POLICY LOANS AND EQUITY

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ABSTRACT

The purpose of this paper is to bring up to date the actuarial literature on policy loans. A brief history of policy loans is given, followed by a description of the "policy loan problem" as it is being experienced by many companies today. The third section lists a variety of possible solutions, with varying degrees of feasibility and effectiveness. Two of those solutions are then explored in greater depth, illustrating how the dividend distribution formulas might be modified to meet the problem.

I. BACKGROUND

A. *A Look Back*

WHEN M. Albert Linton gave his presidential address to the Actuarial Society of America in May, 1938, his topic was "The Policy Loan Interest Rate." This was the time in history when, after twenty-five years of using a 6 percent policy loan interest rate almost exclusively, life insurance companies were required to switch to a 5 percent rate for policies issued in New York. Mr. Linton lamented, "We face the probability that a reduced rate will become general on new policies through the country. . . . Although life insurance appears complicated to the average man, reducing the policy loan interest rate appeals to him as a simple and obviously fair step to take under present conditions. Little does he appreciate the consequences' that may flow from taking it." The prophecy has been fulfilled; the consequences are here.

For a number of reasons, only one of which was Mr. Linton's concern with reducing the policy loan rate in 1938, policy loans have become a major problem in life insurance. Not everyone agrees with this view, however. Many individuals, including a number of public figures, consider the policy loan phenomenon simply as some type of windfall for the consumer. Some individuals within the life insurance industry have mixed emotions, and a few might even be pleased to have recent trends continue. What they overlook is the nature of the policy loan "game." It is "zero-sum," not open-ended; in other words, what is gained by some

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groups is lost by others. And the nature of this business changes inexorably in the process. We believe that a serious policy loan problem exists. We hope to substitute a demonstration for that impression, and we will suggest possible alternative solutions.

Because the policy loan problem is complex, even obscure in some respects, we believe it may be helpful to begin by putting the problem in historical perspective. The history of policy loans in the United States can be seen to unfold in the following chronology.[1]

1845 Participating companies began to accept premium notes for up to one-half of the premium, to be repaid by dividends. (Mutual Benefit was probably the earliest.) This practice was abandoned in the 1870's because dividends were not sufficient to repay the notes.

1848 Policy loans were first granted on a permissive basis, but few companies followed suit. (Penn Mutual was probably the earliest.)

1890 Policy loans became generally available about this time on a contractual basis. The authority of companies to do this was questioned. In 1892 New York insurance law for the first time permitted companies to make loans on their policies; Wisconsin followed in 1893. Interest rates charged were often 5 percent, sometimes 6 percent. Although yields on long-term prime corporate bonds had been falling, and were then under 4 percent, the decision makers may still have remembered the 5–6 percent yields on governments and municipals from 1840 to 1875. Apparently the recollections of 6–8 percent yields on governments between 1800 and 1816 had dimmed by then. These interest rate trends are shown in Figure 1.

1906 Following the Armstrong investigation (1905), New York became the first state to require incorporation of a policy loan provision in the policy contract. The American Life Convention (ALC) stated its opposition to a standard form of policy in 1906, and the National Convention (now Association) of Insurance Commissioners in 1909 called the practice of making policy loans "unwise, unbusinesslike and dangerous." (Some states followed New York, while others to this day have no statutory policy loan requirement. Nonetheless, competition has forced all companies to include such a provision.)

1910 The United States Supreme Court defined the nature of a policy loan in *Board of Assessors of the Parish of Orleans* v. *New York Life Insurance Company*, 216 U.S. 517. The Court noted that a policy loan creates no personal liability of the policyowner, so that it is not a debt, even though

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[1] Extracted primarily from the former American Life Convention's 1970 report entitled "Analysis of the History of the Policy Loan Problem."
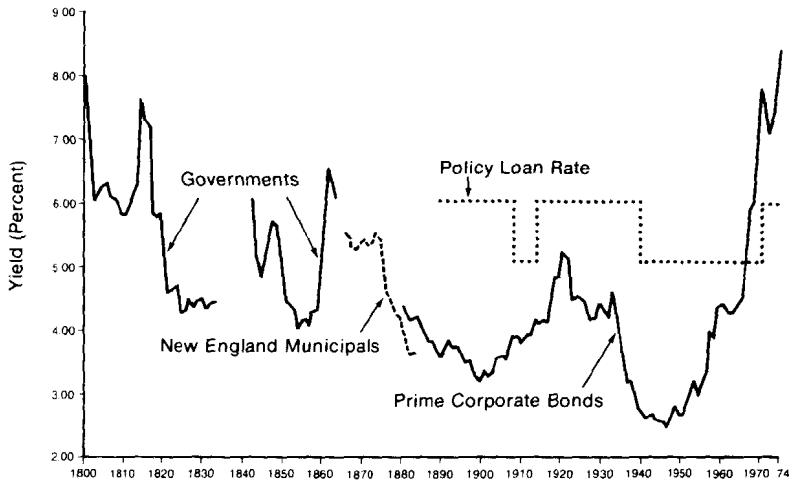
FIG. 1.—Annual average yields of long-term high-grade American bonds. Policy loan rate is superimposed to show comparative levels. (*Source:* Sidney Homer, *A History of Interest Rates* [New Brunswick, N.J.: Rutgers University Press, 1963], augmented by Salomon Brothers for subsequent years.)

interest is charged. (This legal characterization of policy loans is still in effect today.)

1913 Congress passed a law creating the predecessor to our present income tax code, which contained a provision permitting the deduction of interest paid on indebtedness when computing net taxable income. Although no "indebtedness" is involved, "interest" on policy loans, though probably not mentioned specifically in any revenue law until the Revenue Act of 1964, has generally been considered eligible for deduction. Section 264(a) (3) of the Internal Revenue Code of 1954 (augmented by sec. 215[a] of the Revenue Act of 1964) confirms this view.

1913 About this time, as interest rates were rising, companies that had a 5 percent policy loan interest rate moved to 6 percent; other companies had started at 6 percent and remained there. Referring again to Figure 1, prime corporate bond rates had slipped to a low of $3\frac{1}{4}$ percent in 1899 but had moved up to 4 percent by 1913. As it turned out, the prime corporate bond rates did continue to rise, reaching $5\frac{1}{4}$ percent in 1920 before dropping again.

1933 Many states enacted legislation declaring an emergency moratorium on policy loans and surrenders for several months, the only time in history that policy loans have not been available on demand.

1938 New York Superintendent of Insurance Lewis H. Pink tried to gain support for a variable policy loan interest rate with a minimum of $4\frac{1}{2}$ percent and a maximum of 6 percent. The rate would have been fixed

annually by the superintendent of insurance, based upon the average yield of high-grade bonds over the last two years, with 1 percent added to cover policy loan expenses. When that failed, Pink gained acceptance for his second choice, a maximum rate (in effect) of 5 percent, which became law in New York on January 1, 1939. Although Massachusetts was the only state to follow (and not until 1950), most companies extended the 5 percent rate to other states as well, partly to avoid different rates in different states and partly because interest rates were generally declining and policyowner complaints were strong. In fact, the fifteen-year period from 1938 through 1952 was the only time interest rates for prime corporate bonds in the United States stayed consistently below 3 percent (Fig. 1).

1946 Interest rates on new investments reached a historic low, prompting a few companies to offer policy loans at a lower rate than specified in the contract; however, most continued to charge the contractual rates. Those making the adjustment argued that policy loans should be competitive; the others argued that policy loans were only for last-resort borrowing.

1964 The "four-out-of-seven rule" was added to the Internal Revenue Code. This reduced, but did not eliminate, the growing practice of financing a life insurance policy with tax-deductible interest payments on policy loans instead of with premium payments.

1966 This was the year of the first major credit crunch in recent times. Others followed, and each was accompanied by spurts in policy loan activity. A Life Insurance Association of America (LIAA) study of August 5, 1966, stated: "It is evident . . . that cyclical fluctuations in the volume of policy loans by life insurance companies arise primarily because of the fixed statutory ceiling interest rate placed on such loans as compared with the free movement of interest rates generally in the money and capital markets."

1967 New York Superintendent of Insurance Richard E. Stewart tried to gain passage of a bill in which the rate would vary between a minimum of 4 percent and the maximum usury rate; the rate would be determined by the superintendent, based upon the yield on new investments made by the insurer over a twelve-month or shorter period. The ALC-LIAA opposed this, concluding that a 6 percent rate would be preferable to either the current 5 percent rate or a flexible rate. The bill failed to pass, as have subsequent efforts to increase the rate.

1969 A return to a 6 percent policy loan rate was begun for new issues in all states except New York, shortly after Massachusetts returned to a 6 percent rate. (Northwestern Mutual was probably the earliest.) This action followed within a year after the interest rate on prime corporate bonds passed the 6 percent level—the first time in more than 100 years (Fig. 1).

1973 In 1971 the Joint Policy Loan Study Committee of the ALC-LIAA concluded that a variable policy loan interest rate would be desirable for new contracts. This led to the submission of a proposed model bill to the National Association of Insurance Commissioners (NAIC) in 1972. After the NAIC made its own study, the model bill was adopted as a recommended standard in 1973, and a number of states have already passed the relevant legislation.

1975 A variable policy loan interest rate having an 8 percent maximum was introduced. (Northwestern National was probably the earliest.)

During the eighty-five-year history of policy loans in the United States (disregarding the isolated availability before that time), many important events have occurred, some of which we have noted. The following summary highlights those points that shed light on today's problem.

1. The contractual policy loan interest rate used by most companies has varied over time, moving from 6 to 5 percent in 1906, back to 6 percent in 1913, down to 5 percent in 1939, up again to 6 percent in 1969, and now to 8 percent in many states. These changes have reflected corresponding trends in the money market.
2. Interest rates generally have fluctuated over the years, as shown in Figure 1. However, new-money rates, as measured by the prime corporate bond rates, were always below the policy loan interest rate for new issues until 1966.
3. Different attitudes and regulatory practices have existed over the years. Before 1938 the states exerted little control over policy loan interest rates, relying instead on the traditional English usury rate of 6 percent as the maximum.
4. With the benefit of hindsight, we believe that Messrs. Pink and Stewart, former superintendents of insurance in New York, showed laudable foresight in proposing a flexible policy loan interest rate. Policy loan problems would be greatly diminished today if their concept had been adopted, with appropriate subsequent changes to reflect the economy.
5. The use of policy loans to finance premium payments, or minimum deposit, has been practiced for many years. The four-out-of-seven rule is an attempt to curtail its abuse.

Canada's policy loan history offers an interesting contrast. Even though Canadian law has not required a policy loan provision in the contract, competition has prompted most companies to provide one. In policies issued before 1968 an interest rate not exceeding 6 percent was generally included, under an informal understanding between government and the industry beginning in 1935. For more recent issues the companies have been free to charge higher interest rates on policy loans following their assurance in a letter of August 16, 1968, to the minister

of finance that they "will act responsibly, have regard for the interests of their policyholders, and have no intention of charging an unreasonable rate in comparison with the generally prevailing level for our secured personal loans."

