policy yields are positively related to the term insurance rates employed. That is, higher term insurance rates lead to higher imputed rates of return. Since informed purchasers of term insurance would purchase low-cost coverage, low-cost term insurance rates are employed in the analysis.

The formula used to compute policy yields is shown in Equation (1).

$$\sum_{t=1}^{n} (P_t - D_{t-1})(1+i)^{n-t+1} - \sum_{t=1}^{n} (YRT_t)(F_t - CV_{t-1})(1+i)^{n-t+1} = CV_n + D_n \quad (1)$$

where: P_t = policy premiums in policy year t
D_t = policy dividend in policy year t
YRT_t = assumed yearly price of $1,000 of insurance in year t
F_t = policy face amount in policy year t
CV_t = policy cash value at end of policy year t
D_n = policy dividend in year n, plus terminal dividend, if any
i = rate of return (yield) needed to make equation (1) hold

Sample and Data

The sample consists of two types of cash-value life insurance policies: participating whole life (n = 29) and universal life (n = 62). Whole life policies included in the sample are those policies with data from *Best's Policy Report on Whole Life with Dividend Histories* (1998a) and with corresponding policy data from *Bests' Flitcraft Compend* (1988).[7] Universal life policies included in the sample are those policies (option A—level face amount) with complete data in *Best's Policy Report on Universal Life* (1998b). All policies have face amounts of $100,000 and are for nonsmokers.

Policy data for identical ages for WL and UL were not available. Participating whole life policy data are for males age 35, while universal life policy data are for males age 45.[8] Annual (continuous-pay) premiums

Table 2. Five-Year and Ten-Year Average Annual Policy Yields,[a] Male, $100,000 Whole Life and Universal Life 1988 to 1998

	Minimum	Mean	Maximum	Standard Deviation
Five-year:				
Whole Life	–24.6%	–13.2%	–3.5%	4.8%
Universal Life	–100.0%	–4.5%[b]	7.0%	13.5%[c]
Ten-year:				
Whole Life	–3.0%	1.3%	4.3%	1.7%
Universal Life	–6.7%	4.1%[d]	8.0%	2.0%[e]

[a]Policy yields are based on assumed term insurance costs of 50% of 1980 CSO Table.
[b]Significant difference (.01 level) in mean five-year WL yield and UL yield.
[c]Significant difference (.01 level) in standard deviation of five-year WL yield and UL yield.
[d]Significant difference (.01 level) in mean ten-year WL yield and UL yield.
[e]No significant difference in standard deviation of ten-year WL yield and UL yield.

for whole life policies range from $985 to $1,731 (mean of $1,328), and annual premiums for universal life policies are $1,500. Data for all policies are for the period 1988 to 1998. Thus, actual policy yields (as opposed to projected yields) are calculated, based on appropriate term insurance assumptions.[9] The insurers included in the sample represent over one-third of whole life and universal life in terms of in-force face amount.[10]

RESULTS

Based on the low-cost term insurance rates employed in this analysis, the mean five-year and ten-year policy yields for *participating whole life* policies were –13.2 percent and 1.3 percent, respectively. The five-year and ten-year WL yields ranged from –24.6 percent to –3.5 percent and from –3.0 percent to 4.3 percent, respectively. Results for the sample of whole life policies indicate substantial variation in five-year and ten-year policy yields. The five-year and ten-year standard deviations of whole life yields were 4.8 percent and 1.7 percent, respectively.[11]

Based on the low-cost term insurance rates employed in this analysis, the mean five-year and ten-year policy yields for *universal life* policies were –4.5 percent and 4.1 percent, respectively. The five-year and ten-year UL yields ranged from –100.0 percent to 7.0 percent and from –6.7 percent to 8.0 percent, respectively. Results for the sample of universal life policies indicate substantial variation in five-year and ten-year policy yields. The five-year and ten-year standard deviations of universal life yields were 13.5

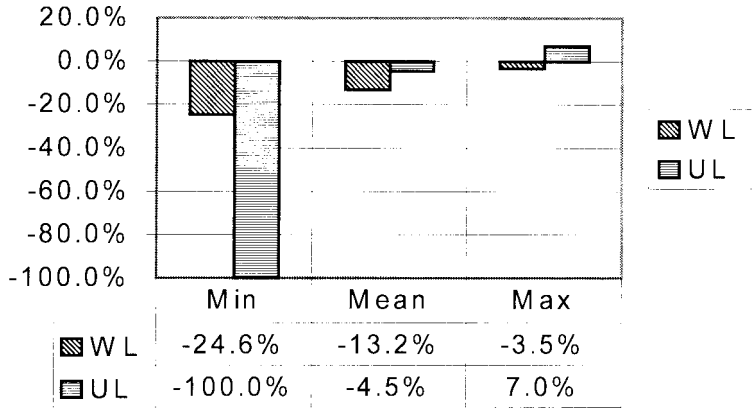


Figure 1. Five-year average annual policy yields (minimum, mean, and maximum), whole life (n = 29) and universal life (n = 62), 1988 to 1993.

percent and 2.0 percent, respectively. Table 2 provides descriptive statistics based on five-year and ten-year yields for the sample of whole life and universal life policies.