The superintendent of insurance permits a company to specify a maximum rate, either in the policy contract or in the loan agreement. The majority of companies specify the maximum in the loan agreement, however, and typical current maximum rates are between 9 and 11 percent. In addition, if the loan agreement route is selected, the company must show the actual rate in effect at the inception of the loan. With proper notice, it may be changed to any other rate not exceeding the specified maximum. Typical actual rates currently are $8\frac{1}{2}$ or 9 percent. (We are indebted to David R. Johnston for this information about policy loan interest rates in Canada.)

Since we were not able to find a bibliography on policy loans, we have prepared one and appended it to this paper. We searched the actuarial literature as well as several life insurance professional journals and industry association reports. We did not include the many books on life insurance or the news-oriented trade publications.

B. *Policy Loan Trends*

Figure 2 shows the fluctuations in policy loans (United States) over the years, both in absolute amount and in proportion to policy reserves. Table 1 gives the underlying data.

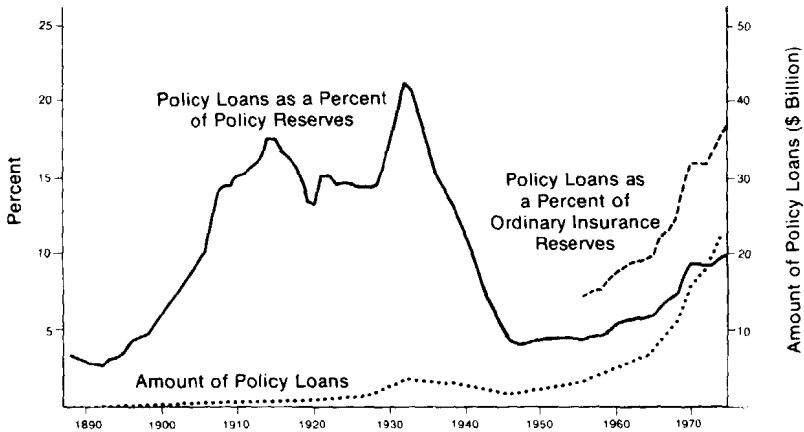It is notable that, except for the year 1919, the absolute amount of

Fig. 2.—Policy loan trends for United States life insurance companies. (Source: *1975 Life Insurance Fact Book* and related data from the Institute of Life Insurance.)

TABLE 1

Policy Loans as a Percent of Policy and Ordinary Reserves

Year	Policy Loans (000,000)	Percent of Policy Reserves	Year	Policy Loans (000,000)	Percent of Policy Reserves	Year	Policy Loans (000,000)	Percent of Policy Reserves	Percent of Ordinary Reserves
1888........	$ 19	3.32%	1917........	$ 810	16.09%	1946........	$ 1,894	4.54%	....
1889........	20	3.22	1918........	817	15.11	1947........	1,937	4.32	....
1890........	20	2.97	1919........	805	13.81	1948........	2,057	4.27	....
1891........	21	2.90	1920........	859	13.55	1949........	2,240	4.35	....
1892........	22	2.81	1921........	1,058	15.33	1950........	2,413	4.39	....
1893........	28	3.24	1922........	1,141	15.30	1951........	2,590	4.42	....
1894........	31	3.38	1923........	1,198	14.74	1952........	2,713	4.34	....
1895........	36	3.62	1924........	1,323	14.80	1953........	2,914	4.37	....
1896........	45	4.28	1925........	1,446	14.57	1954........	3,127	4.41	....
1897........	52	4.65	1926........	1,599	14.46	1955........	3,290	4.37	....
1898........	57	4.76	1927........	1,785	14.54	1956........	3,519	4.41	7.42%
1899........	71	5.35	1928........	2,000	14.71	1957........	3,869	4.60	7.74
1900........	89	6.13	1929........	2,379	15.92	1958........	4,188	4.73	7.92
1901........	108	6.85	1930........	2,807	17.29	1959........	4,618	4.91	8.25
1902........	128	7.36	1931........	3,369	19.38	1960........	5,231	5.31	8.88
1903........	159	8.27	1932........	3,806	21.34	1961........	5,733	5.55	9.25
1904........	190	9.03	1933........	3,769	20.85	1962........	6,234	5.75	9.56
1905........	226	9.83	1934........	3,658	19.22	1963........	6,655	5.82	9.63
1906........	266	10.76	1935........	3,540	17.35	1964........	7,140	5.92	9.80
1907........	348	13.15	1936........	3,411	15.65	1965........	7,678	6.02	9.99
1908........	413	14.61	1937........	3,399	14.65	1966........	9,117	6.77	11.25
1909........	446	14.74	1938........	3,389	13.84	1967........	10,059	7.06	11.72
1910........	495	15.34	1939........	3,248	12.58	1968........	11,306	7.52	12.52
1911........	542	15.71	1940........	3,091	11.35	1969........	13,825	8.72	14.55
1912........	588	16.03	1941........	2,919	10.08	1970........	16,064	9.59	16.05
1913........	658	16.73	1942........	2,683	8.71	1971........	17,065	9.52	16.13
1914........	735	17.64	1943........	2,373	7.18	1972........	18,003	9.37	16.08
1915........	780	17.73	1944........	2,134	6.00	1973........	20,199	9.92	17.07
1916........	787	16.76	1945........	1,962	5.07	1974........	22,862	10.61	18.31

Source.—Institute of Life Insurance.

policy loans increased each year to a peak in 1932, then decreased annually to a low in 1946, and has been increasing continuously since then. It was not until 1957 that the 1932 high was again reached, but in the subsequent seventeen years to 1974, the level sextupled.

The ratio of policy loans to policy reserves has had less regular patterns. Interestingly, the ratio stayed above 10 percent from 1906 through 1941. The high point of 21 percent was reached in 1932, the deepest part of the depression. The ratio was quite stable between 4 and 5 percent from 1945 to 1959, but it has risen rapidly since then, except for a brief leveling in 1971 and 1972.

Although the ratio of policy loans to policy reserves was a significant indicator over most of a century, it is no longer nearly as meaningful. This ratio tends to hide the policy loan problem, because in recent years policy reserves include substantial blocks of nonborrowable reserve dollars (e.g., group annuity reserves). A more appropriate measure is the ratio of policy loans to total ordinary life insurance reserves. This newer ratio, available since 1956, is superimposed on the figure and also is shown in Table 1; it provides a more realistic comparison with the years preceding 1940, before group annuities became so prevalent. When viewed in this context, the recent dramatic rise in the proportion of eligible reserves borrowed is more clearly seen. This proportion has increased from 7.42 percent in 1956 to 18.31 percent in 1974, which is the highest ratio since the Great Depression.

C. *Recent Industry Loan Figures*

The data in the preceding section showed policy loan trends for the industry. What has happened to specific companies over the last ten years? We have developed data for the twenty largest mutual companies (Table 2) and the ten largest stock companies (Table 3), by assets, in the United States. The 1974 percentages of ordinary reserves borrowed are compared with the 1964 percentages. Looking at the mutual companies, the range in 1964 was relatively narrow, from 7.43 to 20.62 percent; by 1974 the range had more than doubled, from 10.05 to 44.36 percent. The ratio of the 1974 percentage to the 1964 percentage also varies considerably, from a low of 1.19 to a high of 3.00. This may explain why some companies are more concerned about the policy loan problem than others. For fifteen out of the twenty companies, however, the 1974/1964 ratio is at least double.

The averages for the twenty United States mutual companies may also be of interest. On a simple-average basis, the percentage of loans to ordinary reserves was 11.32 percent in 1964 and increased by a factor of

TABLE 2

POLICY LOANS AS A PERCENT OF ORDINARY RESERVES

20 Largest United States Mutual Companies— 1974 Ranking	1974 Assets (000 Omitted)	1974 Policy Loans as Percent of Ordinary Reserves	1964 Policy Loans as Percent of Ordinary Reserves	Ratio 1974/1964
1. Prudential.............	$35,819,206	11.70%	7.43%	1.57
2. Metropolitan..........	32,727,759	10.05	8.47	1.19
3. Equitable—New York ..	17,558,152	21.44	10.04	2.14
4. New York Life.........	13,002,254	25.90	11.61	2.23
5. John Hancock.........	11,822,318	14.63	9.86	1.48
6. Northwestern Mutual....	7,344,094	27.36	9.12	3.00
7. Massachusetts Mutual..	5,397,258	34.35	13.89	2.47
8. Mutual of New York....	4,396,845	20.98	9.79	2.14
9. New England Mutual...	4,260,937	30.64	11.55	2.65
10. Connecticut Mutual....	3,375,278	30.13	12.14	2.48
11. Mutual Benefit........	3,105,027	34.06	13.17	2.59
12. Bankers Life—Iowa....	2,928,036	18.50	8.20	2.26
13. Penn Mutual..........	2,779,324	24.19	10.74	2.25
14. Western and Southern..	2,211,938	10.94	8.31	1.32
15. National Life—Vermont	1,741,752	44.36	17.32	2.56
16. Phoenix Mutual........	1,681,902	37.87	20.62	1.84
17. State Mutual..........	1,486,700	31.92	11.78	2.71
18. Provident Mutual......	1,335,850	28.14	9.83	2.86
19. Pacific Mutual.........	1,198,581	21.05	10.23	2.06
20. Guardian—New York..	1,183,704	29.54	12.36	2.39
Weighted average......	....	19.82%	9.89%	2.00
Simple average........	....	25.39%	11.32%	2.24

SOURCE.—Annual Statement: Loans, Page 2, line 5; Reserves, Page 10, Life—Ordinary, Exhibit 8-A.

TABLE 3

POLICY LOANS AS A PERCENT OF ORDINARY RESERVES

10 Largest United States Stock Companies— 1974 Ranking	1974 Assets (000 Omitted)	1974 Policy Loans as Percent of Ordinary Reserves	1964 Policy Loans as Percent of Ordinary Reserves	Ratio 1974/1964
1. Aetna Life.............	$9,429,580	17.48%	7.80%	2.24
2. Connecticut General....	6,949,766	20.16	5.96	3.38
3. Travelers..............	6,373,281	16.55	7.76	2.13
4. Teachers Insurance and Annuity...............	3,812,985	13.19	5.51	2.39
5. Lincoln National.......	2,745,591	17.36	8.89	1.95
6. National Life and Accident...................	2,240,965	11.40	10.74	1.06
7. Occidental—California..	2,122,689	20.79	12.12	1.72
8. Continental Assurance..	2,077,337	26.03	12.64	2.06
9. American National.....	1,619,239	10.79	6.35	1.70
10. Franklin Life—Illinois ..	1,593,643	17.32	15.81	1.10
Weighted average......	....	17.28%	8.98%	1.92
Simple average........	....	17.11%	9.36%	1.83

SOURCE.—Annual Statement: Loans, Page 2, line 5; Reserves, Page 10, Life—Ordinary, Exhibit 8-A.

2.24, to 25.39 percent, in 1974. The weighted average is influenced by the tendency of the largest companies to have lower percentages; it was 9.89 percent in 1964 and increased by a factor of 2.00, to 19.82 percent, in 1974. In short, during the last ten years policy loans have doubled in significance for these companies, on the average.

Moving to the ten United States stock companies in Table 3, the ranges and averages are generally lower. The 1964 range was from 5.51 to 15.81 percent, and the 1974 range from 10.79 to 26.03 percent. The ratio for 1974/1964 showed a wider range than for mutual companies, from 1.06 to 3.38. On a simple-average basis, the 1964 figure of 9.36 percent increased by a factor of 1.83, to 17.11 percent, in 1974. The comparable weighted averages were 8.98 percent in 1964, increasing by a factor of 1.92, to 17.28 percent, in 1974. In short, it appears that policy loans are not quite as significant in large stock companies as they are in large mutuals, but the relative change over the last ten years has been almost as great on a weighted-average basis.

Are these experiences of thirty very large companies representative of the industry? Referring to Table 1, we find that the percentage of policy loans to ordinary reserves for the industry was 9.80 percent in 1964 and 18.31 percent in 1974, with a 1974/1964 ratio of 1.87.

D. *Uses of Policy Loans*

Fifty-five years ago Henry S. Nollen, then president of the Equitable of Iowa, made this statement to the Association of Life Insurance Presidents:

Although Life Companies do not have a right to make the inquiry, a number of policyholders have voluntarily stated the needs that compelled them to apply for a policy loan, and from this source we find that, particularly within the past 18 months, the following reasons have prevailed:

To pay premiums on policies.

To pay interest due on obligations to banks.

To pay maturing notes to banks, or portions of indebtedness to procure extensions on the balance.

To pay outstanding accounts to merchants and for professional service.

To pay rental on farms.

To pay taxes—particularly during the last half of 1921.

To purchase supplies for current needs of equipment, food, and clothing.

To meet the pressing demand of creditors who could force a premature sale of stock or grain at a sacrifice.

In some instances, to invest the proceeds of the loans at a profit.

. . . The various reasons for their demands may all be summarized in one underlying cause—"financial stringency."

Certainly most of those reasons still apply today, although in different proportions and with less rural flavor. But there is a difference. In addition to "financial stringency," today's reasons for policy loans include the minimum deposit phenomenon and a much greater potential for arbitrage. Here is a list of policy loan uses in 1976:

1. Short-term borrowing—May be used whenever required or desired expenditures are greater than available funds, if the interest rate is the best available, if credit from other sources is difficult to obtain, or if greater confidentiality is desired. The specific purpose might be for premiums, taxes, business inventories, automobiles, vacations, or a myriad other uses. Short-term borrowing often turns out to be long term because there is no pressure to repay.
2. Long-term borrowing—May be used to pay for a new home or for a business. This use is likely to be infrequent because few policyowners simultaneously have the substantial cash values, the long-term need, *and* the willingness to reduce coverage by the loan amount.
3. Minimum deposit—May be used by some policyowners, particularly those in a high tax bracket, to finance premiums. Minimum deposit may take one of several forms, but essentially it involves paying four premiums out of the first seven (to satisfy the Internal Revenue Code requirement), borrowing all subsequent premiums, and paying all interest when due. The combination of an attractive interest rate and income tax deductibility of the interest paid provides low-cost life insurance, at least in its earlier years. This subject is discussed further in Section E.
4. Arbitrage—May be used by some policyowners whenever they can borrow at the low policy loan rate and invest elsewhere at a higher rate. These borrowers are likely to continue the policy loan as long as the interest differential exists.

These four broad uses do not tell the whole story. Consumers increasingly seek higher standards of living sooner through the use of credit mechanisms. This force has contributed to the burgeoning popularity of policy loans.

E. *Minimum Deposit Business*

The minimum deposit approach may be the most-used and least-understood financing technique in the business. Known as "mini-dip," it is essentially the use of cash values to help pay for the policy. Minimum deposit in the extreme involves borrowing all the available cash value each year; more moderate variations involve paying a limited number of premiums in cash and paying some or all of the interest on the policy loan.

Minimum deposit is attractive to many policyowners because interest

payments replace premium payments; interest payments are deductible on individual federal income tax returns, while premiums are not. This privilege was restricted somewhat in 1964, when section 264 of the Internal Revenue Code was amended to disallow an interest deduction for indebtedness incurred to buy life insurance pursuant to a plan of systematic borrowing. If borrowing occurs in more than three out of the first seven years, a "plan" is presumed. Four exceptions to the general rule are permitted; the most important of these provides that, if no part of four out of the first seven premiums is paid via borrowing, the deduction is permitted even if the borrowing follows a plan.

Minimum deposit is difficult to understand. The concept adds a number of variable factors to the insurance equation; none of these is too difficult by itself, but in combination they become complex.

1. The death benefit varies according to a pattern not determinable at issue, although approximations may be made.
2. The net cash value varies similarly, depending on the loan amount.
3. The number and incidence of premiums paid in cash may follow one of many patterns.
4. The annual interest on the policy loan may be paid in cash, or part or all may be added to indebtedness if the remaining cash value is sufficient.
5. If premiums and interest are paid with sufficient frequency, cash values will build up, permitting discretionary borrowing for other purposes.
6. The loan interest that is actually paid in a given year is deductible for federal income tax purposes, but the effect of the deduction varies with the tax bracket of the policyowner.

In order to compare minimum deposit with the conventional approach of paying for life insurance, we prepared two minimum deposit illustrations, based on a $100,000 whole life participating policy issued to a male aged 35. The first illustration assumes that dividends are used to purchase additions, that the first four premiums are paid in cash, and that policy loan interest is unfailingly paid when due; the result is minimum deposit in its more conservative form. A detailed ledger statement using those assumptions is shown in Table 4 for forty years, to age 75. The results are summarized in Tables 5A, 5B, and 5C for five-year intervals; these tables compare that particular version of minimum deposit with a policy for which all premiums are paid when due, with dividends used to reduce premiums so that cumulative payments may be more comparable. The comparison is made for two different federal tax bracket assumptions: 50 percent (taxable income of $32,000 for a single taxpayer or $44,000 for a joint taxpayer) and 25 percent (taxable income of $8,000 for a single taxpayer or $12,000 for a joint taxpayer). Another comparison is

TABLE 4

LEDGER STATEMENT TO ILLUSTRATE MINIMUM DEPOSIT WITH ALL POLICY LOAN INTEREST AT 6 PERCENT PAID IN CASH

(Assumptions: $100,000 Whole Life Policy Issued to Male Aged 35; Gross Premium, $2,205;
First Four Premiums Paid in Cash; Dividends Applied to Purchase Additions)

YEAR	TOTAL DEATH BENEFIT (END OF YEAR)	TOTAL CASH VALUE (END OF YEAR)	TOTAL DIVIDENDS (END OF YEAR)	TOTAL LOAN VALUE (BEGINNING OF YEAR)	CASH PAYMENTS— PREMIUM (P), INTEREST (I) (BEGINNING OF YEAR)	TOTAL POLICY LOAN (BEGINNING OF YEAR)	NET DEATH BENEFIT (END OF YEAR)	If No Borrowing	
								Guaranteed Cash Value (End of Year)	Gross Premium less Dividend (Beginning of Year)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1...........	100,500	336	195	0	2,205 (P)	....	100,500	141	2,205
2...........	101,100	2,195	259	1,826	2,205 (P)	....	101,100	1,745	2,010
3...........	102,000	4,143	325	3,600	2,205 (P)	....	102,000	3,386	1,950
4...........	103,000	6,263	397	5,532	2,205 (P)	....	103,000	5,061	1,889
5...........	104,100	8,478	472	7,550	0 (I)	2,205	101,895	6,769	1,826
6...........	105,400	11,078	551	9,927	132 (I)	4,410	100,990	8,792	1,760
7...........	106,900	13,821	634	12,435	265 (I)	6,615	100,285	10,846	1,692
8...........	108,500	16,713	718	15,083	397 (I)	8,820	99,680	12,931	1,623
9...........	110,300	19,717	806	17,833	529 (I)	11,025	99,275	15,046	1,555
10.........	112,200	22,885	897	20,735	662 (I)	13,230	98,970	17,191	1,486
11.........	114,300	25,888	991	23,478	794 (I)	15,435	98,865	19,080	1,416
12.........	116,500	29,066	1,090	26,381	926 (I)	17,640	98,860	20,997	1,345
13.........	118,900	32,371	1,190	29,404	1,058 (I)	19,845	99,055	22,941	1,272
14.........	121,400	35,859	1,294	32,595	1,191 (I)	22,050	99,350	24,909	1,201
15.........	124,100	39,483	1,399	35,913	1,323 (I)	24,255	99,845	26,902	1,129
16.........	126,900	43,288	1,497	39,409	1,455 (I)	26,460	100,440	28,917	1,058
17.........	129,800	47,221	1,582	43,038	1,588 (I)	28,665	101,135	30,953	998
18.........	132,800	51,301	1,671	46,801	1,720 (I)	30,870	101,930	33,010	954
19.........	135,900	55,533	1,762	50,706	1,852 (I)	33,075	102,825	35,086	909
20.........	139,100	59,917	1,857	54,751	1,985 (I)	35,280	103,820	37,182	864
21.........	142,800	64,395	2,202	58,648	2,117 (I)	37,485	105,315	38,985	819

NOTE.—Cols. 1–4 include dividend additions. Col. 1 includes additions purchased by current dividend. Col. 2 includes current dividend. Col. 4 = 0.943 × (col. 2 minus col. 3).

The cash payments of interest in col. 5 are before taxes; actual cost is 50 percent if in the 50 percent tax bracket, 75 percent if in the 25 percent tax bracket. The interest paid in each case is the interest accrued at the end of the preceding year. Although dividends are used to purchase additions for the minimum deposit policy, they are used to reduce premiums for the policy without borrowing; this makes cumulative payments more comparable.

TABLE 4—*Continued*

Year	Total Death Benefit (End of Year) (1)	Total Cash Value (End of Year) (2)	Total Dividends (End of Year) (3)	Total Loan Value (Beginning of Year) (4)	Cash Payments—Premium (P), Interest (I) (Beginning of Year) (5)	Total Policy Loan (Beginning of Year) (6)	Net Death Benefit (End of Year) (7)	If No Borrowing	
								Guaranteed Cash Value (End of Year) (8)	Gross Premium less Dividend (Beginning of Year) (9)
22.........	146,600	69,015	2,308	62,905	2,249 (I)	39,690	106,910	40,791	526
23.........	150,500	73,792	2,418	67,306	2,381 (I)	41,895	108,605	42,598	482
24.........	154,500	78,722	2,531	71,848	2,514 (I)	44,100	110,400	44,402	437
25.........	158,700	83,812	2,651	76,535	2,646 (I)	46,305	112,395	46,202	392
26.........	162,900	89,122	2,777	81,423	2,778 (I)	48,510	114,390	47,995	345
27.........	167,300	94,522	2,907	86,393	2,911 (I)	50,715	116,585	49,778	297
28.........	171,800	100,146	3,043	91,568	3,043 (I)	52,920	118,880	51,549	249
29.........	176,400	105,925	3,185	96,884	3,175 (I)	55,125	121,275	53,305	200
30.........	181,200	111,856	3,330	102,340	3,308 (I)	57,330	123,870	55,043	150
31.........	186,100	118,006	3,482	107,996	3,440 (I)	59,535	126,565	56,760	101
32.........	191,100	124,296	3,631	113,787	3,572 (I)	61,740	129,360	58,452	51
33.........	196,300	130,720	3,782	119,703	3,704 (I)	63,945	132,355	60,113	7
34.........	201,600	137,348	3,936	125,808	3,837 (I)	66,150	135,450	61,738	— 36
35.........	207,000	144,099	4,094	132,025	3,969 (I)	68,355	138,645	63,325	— 78
36.........	212,500	150,975	4,255	138,357	4,101 (I)	70,560	141,940	64,874	— 119
37.........	218,300	157,978	4,417	144,808	4,234 (I)	72,765	145,535	66,388	— 159
38.........	224,100	165,281	4,587	151,534	4,366 (I)	74,970	149,130	67,874	— 197
39.........	230,100	172,652	4,756	158,326	4,498 (I)	77,175	152,925	69,339	— 235
40.........	236,200	180,264	4,929	165,341	4,631 (I)	79,380	156,820	70,786	— 271
41.........	....	....	....	....	4,763 (I)	....	....	....	−2,510

NOTE.—Cols. 1–4 include dividend additions. Col. 1 includes additions purchased by current dividend. Col. 2 includes current dividend. Col. 4 = 0.943 × (col. 2 minus col. 3).