Results in Table 2 reject Hypothesis 1 (.01 level). That is, on average, universal life provides significantly higher policy yields compared to whole life both for five-year and ten-year periods. Since UL yields were higher than WL yields, results support the, Price-Transparency Hypothesis (discriminating), the Price-Sensitivity Hypothesis, and the Perceived Product-Risk Hypothesis.

Figure 1 and Figure 2 illustrate *five-year* and *ten-year* policy yields (minimum, mean, and maximum) for the sample of whole life policies and universal life policies. Figure 1 and Figure 2 show that the minimum five-year and ten-year yields for UL policies were lower than the minimum five-year and ten-year yields for WL policies. Figure 1 and Figure 2 show that the maximum five-year and ten-year yields for UL policies were higher than the maximum five-year and ten-year yields for WL policies.

Results in Table 2 for the five-year period also reject Hypothesis 2 (.01 level), indicating that the variance in policy yields is significantly higher for UL policies. Since the five-year variance in UL yields was greater than the variance in WL yields, results support the Cost Recovery Hypothesis and the New Product Hypothesis. For the ten-year period, the variance in UL yields was not significantly different from the variance in WL policy yields.

Figure 3 and Figure 4 illustrate the continuum of ten-year policy yields for the sample of whole life and universal life policies, respectively.

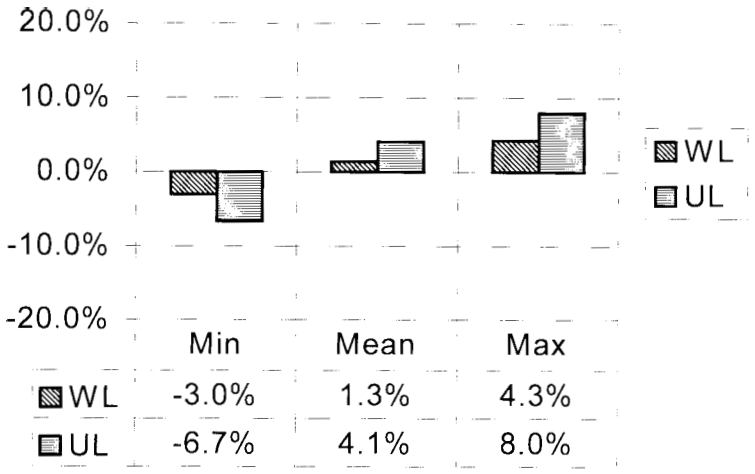


Figure 2. Ten-year average annual policy yields (minimum, mean, and maximum), whole life (n = 29) and universal life (n = 62), 1988 to 1998.

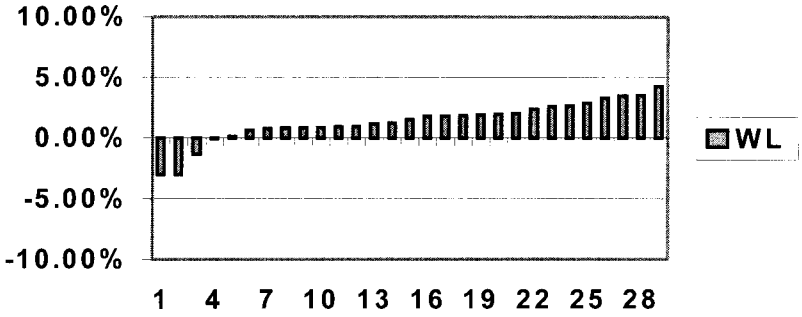


Figure 3. Continuum of ten-year average annual policy yields, sample of whole life policies (n = 29), 1988 to 1998.

Table 3 shows and Figure 5 illustrates policy yields (one-year through ten-year) for the median whole life policy and for the median universal life policy.