The cash payments of interest in col. 5 are before taxes; actual cost is 50 percent if in the 50 percent tax bracket, 75 percent if in the 25 percent tax bracket. The interest paid in each case is the interest accrued at the end of the preceding year. Although dividends are used to purchase additions for the minimum deposit policy, they are used to reduce premiums for the policy without borrowing; this makes cumulative payments more comparable.

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TABLE 5A

Minimum Deposit (Conservative Variation) versus Life Insurance without Borrowing: A Comparative Summary at the 50 Percent Income Tax Bracket Level (Based on Table 4)

Cumulative to End of Year	Cumulative Payments*			Net Death Benefit			Net Cash Value		
	Minimum Deposit	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing‡	Minimum Deposit Advantage
5................	$ 10,022	$11,001	$ 979	$102,874	$100,000	$ 2,874	$ 7,252	$ 7,214	$ 38
10...............	13,300	22,101	8,801	107,771	100,000	7,771	18,456	17,980	476
15...............	18,965	33,339	14,374	114,219	100,000	14,219	29,602	28,049	1,553
20...............	27,468	44,924	17,456	121,276	100,000	21,276	42,093	38,568	3,525
25...............	39,340	56,340	17,000	129,395	100,000	29,395	54,507	48,062	6,445
30...............	55,214	68,311	13,097	136,967	100,000	36,967	67,623	57,147	10,476
35...............	75,481	81,199	5,358	144,003	100,000	44,003	81,102	65,649	15,453
40...............	102,114	95,364	− 6,750	150,070	100,000	50,070	94,134	73,296	20,838

* Each set of payments is accumulated with interest at 7 percent before taxes or 3½ percent after taxes. The minimum deposit advantage may be reduced by a tax on the gain if the policy is surrendered.

† This includes the fund (minimum deposit advantage under cumulative payments).

‡ This includes dividend then payable.

TABLE 5B

MINIMUM DEPOSIT (CONSERVATIVE VARIATION) VERSUS LIFE INSURANCE WITHOUT BORROWING: A COMPARATIVE SUMMARY
AT THE 25 PERCENT INCOME TAX BRACKET LEVEL (BASED ON TABLE 4)

CUMULATIVE TO END OF YEAR	CUMULATIVE PAYMENTS*			NET DEATH BENEFIT			NET CASH VALUE		
	Minimum Deposit	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing‡	Minimum Deposit Advantage
5................	$ 10,666	$ 11,602	$ 936	$102,831	$100,000	$ 2,831	$ 7,209	$ 7,214	−$ 5
10...............	15,926	24,513	8,587	107,557	100,000	7,557	18,242	17,980	262
15...............	25,472	39,141	13,669	113,514	100,000	13,514	28,897	28,049	848
20...............	40,558	56,172	15,614	119,434	100,000	19,434	40,251	38,568	1,683
25...............	62,798	75,711	12,913	125,308	100,000	25,308	50,420	48,062	2,358
30...............	94,275	99,264	4,989	128,859	100,000	28,859	59,515	57,147	2,368
35...............	137,684	128,284	− 9,400	129,245	100,000	29,245	66,344	65,649	695
40...............	196,506	164,561	− 39,945	124,875	100,000	24,875	68,939	73,296	− 4,357

* Each set of payments is accumulated with interest at 7 percent before taxes or 5¼ percent after taxes. The minimum deposit advantage may be reduced by a tax on the gain if the policy is surrendered.

† This includes the fund (minimum deposit advantage under cumulative payments).

‡ This includes dividend then payable.

TABLE 5C

MINIMUM DEPOSIT (CONSERVATIVE VARIATION) VERSUS LIFE INSURANCE WITHOUT BORROWING: A COMPARATIVE SUMMARY
AT THE 50 PERCENT INCOME TAX BRACKET LEVEL, ASSUMING TAX DEDUCTION FOR POLICY LOAN
INTEREST PAID IS ELIMINATED (BASED ON TABLE 4)

CUMULATIVE TO END OF YEAR	CUMULATIVE PAYMENTS*			NET DEATH BENEFIT			NET CASH VALUE		
	Minimum Deposit	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing‡	Minimum Deposit Advantage
5	$ 10,088	$11,001	$ 913	$102,808	$100,000	$ 2,808	$ 7,186	$ 7,214	−$ 28
10	14,771	22,101	7,330	106,300	100,000	6,300	16,985	17,980	− 995
15	23,880	33,339	9,459	109,304	100,000	9,304	24,687	28,049	− 3,362
20	38,246	44,924	6,678	110,498	100,000	10,498	31,315	38,568	− 7,253
25	58,855	56,340	− 2,515	109,880	100,000	9,880	34,992	48,062	− 13,070
30	86,880	68,311	− 18,569	105,301	100,000	5,301	35,957	57,147	− 21,190
35	123,711	81,199	− 42,512	96,133	100,000	− 3,867	33,232	65,649	− 32,417
40	171,004	95,364	− 75,640	81,180	100,000	− 18,820	25,244	73,296	− 48,052

* Each set of payments is accumulated with interest at 7 percent before taxes or 3½ percent after taxes. The minimum deposit advantage may be reduced by a tax on the gain if the policy is surrendered.

† This includes the fund (minimum deposit advantage under cumulative payments).

‡ This includes dividend then payable.

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made for a person in the 50 percent tax bracket, assuming that the tax deduction for policy loan interest paid were eliminated. The approach used is to compare death benefits and cash values, and to compare the two sets of payments made by accumulating them with interest. The interest rate used for the cumulative payments is assumed to be at a before-tax rate of 7 percent, reduced after taxes to $5\frac{1}{4}$ percent for the 25 percent tax bracket and to $3\frac{1}{2}$ percent for the 50 percent tax bracket. We recognize that the 7 percent assumption may seem too low in light of today's rate and too high for the long term; on balance we believe this assumption tends to be overly generous toward minimum deposit.

This conservative variation of minimum deposit leaves substantial values intact in the policy for many years. Even at the fortieth duration in the 50 percent tax bracket (Table 5A), minimum deposit on this basis has an apparently better cost performance than the straight whole life approach; in the 25 percent bracket (Table 5B), the apparent advantage of minimum deposit lasts for more than thirty years. The significant financial effect of the interest deduction is shown in Table 5C, in which we have assumed a zero percent tax bracket for deduction purposes but a 50 percent tax bracket for cumulative payment purposes. Without the deduction, the net cash value for minimum deposit loses its advantage, and the net death benefit is much lower than with the deduction.

Now let us look at the second illustration, another variation of minimum deposit in which the first four premiums are again paid in cash but subsequent payments (interest or premium) are made only to the degree necessary to keep the policy in force. The details are shown in Table 6. (Note that this is the other extreme of minimum deposit, and that the small interest portions borrowed in the sixth and seventh years do not quite fit within the legal requirements for tax deductibility of interest payments.) Looking at summaries for the 50 percent (Table 7A) and 25 percent (Table 7B) tax brackets, we observe that the cumulative payments still show a clear advantage; however, the net cash value, even including the cumulative payment advantage of minimum deposit, falls far below that of life insurance without borrowing. The net death benefit remains higher under minimum deposit for thirty or thirty-five years. Looking at Table 7C, we note that the elimination of the interest deduction would make no difference for at least fifteen years because no interest is being paid. When interest payments do begin (in the nineteenth year), the deterioration of the minimum deposit policy accelerates.

One could carry these comparisons a step further by assigning a value to the difference in net death benefits, based on appropriate yearly

TABLE 6

LEDGER STATEMENT TO ILLUSTRATE MINIMUM DEPOSIT WITH POLICY LOAN INTEREST AT 6 PERCENT PAID ONLY WHEN ESSENTIAL

(Assumptions: $100,000 Whole Life Policy Issued to Male Aged 35; Gross Premium, $2,205; First Four Premiums Paid in Cash; Dividends Applied to Purchase Additions)

Year	Total Death Benefit (End of Year)	Total Cash Value (End of Year)	Total Dividends (End of Year)	Total Loan Value (Beginning of Year)	Cash Payments— Premium (P), Interest (I) (Beginning of Year)	Premium (P) and Interest (I) Borrowed (Beginning of Year)	Total Policy Loan (Beginning of Year)	Interest at 6% on Loan (End of Year)	Net Death Benefit (End of Year)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1...........	100,500	336	195	0	2,205 (P)	....	....	....	100,500
2...........	101,100	2,195	259	1,826	2,205 (P)	....	....	....	101,100
3...........	102,000	4,143	325	3,600	2,205 (P)	....	....	....	102,000
4...........	103,000	6,263	397	5,532	2,205 (P)	....	....	....	103,000
5...........	104,100	8,478	472	7,550	....	2,205 (P)	2,205	132	101,763
6...........	105,400	11,078	551	9,927	....	2,337 (P, I)	4,542	273	100,585
7...........	106,900	13,821	634	12,435	....	2,478 (P, I)	7,020	421	99,459
8...........	108,500	16,713	718	15,083	....	2,626 (P, I)	9,646	579	98,275
9...........	110,300	19,717	806	17,833	....	2,784 (P, I)	12,430	746	97,124
10...........	112,200	22,885	897	20,735	....	2,951 (P, I)	15,381	923	95,896
11...........	114,300	25,888	991	23,478	....	3,128 (P, I)	18,509	1,111	94,680
12...........	116,500	29,066	1,090	26,381	....	3,316 (P, I)	21,825	1,310	93,365
13...........	118,900	32,371	1,190	29,404	....	3,515 (P, I)	25,340	1,520	92,040
14...........	121,400	35,859	1,294	32,595	....	3,725 (P, I)	29,065	1,744	90,591
15...........	124,100	39,483	1,399	35,913	....	3,949 (P, I)	33,014	1,981	89,105
16...........	126,900	43,288	1,497	39,409	....	4,186 (P, I)	37,200	2,232	87,468
17...........	129,800	47,221	1,582	43,038	....	4,437 (P, I)	41,637	2,498	85,665
18...........	132,800	51,301	1,671	46,801	....	4,703 (P, I)	46,340	2,780	83,680
19...........	135,900	55,533	1,762	50,706	619 (I)	4,366 (P, I)	50,706	3,042	82,152
20...........	139,100	59,917	1,857	54,751	1,202 (I)	4,045 (P, I)	54,751	3,285	81,064

NOTE.—Cols. 1–4 include dividend additions. Col. 1 includes additions purchased by current dividend. Col. 2 includes current dividend. Col. 4 = 0.943 × (col. 2 minus col. 3).

The cash payments of interest in col. 5 are before taxes; actual cost is 50 percent if in the 50 percent tax bracket, 75 percent if in the 25 percent tax bracket. Although dividends are used to purchase additions for the minimum deposit policy, they are used to reduce premiums for the policy without borrowing; this makes cumulative payments more comparable.

TABLE 6—*Continued*

Year	Total Death Benefit (End of Year) (1)	Total Cash Value (End of Year) (2)	Total Dividends (End of Year) (3)	Total Loan Value (Beginning of Year) (4)	Cash Payments— Premium (P), Interest (I) (Beginning of Year) (5)	Premium (P) and Interest (I) Borrowed (Beginning of Year) (6)	Total Policy Loan (Beginning of Year) (7)	Interest at 6% on Loan (End of Year) (8)	Net Death Benefit (End of Year) (9)
21.........	142,800	64,395	2,202	58,648	1,593 (I)	3,897 (P, I)	58,648	3,519	80,633
22.........	146,600	69,015	2,308	62,905	1,467 (I)	4,257 (P, I)	62,905	3,774	79,921
23.........	150,500	73,792	2,418	67,306	1,578 (I)	4,401 (P, I)	67,306	4,038	79,156
24.........	154,500	78,722	2,531	71,848	1,701 (I)	4,542 (P, I)	71,848	4,311	78,341
25.........	158,700	83,812	2,651	76,535	1,829 (I)	4,687 (P, I)	76,535	4,592	77,573
26.........	162,900	89,122	2,777	81,423	1,909 (I)	4,888 (P, I)	81,423	4,885	76,592
27.........	167,300	94,522	2,907	86,393	2,120 (I)	4,970 (P, I)	86,393	5,184	75,723
28.........	171,800	100,146	3,043	91,568	2,214 (I)	5,175 (P, I)	91,568	5,494	74,738
29.........	176,400	105,925	3,185	96,884	2,383 (I)	5,316 (P, I)	96,884	5,813	73,708
30.........	181,200	111,856	3,330	102,340	2,562 (I)	5,456 (P, I)	102,340	6,140	72,720
31.........	186,100	118,006	3,482	107,996	2,689 (I)	5,656 (P, I)	107,996	6,480	71,624
32.........	191,100	124,296	3,631	113,787	2,894 (I)	5,791 (P, I)	113,787	6,827	70,486
33.........	196,300	130,720	3,782	119,703	3,116 (I)	5,916 (P, I)	119,703	7,182	69,415
34.........	201,600	137,348	3,936	125,808	3,282 (I)	6,105 (P, I)	125,808	7,548	68,244
35.........	207,000	144,099	4,094	132,025	3,536 (I)	6,217 (P, I)	132,025	7,922	67,053
36.........	212,500	150,975	4,255	138,357	3,795 (I)	6,332 (P, I)	138,357	8,301	65,842
37.........	218,300	157,978	4,417	144,808	4,055 (I)	6,451 (P, I)	144,808	8,688	64,804
38.........	224,100	165,281	4,587	151,534	4,167 (I)	6,726 (P, I)	151,534	9,092	63,474
39.........	230,100	172,652	4,756	158,326	4,505 (I)	6,792 (P, I)	158,326	9,500	62,274
40.........	236,200	180,264	4,929	165,341	4,690 (I)	7,015 (P, I)	165,341	9,920	60,939
41.........	....	....	....	....	4,960 (I)	....	....	....	....

NOTE.—Cols. 1–4 include dividend additions. Col. 1 includes additions purchased by current dividend. Col. 2 includes current dividend. Col. 4 = 0.943 × (col. 2 minus col. 3).

The cash payments of interest in col. 5 are before taxes; actual cost is 50 percent if in the 50 percent tax bracket, 75 percent if in the 25 percent tax bracket. Although dividends are used to purchase additions for the minimum deposit policy, they are used to reduce premiums for the policy without borrowing; this makes cumulative payments more comparable.

TABLE 7A

MINIMUM DEPOSIT (MINIMAL PAYMENT VARIATION) VERSUS LIFE INSURANCE WITHOUT BORROWING: A COMPARATIVE
SUMMARY AT THE 50 PERCENT INCOME TAX BRACKET LEVEL (BASED ON TABLE 6)

CUMULATIVE TO END OF YEAR	CUMULATIVE PAYMENTS*			NET DEATH BENEFIT			NET CASH VALUE		
	Minimum Deposit	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing‡	Minimum Deposit Advantage
5...............	$ 9,956	$11,001	$ 1,045	$102,808	$100,000	$ 2,808	$ 7,186	$ 7,214	−$ 28
10.............	11,824	22,101	10,277	106,173	100,000	6,173	16,858	17,980	− 1,122
15.............	14,044	33,339	19,295	108,400	100,000	8,400	23,783	28,049	− 4,266
20.............	18,431	44,924	26,493	107,557	100,000	7,557	28,374	38,568	− 10,194
25.............	26,421	56,340	29,919	107,492	100,000	7,492	32,604	48,062	− 15,458
30.............	37,771	68,311	30,540	103,260	100,000	3,260	33,916	57,147	− 23,231
35.............	53,734	81,199	27,465	94,518	100,000	− 5,482	31,617	65,649	− 34,032
40.............	75,777	95,364	19,587	80,526	100,000	− 19,474	24,590	73,296	− 48,706

* Each set of payments is accumulated with interest at 7 percent before taxes or 3½ percent after taxes. The minimum deposit advantage may be reduced by a tax on the gain if the policy is surrendered.

† This includes the fund (minimum deposit advantage under cumulative payments).

‡ This includes dividend then payable.

TABLE 7B

MINIMUM DEPOSIT (MINIMAL PAYMENT VARIATION) VERSUS LIFE INSURANCE WITHOUT BORROWING: A COMPARATIVE SUMMARY AT THE 25 PERCENT INCOME TAX BRACKET LEVEL (BASED ON TABLE 6)

CUMULATIVE TO END OF YEAR	CUMULATIVE PAYMENTS*			NET DEATH BENEFIT			NET CASH VALUE		
	Minimum Deposit	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing‡	Minimum Deposit Advantage
5.	$ 10,567	$ 11,602	$ 1,035	$102,798	$100,000	$ 2,798	$ 7,176	$ 7,214	−$ 38
10.	13,648	24,513	10,865	106,761	100,000	6,761	17,446	17,980	− 534
15.	17,627	39,141	21,514	110,619	100,000	10,619	26,002	28,049	− 2,047
20.	25,424	56,172	30,748	111,812	100,000	11,812	32,629	38,568	− 5,939
25.	39,857	75,711	35,854	113,427	100,000	13,427	38,539	48,062	− 9,523
30.	61,384	99,264	37,880	110,600	100,000	10,600	41,256	57,147	− 15,891
35.	93,034	128,284	35,250	102,303	100,000	2,303	39,402	65,649	− 26,247
40.	138,698	164,561	25,863	86,802	100,000	− 13,198	30,866	73,296	− 42,430

* Each set of payments is accumulated with interest at 7 percent before taxes or 5¼ percent after taxes. The minimum deposit advantage may be reduced by a tax on the gain if the policy is surrendered.

† This includes the fund (minimum deposit advantage under cumulative payments).

‡ This includes dividend then payable.

TABLE 7C

MINIMUM DEPOSIT (MINIMAL PAYMENT VARIATION) VERSUS LIFE INSURANCE WITHOUT BORROWING: A COMPARATIVE
SUMMARY AT THE 50 PERCENT INCOME TAX BRACKET LEVEL, ASSUMING TAX DEDUCTION FOR
POLICY LOAN INTEREST PAID IS ELIMINATED (BASED ON TABLE 6)

CUMULATIVE TO END OF YEAR	CUMULATIVE PAYMENTS*			NET DEATH BENEFIT			NET CASH VALUE		
	Minimum Deposit	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing‡	Minimum Deposit Advantage
5................	$ 9,956	$11,001	$ 1,045	$102,808	$100,000	$ 2,808	$ 7,186	$ 7,214	−$ 28
10...............	11,824	22,101	10,277	106,173	100,000	6,173	16,858	17,980	− 1,122
15...............	14,044	33,339	19,295	108,400	100,000	8,400	23,783	28,049	− 4,266
20...............	20,180	44,924	24,744	105,808	100,000	5,808	26,625	38,568	− 11,943
25...............	33,024	56,340	23,316	100,889	100,000	889	26,001	48,062	− 22,061
30...............	52,003	68,311	16,308	89,028	100,000	− 10,972	19,684	57,147	− 37,463
35...............	79,510	81,199	1,689	68,742	100,000	− 31,258	5,841	65,649	− 59,808
40...............	118,346	95,364	− 22,982	37,957	100,000	− 62,043	− 17,979	73,296	− 91,275

* Each set of payments is accumulated with interest at 7 percent before taxes or 3½ percent after taxes. The minimum deposit advantage may be reduced by a tax on the gain if the policy is surrendered.

† This includes the fund (minimum deposit advantage under cumulative payments).

‡ This includes dividend then payable.

renewable term rates. These term premiums would then be included in the fund in which the difference in payments is accumulated. Although theoretically satisfying, it is not necessary to demonstrate that the interest deduction may make it apparently advantageous for the policyowner to make payments as interest instead of as premiums. The significance of this conclusion is discussed in the next section.

Of course, the policyowner must give proper weight to some of the disadvantages inherent in minimum deposit, which may completely offset the advantages. These include the following.

1. There is the need to invest the difference in cumulative payments on a regular and effective basis. This is a cumbersome process, and "the road to hell is paved with good intentions."
2. If the policy is surrendered, there is a taxable gain (at ordinary income rates) equal to the total cash value less the premiums paid, whether by loan or in cash. For a minimum deposit policy, this gain can be very large relative to the net cash value received—potentially a rude shock to the policyowner—if it was not mentioned or illustrated at issue. For example, using the figures in Table 6, if the policyowner surrendered at the thirtieth duration, the cash received after deducting the loan would be only $3,376, while $45,706 would be reportable as ordinary taxable income in that year. The use of payment plans (settlement options) can spread out the impact over several years, but the only way for the policyowner to escape the tax problem completely is to die while the policy is in force.
3. A change in tax laws or in the policyowner's tax bracket is always possible, and the early tax advantage to the policyowner may disappear.
4. A more subtle point is the ever present tension between the objectives of the individual and those of the group. If the fulfillment of individual objectives tends to weaken the group, then the individual is adversely affected also. Even though minimum deposit may be good for certain policyowners, it will tend to weaken the body of policyowners, and indirectly the individuals in it.

II. THE POLICY LOAN PROBLEM

A. *The Problem Presents Many Faces*

Although loans against policy cash values go back at least to 1845, they have caused few major problems. Policy loans were serious enough during the Great Depression to warrant a moratorium for several months during 1933 but since then caused little concern until the late 1960's. At the present time (1976), policy loans are regarded by many industry executives as a very serious problem indeed. Just what is the nature of the problem, and how did it develop? This analysis will be largely restricted to participating policies issued in the United States. Perhaps the discussants of this paper can augment the brief comments about policy loans on nonparticipating policies and in Canada.