DISCUSSION

The sample used in this study (29 whole life policies and 62 universal life policies) is larger than the samples used in most previous studies, but

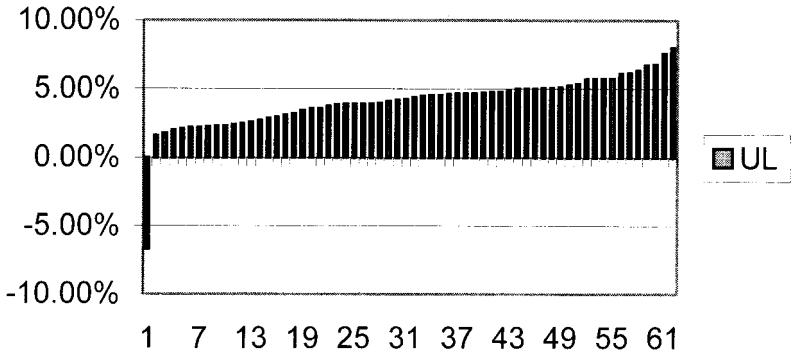


Figure 4. Continuum of ten-year average annual policy yields, sample of universal life policies (n = 62), 1988 to 1998.

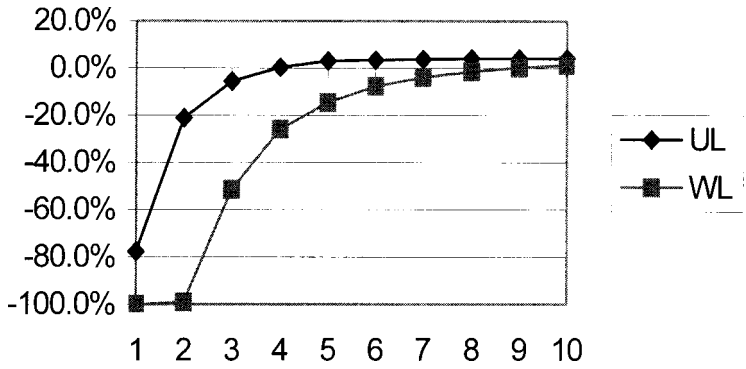
Table 3. Average Annual Policy Yields,[a] One-Year through Ten-Year Median Whole Life Policy and Median Universal Life Policy, 1988 to 1998

Year	Median Whole Life	Median Universal Life
1	–100.0%	–77.5%
2	–98.8%	–21.2%
3	–51.3%	–5.5%
4	–25.8%	0.4%
5	–14.6%	3.1%
6	–7.7%	3.5%
7	–3.9%	3.8%
8	–1.4%	4.0%
9	0.3%	4.1%
10	1.5%	4.3%

[a]Policy yields are based on assumed term insurance costs of 50% of 1980 CSO Table.

still comprises a small subset of all whole life and universal life policies in force. For this reason, the policy yields should not be interpreted as typical of all whole life and universal life policies. Sample bias, if present, may skew the policy yields, since the A.M. Best (1998) data are based on a self-selection process via voluntary responses from insurers.

Results of the analysis indicate that the median (and mean) whole life policy yield was lower than the median (and mean) universal life policy yield during the ten-year period from 1988 to 1998. The ten-year policy



[a]Policy yields are based on assumed term insurance costs of 50% of 1980 CSO Table.
[b]From Table 3, WL ten-year average annual yield equals 1.5%; UL ten-year average annual yield equals 4.3%.

Figure 5. Average annual policy yields,[a] (one-year through ten-year), [b] median whole life policy and median universal life policy, 1988 to 1998.

yield for the median WL policy was 1.5 percent, and the ten-year policy yield for the median UL policy was 4.3 percent.

Various explanations could account for the lower policy yields of WL compared to UL. Consumers may be willing to pay more (accept lower yields) for WL than for UL because they place greater value on the package of options provided by WL. However, in one form or another, UL offers a similar package of options, plus more flexibility and more transparency. Thus, based on the package-of-options perspective, the finding of higher policy yields for UL is paradoxical, and the results do not support the Flexibility, Administrative Cost, or Price-Transparency (hopeful) Hypotheses. It is noteworthy that of insurers that offered both WL and UL (17 insurers in the sample), 16 had a UL policy with a higher yield than their WL policy, with an average difference in ten-year policy yields of 300 basis points.[12]

As discussed by Briys and Louberge (1985) and Joskow (1973), it is likely that consumers often purchase insurance without being fully informed. In addition, it is intuitive that UL's greater transparency makes it more responsive to competitive market forces. Consumers may not understand differences in life insurance yields, but some purchasers of UL, in one sense, behave as if they did. As such, results support the Price-Transparency (discriminating), Price-Sensitivity, and Perceived Product-Risk Hypotheses.

The introduction of UL may have effectively segmented policyowners by their price sensitivity: cash-value life insurance buyers that were more

price-sensitive opted for UL, and buyers less price-sensitive (or more traditional) chose whole life. The advent of UL and its market-sensitive interest rate feature likely led many would-be term insurance buyers to instead opt for the UL form of cash-value insurance.