Even in a business accustomed to complexities, the policy loan problem looms as an unusually knotty one. Likening it to the proverbial iceberg, we want to get rid of the tip, but we had better do something also about the great bulk of ice under the water's surface. To work the analogy to death, should we blast it, melt it, set up a ski lodge on it, push it into an unused harbor, or try to ignore it?

Under the surface of the policy loan problem we must identify in the tangle who is benefited and who is hurt, in the short run and in the long run, and to what degree. How can we know whether we are perceiving one of the symptoms or the disease itself—or a condition that caused the disease? As with any good physician, we will want to tackle all three—relieve the symptoms, cure the disease, and remove the underlying causes, if possible.

Consider first the symptoms:

1. The cash flow of investable new money has been severely restricted by policy loans, particularly for policies with large cash values. This has resulted in the following:
    a) Yields are below what they would be with normal cash flow, thereby holding down dividends and increasing costs to many policyowners.
    b) The industry is failing to fulfill its role as a source of long-term capital for economic expansion, thereby hurting both individuals and business organizations directly and adding indirectly to overall economic problems.
2. Inequity has arisen between borrowers and nonborrowers. The higher earnings on assets, which underlie reserves of the nonborrowers, are diluted by being shared with (and hence subsidizing) the borrowers, because this important factor is not now recognized in the dividend scale.
3. Some dissatisfaction has arisen as a result of lack of understanding of the consequences of the minimum deposit approach (reduced life insurance protection and eventual tax liability on surrender), thus eroding confidence in life insurance.
4. The same commission dollars are paid for minimum deposit as for regular whole life insurance, even though the former may be essentially term insurance.
5. The industry is gaining more in nominal face amount than in actual protection.

Those are the symptoms, and there are several ways in which we can treat them. However, it will be best to treat them in ways that help to cure the disease also, if possible. So let us go beyond the symptoms and identify the diseases we face.

Essentially three diseases are producing those symptoms:

1. Policy loan interest rates are much lower than current interest rates in the money market—a *money-pricing inconsistency*. This causes borrowing for arbitrage, that is, for no reason other than to take advantage of that in-

consistency. Also, it causes policy loans to be used as a primary lending source rather than as a last resort.

2. For many people, a policy with a loan is apparently cheaper than one without—a *product-pricing inconsistency*. This causes policy loans to become a primary financing medium to be used constantly, rather than a subsidiary provision to be used occasionally in special circumstances. This use deviates from the original purpose for which loans were intended.

3. A third disease may gain a foothold through the weakness caused by the product-pricing inconsistency. Although minimum deposit may be advantageous to some policyowners, a few agents may rationalize its broader use even if they are the only ones benefiting—a *distribution-pricing inconsistency*.

Those are the basic diseases, the three primary problems, which the industry must try to eradicate. Although the first two are in part independent problems, the money-pricing inconsistency aggravates the product-pricing inconsistency, thereby extending its applicability to many more people and business firms.

Underlying those diseases are certain conditions in the economic environment. We may or may not be able to cure the diseases without changing the conditions, but at least we should recognize them and work on them. Those underlying conditions are as follows:

1. An inflationary economy has raised the price of money to historic highs because the annual rate of inflation tends to be incorporated into the price of money. This has triggered interactions among the other factors.

2. Regulations of certain states prevent increasing the policy loan rate above a maximum of 5 or 6 percent, making it impossible to keep in step with the money market. If policy loans at market rates were permitted, there probably would be no policy loan problem.

3. Policy loan interest paid is deductible as an expense in federal ·(and state) income tax returns. This condition is not harmful by itself, and it is consistent with the deductibility of interest generally. However, it is a condition to be recognized.

In summarizing the definition of the problem, we must remember that we are dealing not just with one problem but with a network. There are at least three identifiable levels—the symptoms, the diseases, and the underlying conditions—and each level has several distinct parts. As each solution is considered, its location within the network must be identified and its side effects on the others must be anticipated.

B. *Who Are the Parties Involved, Who Benefits, and Who Pays?*

There are at least seven identifiable parties that have an interest in the policy loan problem: the borrowing policyowner, the nonborrowing

policyowner, the agent, the company as a whole, capital-seeking businesses and individuals, insurance departments and state legislators, and the federal government.

As with inflation, a little bit of minimum deposit and a little bit of borrowing below the rate on the money market did not seem too bad. But with the magnitude of the problem today, we must look more closely at who benefits and who pays. First, who benefits? The following are the advantages of policy loans at fixed low rates:

To the borrowing policyowner:
  He pays 5 or 6 percent on policy loans, a real "bargain."
  He obtains a loan with little effort.
  He may invest that amount for arbitrage.
  In the case of minimum deposit, he receives a tax advantage, desirable options of permanent insurance (which may be used later), and extensive and expensive service.
To the nonborrowing policyowner:
  None, except for the availability if needed.
To the agent:
  In the case of minimum deposit, he receives more commissions than through term.
  He finds the policies easy to sell (if he is expert).
  He performs interesting and challenging work, "doing more for client."
To the company as a whole:
  It may have higher sales volume and lower unit costs.
  Talented agents (especially in large urban areas) will be attracted.

Who pays? The following are the disadvantages of policy loans:

To the borrowing policyowner:
  He does not accumulate cash values; the "permanent" insurance is really term.
  He has diminished protection (although this may be understood and accepted).
  He has increased chance of lapse because cash value can no longer absorb financial reverses.
To the nonborrowing policyowner:
  He not only forgoes high yields on the assets underlying the borrower's reserves going into policy loans but also shares high yields on his assets with the borrower—the borrower takes a proportionate share of dividends without proportionate contribution to investable funds (you *can* have your cake and eat it too!).
  He bears the brunt of increased expenses from greater service to the borrower and from often higher lapse rates.
  He receives lower dividends as a result.

To the agent:

He may be harmed by the ultimate effects on the company.

To the company as a whole:

It suffers possible loss of competitive position because of lower yields and higher expenses.

It finds it difficult to support a qualified investment staff and to maintain its status in investment markets.

It is subject to major deterioration of permanent life insurance as we know it, because governmental reaction may have a "pendulum swing" effect, because of high lapse rates of borrowers, because of increasing disenchantment of nonborrowers, and because of diminution of investment function.

To the federal government:

It must make up for lost taxes in some way.

To the capital-seeking businesses and individuals:

They find that a major source of long-term capital is drying up.

C. *Two Types of Borrowers*

The picture we have just painted shows the consequences of policy loans: some gain and some lose. The traditional reason for making policy loans still applies today—namely, the occasional use of the policy loan provision with the expectation of repayment in a relatively short time. Policy loans may be used in place of commercial loan sources for reasons of convenience, privacy, availability, credit position, and repayment flexibility. When policy loan interest rates are at or above current rates on the money market, policy loans tend to be loans of last resort. Under those conditions we have the traditional type of borrower—the occasional, special-purpose borrower.

The new breed of borrower is the one who is taking advantage of the unrealistically low policy loan interest rate in today's money market and/or the tax reduction possibilities. The policy values may be borrowed out as fast as they build up, subject only to the IRS four-out-of-seven rule. This borrower has no intention of repaying the loan as long as the interest rate differential and/or tax advantages continue. So here we have the second type of borrower—the sustained, substantial, systematic borrower.

Borrowing of the first type tends to be relatively low and stable over many years, and can be accommodated without great difficulty in product pricing and company planning. Borrowing of the second type is erratic and leads to high policy loan levels. It fluctuates with the vagaries of the prime rate, tempered by the policyowner's conflicting objectives: maximum permanent coverage and maximum personal asset growth.

D. *Effects on Different Companies*

Adding to the complexity of the policy loan problem is its varying effect on different companies. One such clear distinction occurs between stock and mutual companies. Although many of the comments made apply equally to both stock and mutual companies, some may hold that the inequity between borrowers and nonborrowers is less applicable to nonparticipating policies; at least a part of the reduction in yields on assets (compared with what they would be without policy loans) is borne by the stockholder in the form of reduced stock dividends and forgone appreciation in stock values. This is especially true for older policies. More recently, we understand, the level of policy loans is beginning to be recognized in pricing for nonparticipating policies, in which case the nonborrower in effect will subsidize the borrower.

Companies that have many permanent policies in force for larger amounts will tend to have a much larger proportion of cash values borrowed than those with preponderantly small policies. (However, even the latter may have a "hidden" policy loan problem, in that extensive borrowing on their larger policies may be obscured by the large proportion of small policies.) In a similar vein, policyowners who have greater economic awareness may be more likely to borrow than those who do not, and some companies have specialized more in the direction of the former. As between younger and older life insurance companies, the younger companies have lower reserves per policy on the average and hence are currently less subject to the policy loan problem. Size of company does not seem to be a factor, except to the degree that size reflects the company's age or its marketing approach.

E. *Future Loan Trends*

Before leaving the policy loan problem to consider possible solutions, it may be instructive to consider the dynamics of the problem. What future trend may we expect in the proportions of policy cash values borrowed? The answer depends on what happens to cure the diseases or change the conditions in the economic environment referred to earlier. It is hazardous to predict the volume of policy loans for, say, the next fifteen years, but it is important to try. If we assume a continuation of four conditions—inflationary economy with high price for money, policy loan rates of 5 or 6 percent, deductibility of policy loan interest in tax returns, and unchanged product lines and commission scales—then we may see the trend shown in Figure 3 (an extension of Fig. 2 in Sec. I). Surely the emerging change to an 8 percent rate will have a favorable impact, but it is too early to evaluate.

This projection of policy loans for the next fifteen years (Table 8) is based on the assumption that both ordinary reserves and policy loans or the industry increase with a constant second difference; that second difference is the average of the second differences for the ten-year period 1964–73. Some may regard that projection as overly optimistic (that is, policy loans will increase even faster), while others may take the opposite view. In any event, under the assumptions given, policy loans would increase in absolute amount to $38 billion by 1979, $60 billion by 1984,
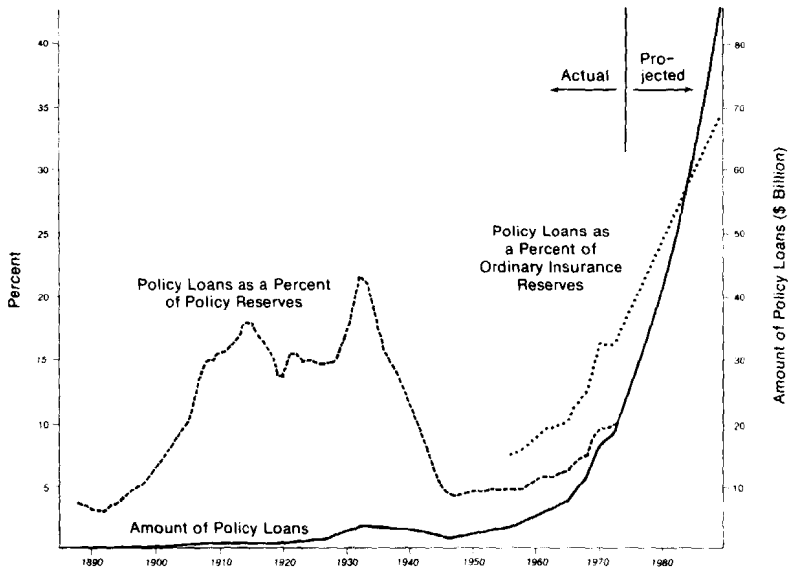
Fig. 3.—Policy loan trends for United States life insurance companies. (Source: *1975 Life Insurance Fact Book* and related data from the Institute of Life Insurance, for figures through 1974; projection for 1975–89.)

and $87 billion by 1989. The corresponding ratios to ordinary reserves would be 23.6 percent. 29.1 percent, and 34.1 percent. This projection is intended to show not what *will* happen but rather what *could* happen easily if the current conditions continue. The 34 percent level is hardly an unrealistic figure because a few companies have already surpassed it and are approaching 45 or 50 percent.