No significant difference in the variance between WL and UL policy yields was found for the ten-year period. However, the greater variability of UL yields for the five-year period reflects that UL had both a much lower minimum policy yield and a much higher maximum policy yield compared to WL. Results for the five-year period (in terms of variance of policy yields) support the Cost Recovery Hypothesis and the New Product Hypothesis. The yields shown in Table 2 also indicate that the range of policy yields is wider than that found in previous research (e.g., Linton, 1964; Ferrari, 1968).

Grossman and Stiglitz (1980) suggest that "because information is costly, prices cannot perfectly reflect the information which is available, since if it did, those who spent resources to obtain it would receive no compensation. There is a fundamental conflict between the efficiency with which markets spread information and the incentives to acquire information." In the life insurance market, where buyer passivity and asymmetric information is ubiquitous, the incentives to *disseminate* information are dampened by the reverse competition effects of commissioned-based products. Bartlett (1995) suggests that competition likely occurs more at the agent level, whereby policies with relatively higher commissions are the policies that are sold (reverse competition). Knowledge of the disparity in policy yields across policy type is fundamental for consumers to make an informed choice between whole life and universal life. Knowledge of policy yields also is paramount to an informed decision between term and cash-value insurance.

IMPLICATIONS OF THE STUDY

Many individuals remain unaware of the wide variation in life insurance policy performance (cost), both within and across policy type. For first-time life insurance buyers, the very low (often–100 percent) early-year policy yields and the generally negative five-year and modest ten-year policy yields support Murray (1976): "one should buy term insurance unless a good case can be made for the purchase of cash value insurance." This argument is further strengthened in light of lapse data that indicate lapse rates of at least one-third of new cash-value policies within five years of purchase (see LIMRA, 1990).

For policyowners with existing coverage, the finding of higher policy yields for UL over WL does not imply that all WL policyowners should replace their WL policies with UL. Given the wide variation in yields, such a hasty generalization about the relative yields available from cash-value policies would be misleading at best. In addition, such a hasty generalization would simply lead to more spinning on the replacement treadmill whereby new policy acquisition costs and surrender charges detract from existing accumulations. Rather, results indicate the need for individual policy analysis by a competent financial-service professional.

Improved policy persistency generally is in the financial interests of insurers, as high lapse rates contribute to increased insurer expenses and are significantly (negatively) related to policy cash values (see Carson and Dumm, 1999). Similarly, Figure 5 illustrates the benefits of persistency for policyowners. This study's findings reinforce the need for improved information for consumers in order to arm policyowners with the knowledge needed to avoid inappropriate policy replacement (see Carson and Forster, 2000). Coupled with LIMRA data on the incidence of policy lapsation, results here suggest that replacement activity is too high, especially during the first five years after policy issuance, but also after the first five years, when policy yields generally begin to turn positive. Regulators have taken steps to attempt to improve the policy replacement environment (e.g., NAIC Model Replacement Regulation, and New York Regulation 60).

SUMMARY AND CONCLUSIONS

This study provides information regarding the nature and possible causes of variation in the market for cash-value life insurance, both within and across policy type. Policy yields were calculated for a sample of whole life and universal life policies for the period 1988 to 1998. Based on the low-cost term insurance rates employed in this analysis, the mean five-year and ten-year policy yields for *participating whole life* policies were –13.2 percent and 1.3 percent, respectively. Based on the low-cost term insurance rates employed in this analysis, the mean five-year and ten-year policy yields for *universal life* policies were –4.5 percent and 4.1 percent, respectively.

The range in policy yields for the sample of policies is wider than that found by previous studies. Given the wide variation in yields, generalizations about yields available from cash-value policies is difficult and perhaps misleading. With this caveat in mind, ten-year results for the participating whole life policies in this study's sample are consistent with the 1.3 percent "return" reported in the FTC Report (1979). Equally (if not

more) important, however, is that the range of yields includes much higher and much lower policy yields both for WL and for UL.

Results of this study indicate that wide price dispersion exists within and across alternative forms of life insurance. Results for this time period (1988 to 1998) and for this study's sample indicate that universal life policies, on average, provided higher yields than participating whole life policies. Such information must be interpreted carefully, since misuse of the study's results could lead to improper policy purchases, replacements, and incorrect perceptions of the relative merits of cash-value life insurance, all of which are to the detriment of life insurance policyowners and the life insurance industry.