We can postulate generally what might happen within the life insurance industry and in the larger economy if such a trend were to materialize. Surely those companies already experiencing a policy loan problem would find that it had increased in severity, and many companies with policy loan proportions not yet very high would find that they too had a problem. The relatively higher policy loan levels would affect the econo-

my by reducing the availability of long-term capital traditionally supplied by life insurance companies. And, significant as they are, the overall figures do not tell the whole story of interference with capital formation. The policy loan demand is volatile, depending on the prime rate and related factors. When the Federal Reserve tightens the money supply, and the market most wants long-term capital, life insurance companies are faced with large policy loan demands that prevent them from providing it. The desire to maintain liquidity in the face of such uncertainties

TABLE 8

PROJECTION OF POLICY LOANS AS A PERCENT
OF ORDINARY RESERVES*

Year	Policy Loans (000,000)	Ordinary Reserves ((000,000)	Policy Loans as Percent of Ordinary Reserves
1975	$25,293	$131,902	19.18%
1976	28,191	139,071	20.27
1977	31,323	146,496	21.38
1978	34,689	154,177	22.50
1979	38,289	162,114	23.62
1980	42,123	170,307	24.73
1981	46,191	178,756	25.84
1982	50,493	187,461	26.94
1983	55,029	196,422	28.02
1984	59,799	205,639	29.08
1985	64,803	215,112	30.13
1986	70,041	224,841	31.15
1987	75,513	234,826	32.16
1988	81,219	245,067	33.14
1989	87,159	255,564	34.10

* This projection is an extension of Table 1, based on constant second differences for policy loans and ordinary reserves; that difference was determined as the average second difference for years 1964–73.

forces companies to cut back on forward commitments, thereby complicating the planning process for users of such capital. For example, in one life company forward commitments declined from 81 percent of forecast cash flow (investable funds) in 1966 to 32 percent in 1971, and back to 46 percent in 1976. Expressed another way, life insurance companies have been forced to move from a role of primarily long-term capital formation toward a role that competes with the short-term lending activities of commercial banks and savings and loan institutions.

This view of the significance of policy loans to long-term capital formation was expressed in 1974 by Dr. James J. O'Leary:[2]

[2] Address by Dr. O'Leary, vice-chairman and economist, United States Trust Company, before the annual meeting of the National Association of Business Economists in Denver, September 22, 1974.

Beset with heavy deposit outflows and policy loans, most of the savings institutions are highly uncertain about the future drain of cash from them in the months ahead. The general reaction has been to cease making new forward commitments to buy bonds and mortgages and to use their cash flow to build liquid assets. . . . The result is that there is a drying up of the availability of funds in the long-term capital markets. As this has happened, borrowing that would have been accommodated in the long-term markets is often shifted to the commercial banks, frequently in the form of term loans. The entire process seems to be feeding on itself because the shift of borrowing into the short-term markets tends to put upward pressure on short-term rates, the very thing that feeds the disintermediation and reduces availability of long-term funds.

At some point, if the trend continues, the capital accumulation function may atrophy because the life insurance industry will no longer be able to fulfill its role on either end of the capital equation; that is,

The industry will no longer be competitive, and its customers will look elsewhere for capital accumulation services.

The industry will no longer accumulate capital, and its investment outlets will look elsewhere for capital formation services.

If and when the life insurance industry reaches that stage, the strength and vigor of the industry already will have been in serious decline for several years. If the industry by then is selling little besides term insurance and heavily borrowed permanent insurance, it may lose much of its agent force, much of its home office staff, and much of its role in the economy and in the financial plans of its customers. The weakened industry could well become increasingly vulnerable to ill-advised regulatory changes and multilife catastrophes (because of decline in surplus).

We do not mean to cry wolf, but we do think it is extremely important for life insurance management and insurance regulatory bodies to recognize the potentially dangerous path being followed. For many that path does not yet seem dangerous—and for some it may appear to be primrose-lined—but, as we look down the current path, the future appears threatening unless we change course.

III. ALTERNATIVE SOLUTIONS

Many alternative actions are available. Some are effective solutions. Others may relieve the problem at hand but may also create new problems that are bigger than the old. The trick is to tell which is which. We have set down all the solutions we could think of, even if wholly unlikely, with the hope that one idea may lead to another. The ultimate objectives of any solution are interrelated; to improve equity between borrowers and nonborrowers and to strengthen the industry's role in long-term capital formation.

A. *Solutions Relating to the "Conditions"*

As mentioned in Section II, A, two of these conditions are the inflationary economy, which has raised the price of money to unprecedented heights, and regulations in certain states, which still hold the policy loan rate at 5 or 6 percent. Since the spread between the price of money and the policy loan rate is the difficulty, a reduction in the first or an increase in the second would be equally helpful. The third condition is deductibility of policy loan interest on income tax returns.

1. CONTROL INFLATION SO THAT THE PRICE OF MONEY MAY DECLINE (SOLUTION 1)

Obviously it is not within the power of the life insurance industry to control inflation, but it can exert some measure of effective influence in that direction. This is important no matter what other solutions are pursued, because inflation erodes the effectiveness of life insurance and aggravates the money-pricing inconsistency. Any degree of success in this area will hold down the price of money and will help to solve the problem.

2. REMOVE THE UNNATURAL CEILING ON POLICY LOAN INTEREST RATES IMPOSED BY VARIOUS STATES (SOLUTION 2)

This solution applies to new policies only. An increase in the ceiling is being pursued actively, where appropriate, at this time. The NAIC in June, 1973, adopted a model bill embracing the concept of a variable policy loan interest rate, with the maximum rate to be set by each state. Since that time, much effort has been directed toward enactment of the model bill or something similar in those states with a policy loan interest rate limitation below 8 percent. As of June, 1976, an 8 percent policy loan interest rate is permissible under the statutes of thirty-three states and the District of Columbia.[3] Efforts to obtain such legislation continue in most of the remaining seventeen states.

The 8 percent rate by no means solves the problem completely for new policies, but it is a significant improvement. Ultimately, the responsible discretion allowed Canadian companies in setting the rate would seem to be a better answer (see Sec. I).

[3] State requirements vary. In twelve states the statutes do not require a policy loan provision and have no interest rate limitations specifically relating to policy loans. In fourteen states and the District of Columbia policy loan provisions are statutorily required, and the interest rate has to be specified in the policy, but no specific limitation has been set (the general usury statutes presumably apply, two of which are below 8 percent). In twenty-four states the policy loan provision is statutorily required, and an $8\frac{1}{2}$ percent limit has been set in one state, 8 percent in eight states, 6 percent in fourteen states, and 5 percent in one state.

3. ELIMINATE THE DEDUCTIBILITY OF POLICY LOAN INTEREST FOR INCOME TAX PURPOSES (SOLUTION 3)

This solution is highly controversial. If implemented, it could be an effective deterrent to policy loans, but it would meet strong resistance. The consequences are not entirely clear. Although the deductibility of policy loan interest represents a unique application of the tax law, is it logically defensible to eliminate the deductibility of one type of interest and not the others? For that matter, should all interest deductions be eliminated? What about the many thousands of policies that were sold on this basis? These are debatable questions, not merely rhetorical. This solution brings in the entire question of tax reform and is clearly outside the scope of this paper.

B. *Solutions Relating to the "Diseases"*

We suggested earlier that the three diseases that cause excessive policy loans are the money-pricing inconsistency, the product-pricing inconsistency, and the distribution-pricing inconsistency. If the conditions that underlie these diseases cannot be removed, then the next best approach is to try to cure the diseases. These solutions attempt to control the problems as much as possible, or at least to isolate them. They are accomplished through design of products, pricing patterns, dividend scales, and commission scales.

1. DESIGN PRODUCTS WITHOUT A POLICY LOAN PROVISION (SOLUTION 4)

The complete way to solve the problem for new business would be to eliminate the loan provision. When the policy loan concept was developed about a century ago, credit facilities were limited and policy loans served an important function. Today credit facilities are widely available, and loans are granted readily by a variety of lending institutions. Presumably, the assets for these policies without the loan provision would have to be insulated from the effects of loans on policies with the loan provision, so as to distribute equitably the respective investment yields. If a life insurance company wished to continue to provide loans secured by the policy, it could offer a choice between a policy with loan provision and one without, or it could offer loans through a subsidiary at current rates.

This solution is not currently possible; it would require legislative changes in forty states that specifically require that the contract include a policy loan provision. Others might require it if they thought their citizens were being discriminated against. It might be difficult to implement this solution, particularly for one company, but it is an intriguing approach, and some would say the only real solution.

2. DESIGN A POLICY THAT IS PRICED TO ANTICIPATE THE EFFECTS OF POLICY LOANS (SOLUTION 5)

The previous solution designed policy loans out; this one designs them in. Pricing of this product would anticipate a high policy loan level. Unfortunately, a "policy loan special" will have poorer performance characteristics than the regular products; if the agent and the policyowner have the right to choose, they will choose the regular product with better performance. Furthermore, there is no way to predict whether or not a particular policyowner will follow the policy loan route, so this solution could not be controlled. It is impractical.

3. DESIGN A DIVIDEND SCALE THAT VARIES WITH THE MAXIMUM POLICY LOAN INTEREST RATE SPECIFIED IN THE POLICY (SOLUTION 6)

This solution is already being used by several companies to reflect the differences among the 5, 6, and 8 percent policy loan interest classes of business. It may be applied to new and/or existing policies. Equity may be improved if both new and existing policies are given the opportunity to obtain the highest permissible loan rate. The biggest advantages of this solution are that it is in the right direction and it is acceptable to insurance regulators. In fact, at least two states require that if a company uses a maximum loan interest rate above 6 percent, and if the earnings on that class are substantially higher than on the 6 percent class, then this must be reflected through lower premiums, higher dividends, or both. The biggest disadvantage is that the solution does not distinguish between the borrower and the nonborrower; it may actually encourage some 5 and 6 percent nonborrowers to borrow. This solution is analyzed in Section IV.

4. DESIGN A POLICY WITH POLICY LOAN INTEREST RATE LINKED TO GUARANTEED RESERVE INTEREST RATE, AND WITH DIVIDENDS MODIFIED ACCORDINGLY[4] (SOLUTION 7)

This solution involves two changes in the contract. First, the policy loan provision would specify an interest rate equal to the interest rate used in computing reserves, plus an allowance for the expenses of processing the loans, say 1 percent. Second, the dividend provision would state that dividends on the policy would reflect the amount of policy loan outstanding. This solution is an intriguing variation of solution 8, applicable to new policies. One concern with this solution would be that the artificially low policy loan interest rate might actually encourage policy loans, simply because it would *appear* to be so attractive. This approach is being used by one company in its variable life insurance contract.