Sowell (1980) suggests that "knowledge is paramount partly because few understand its importance." The findings of this study should help the various parties to the insurance transaction to better understand the nature of policy performance and its variation within and across policy types. This increased understanding should, in turn, lead to more competition and a more efficient life insurance market, to the benefit of consumers, financial service professionals, insurers, and regulators.

Avenues for future research in this area include analysis of the financial performance (policy yields) of other types of cash-value products such as variable life and variable universal life. Because of the relatively high expense components of these policies, it is clear that strong equity gains are required in order to equal the performance of whole life or universal life. The level of equity returns that are required to provide comparable policy yields is an empirical question.

NOTES

[1]In the absence of yield information (i.e., price or cost information), it is not possible to make an informed decision between one product and another, as discussed by Schlesinger (1998). Just as one can't make a rational decision between one deductible and another without knowing the prices of the respective coverages, one can't make a rational decision between WL and UL without price information. Policy yields provide this price or measure of performance in this paper. We assert that yield information (a measure of price) is central to an informed decision between WL and UL. We also suggest that not only is yield methodology appropriate, but that yield methodology is the best approach for such a comparison.

[2]The FTC Report accounts for lapsation and mortality, and thus derives a policy yield based on the "group average" method. Thus, no time horizon is given for the yield of 1.3 percent. Rather, the figure is an expected value for all cash-value policyowners. Our analysis does not compute a "group average" policy yield, in part because we examine historical policy performance, which assumes that the insured survived the ten-year sample period and did not lapse the policy.

[3]An additional hypothesis was considered, but is not included here. Namely, the investments supporting WL might provide higher returns than the investments supporting UL, or

vice versa, which could lead to higher policy yields for WL or UL, respectively. However, Black and Skipper (2000) note that, "The investment performance of the general account of a life company affects profits, dividends, and interest credits on term, traditional whole life and universal life and other current assumption products, as well as traditional annuity products and guaranteed investment contracts" (p. 880). Organizational form also was considered. However, the sample contains insurers that offered both WL and UL (stock and mutual insurers), and results do not suggest a significant difference. In addition, Carson and Dumm (1999) found that organizational form was not a significant variable with respect to universal life policy performance.

[4]However, to the extent that WL does not provide price transparency, it may be the hopeful/naïve buyer who hopes that WL will provide a higher yield versus UL to compensate for the lower degree of price transparency.

[5]Note that this argument does not imply that consumers necessarily explicitly know the policy yields of whole life or universal life policies.

[6]Although less transparent than interest rate risk in UL, similar risk exists for dividends in WL.

[7]*Best's Flitcraft Compend* (1988) was used to obtain five-year cash value data that were not provided in *Best's Policy Reports* (1998) for the whole life policy sample.

[8]Best provides data for WL policies for ages 35 and 55, but only provides data for UL policies for age 45. This data limitation is addressed by examining whole life policy yields for age 35 and age 55. That is, since data to match the age of the UL sample (age 45) are not available, we analyze whole life policy yields for ages that are below and above the age of the UL sample. Note that results for both whole life samples are consistent with each other—i.e., the policy yields for the age 55 whole life sample are very similar to the policy yields for the age 35 whole life sample.

[9]The source for term insurance (indeterminate premium) rates for policies is *Best's Review* (1985). The lowest (projected and actual) ten-year term insurance rates of listed policies paralleled the 1980 Commissioners' Standard Ordinary Table (1980 CSO), at approximately 50 percent of the 1980 CSO rates. Thus, for simplicity, this analysis employs 50 percent of the 1980 CSO rates as a proxy for low-cost term insurance rates (starting at age 35 for the WL sample and at age 45 for the UL sample). As an indication of the sensitivity of policy yields to the choice of term insurance rates, ten-year policy yields are generally 200 basis points higher based on term rates equal to 100 percent of the 1980 CSO Table (as opposed to 50 percent of the 1980 CSO Table).

[10]The data in *Best's Policy Reports* are for each insurer's "leading" product for the sample period.

[11]The analysis shows whole life policy yields for age 35. As noted in endnote 8, whole life policy yields for age 55 also were examined. While the variation and range of yields were similar for age 35 and age 55, the average policy yield for age 35 actually was higher than for age 55 (and WL yields for both ages were lower than UL yields). The consistency of results for these two ages for the whole life samples further supports the finding that yields of whole life policies are lower than the yields for universal life policies.

[12]The finding here—i.e., of insurers that offer WL and UL, 16 of 17 UL policies had higher yields—supports the notion that reasons other than investment portfolio returns drive the disparity between WL and UL policy yields. Future research could examine the extent to which the investment returns of insurers focusing on whole life differ (if at all) from the investment returns of insurers focusing on universal life.

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