[4] Proposed by C. Norman Peacor, F.S.A., in *CLU Journal*, April, 1972.

5. DESIGN A DIVIDEND SCALE THAT REFLECTS ACTUAL POLICY LOAN EXPERIENCE FOR SPECIFIC POLICIES RETROSPECTIVELY (SOLUTION 8)

For participating business this is the one solution that attacks the problem of equity directly and is equally effective for new and existing business. Because of its strong appeal, this solution is analyzed in greater depth in Section V.

6. DESIGN COMMISSION SCALES AND HONORS SYSTEMS THAT LEAD THE AGENT TO AVOID ENCOURAGING POLICY LOANS (SOLUTION 9)

When the agent sells a case using minimum deposit or borrow-to-buy, policy loans are encouraged. On the other hand, when the policyowner borrows for any other reason, it is not likely that the agent has any direct involvement. Except possibly for policies designed for minimum deposit, it is not possible to predict which policies will be subject to loans or for what reason. Thus, the commission scale for a specific policy cannot be designed to anticipate loans. However, it is possible to include a compensation incentive for agents with relatively low policy loan levels, since they have demonstrated a smaller proportion of minimum deposit cases. For example, the company-wide average percentage of policy loans to cash values can be determined, and an agent with a lower percentage can be given a compensation incentive tied to that percentage. If this is done, the company must stress to the agent the importance of not interfering with policy loans after the policy is issued.

The honors system (recognition of agents' performance) also has potential as a means for leading agents to avoid encouraging policy loans. For example, agents with loan ratios more than double the company average could be ineligible to participate in the honors system.

C. Solutions Relating to the "Symptoms"

Most of the symptoms of the policy loan problem would diminish noticeably if progress were made in changing the underlying conditions or curing the diseases. One useful solution not yet mentioned pertains to the symptom of policyowner complaints about not understanding the consequences of borrowing on the policy values, and possibly to the other symptoms as well.

1. PERSUADE POLICYOWNERS TO REPAY EXISTING POLICY LOANS AND TO BORROW ONLY FOR EMERGENCY PURPOSES (SOLUTION 10)

This is an action that many companies have tried in recent years, with varying degrees of success. The persuasive points to be made are that policy loans tend to defeat the original purpose of the life insurance, the amounts borrowed are often dissipated in nonvital expenditures, cash

values offer a ready supply of credit if and when needed for emergency purposes, and heavily borrowed policies are much more likely to lapse. Also policy loans may change the intended patterns of payment at time of death, and they may affect other aspects of the estate plan. In the short run, policy loans may appear attractive, but in the long run, if not repaid, they often spell disappointment.

D. *Comparison of Alternative Solutions*

No doubt other solutions and variations will be proposed to help alleviate the policy loan problem, and we will welcome them. In order to gain

TABLE 9

COMPARISON OF SOLUTIONS

SOLUTION	OBJECTIVES		APPLICABILITY		EFFEC- TIVE- NESS*	FEASI- BILITY*
	Increase Equity	Increase Capital Supply	For New Policies	For Existing Policies		
1. Control inflation	+	+	+	+	5	2
2. Remove 5–6% ceiling	+	+	+		5†	4
3. Eliminate deductibility		+	+	+	3	1
4. Eliminate loan provision	+	+	+		5	2
5. Policy loan special	+		+		1	5
6. Dividends reflect loan rate	+	+	+	+	3	5
7. Loan/reserve rate link	+	?	+		3	2
8. Dividends reflect loans	+	+	+	+	4	3
9. Commission/honors incentive		+	+		2	5
10. Persuasion		+	+	+	1	5

* Scale refers to degree of effectiveness/feasibility (in our opinion): 0 = no effectiveness/feasibility 5 = perfect effectiveness/feasibility.
† This assumes no ceiling. Increasing the ceiling to 8% is effective at the "3" level currently.

a better perspective about the relative merits of the proposed solutions, Table 9 was prepared to highlight their principal characteristics according to objectives accomplished.

IV. DIVIDENDS VARYING WITH THE POLICY LOAN INTEREST RATE

A. *Description*

Separating policies into dividend classes by recognizing the contractual policy loan interest rate is one possible basis for a dividend refinement (referred to as solution 6 in Sec. III). These new classes permit the achievement of greater equity between blocks of business with different policy loan interest rates than the current structure, which treats them all as one block. The homogeneity of the risks in each class will be improved further

if distinctions within these classes are also made for business with significantly different borrowing patterns, such as tax-qualified business. The highest flexible policy loan interest rate permitted by law should also be made available to minimize the surplus distribution problem that develops whenever the loan rate is significantly less than that for alternate sources of funds.

The ability to introduce a higher policy loan interest rate is severely restricted in the United States, especially by those states with low maximum loan rates.[5] Today these limits frustrate the equitable treatment of new buyers. More freedom exists in Canada, where policy loan rates have not been subject to such low arbitrary limits since 1969. Uniform adoption of a higher maximum rate (or, better yet, the Canadian approach) would permit companies to charge borrowers a rate that would not have a depressive effect on nonborrowers' dividends.

This dividend refinement credits the interest gain based on the investment earnings attributable to each class. The investment experience for all policies with the same contractual loan rate is combined, including that from policy loans. Thus, the dividend interest rate reflects the average borrowing of all policies in the class.

The surplus distribution refinements would probably be limited to the interest factor. We know of no evidence that links mortality experience and policy indebtedness, so the mortality factor would not change. Expense savings are reduced by the costs associated with policy loan activity; the normal business practice is to deduct these costs from the gross policy loan investment income. Heavily borrowed policies tend to have higher termination rates in later policy years, but for some companies this is offset by better persistency in early policy years. Any significant differences should be recognized.

A dividend interest rate would be calculated for each class in the form of a weighted average of the policy loan rate and the company's portfolio rate on assets other than policy loans, each net after expenses and taxes. For a typical policy with a 5 percent loan rate, the dividend interest rate might be 5.18 percent. This rate assumes that the dividend class has loans equal to 25 percent of the cash values, that the net non–policy loan portfolio rate is 5.5 percent, and that the net earnings rate on a 5 percent policy loan is 4.2 percent. Similar values could be calculated for other borrowing levels and/or policy loan interest rates. Dividends on policies

[5] The maximum loan rate is 6 percent in fourteen states and 5 percent in New York as of June, 1976. Presumably the usury limits apply in two other states (6 percent in Pennsylvania and 7 percent in Michigan), although this question has not been resolved.

with higher loan rates are higher, reflecting the larger contributions to surplus made by these classes of policies.

The only major administrative changes required to implement this refinement are (1) adding the policy loan rate to the basic policy record (if it is not already there), (2) recognizing this rate in the dividend interest rate calculation, and (3) coding for amended policies. A system to determine the portion of cash values borrowed for each class would also have to be developed.

If this approach is used, we believe it should include both the higher policy loan interest rate for new issues and the right to amend to the higher rate for existing business. A number of companies are currently differentiating their dividends by policy loan interest rates for both new and existing business. At least one company has instituted an amendment program, and several others are in the process of doing so.

Offering existing policyowners the opportunity to amend their contracts is consistent with past efforts to make policy improvements available to existing policyowners whenever possible. Thus, the policyowner who is primarily interested in long-term, low-cost life insurance protection can obtain higher dividends without giving up the immediate availability of a policy loan.

An amendment program could be a major undertaking. The offer could be as simple as a premium stuffer stating that the opportunity was available, or as elaborate as a personal presentation by an agent. The administrative effort required will strongly influence the kind of offer selected.

B. *Effects of This Refinement*

1. ON THE BORROWER

We will refer to "the borrower" frequently in this section and the next. This will refer to a policy with a substantial or maximum loan, unless otherwise stated.

The effect of this refinement on policies with loans is at best indirect, since the same dividends are paid on policies with loans as on those without. Under current and foreseeable economic conditions, the substantial borrowers will continue to be subsidized by nonborrowers and "less-than-average" borrowers in each dividend class, but the subsidy between policies with different loan rates will have been eliminated. Minimum deposit, arbitrage, and loans for other purposes may continue to be attractive to the user.

2. ON THE NONBORROWER

Dividends under this refinement are likely to be higher than those under the present system for all policies except those with the 5 percent

policy loan rate. The nonborrowers with the highest policy loan rate will benefit the most. The actual results will depend on the portion borrowed for policies within each policy loan interest rate grouping. Borrowing will normally be heavier at the lower loan rates.

3. ON THE COMPANY

Other possible positive side effects of this refinement may include maintenance of the company's competitive position, possible future reduction in drain on cash flow in periods of high interest rates, and minimization of the incentive for replacing older policies.

Possible unfavorable aspects of this refinement may include increased borrowing by those who feel they are being penalized, increased termination rates for heavily borrowed policies with lower loan rates and now probably lower dividends, a possible temporary competitive disadvantage in those states that do not permit a higher loan interest rate (as long as some companies do not adopt this refinement), and a need for separate sales aids for each loan interest rate. Also, it does not completely solve the problem of reduced investment yield due to the continued, albeit reduced, need for liquidity.

C. *Rationale Supporting This Refinement*

The primary reason for considering this approach is that it provides greater equity among these classes of policyowners with a relatively small amount of effort. Consider what happens if the dividend scale is changed to distinguish among policies with a 5 percent, a 6 percent, and an 8 percent policy loan rate. The dividends will be more fairly apportioned. Without this refinement the 8 percent class would in effect be subsidizing the other two classes, the 5 percent class more than the 6 percent class. Similarly, the 6 percent class would be subsidizing the 5 percent class. Now each class reflects its own investment experience.

During the last ten years the investment earnings rate differential between blocks of business with different loan interest rates has increased in many companies to the point where it should be recognized. Other companies are just beginning to feel the impact of the higher market interest rate on their policy loan accounts. We would suggest that it is practicable to recognize the different interest earnings levels among classes of business with different policy loan interest rates when the dividend interest differential between classes is 0.10–0.15 percent. It would not have been particularly effective to adopt this refinement in past years when the lower level of borrowing produced relatively insignificant differentials among the classes.

This refinement fits the traditional structure. The dividend classes are based on factors determinable at issue. Everyone has the right to borrow and participates in the total experience that emerges for that policy loan rate class.

In order to take advantage of the larger subsidy granted to the borrower, minimum deposit sales may shift to companies that choose to stay at the lower loan rate and not differentiate. Eventually such policies may become less attractive as high policy loan levels reduce the investment yield, and knowledgeable nonborrowers shift to a company that offers an 8 percent policy and differentiates. This possibility, along with fairness, should encourage most companies to consider making this refinement.

D. *Weaknesses of This Refinement*

The major weakness of this refinement, in our opinion, is that it does not eliminate the inequity between the borrower and the nonborrower within each policy loan rate class. We recognize also that the refinement complicates the dividend distribution system. The first step is relatively simple, but it could lead to more and more distinctions, and each would increase the work load. It may also increase correspondence, since questions are likely as to why any distinction is necessary, and in particular why this distinction and not another one. For example, someone may ask why distinctions are not made by plan or policy duration to reflect differences in borrowing levels, since tax-qualified and non-tax-qualified differences are recognized.

Each distinction may also increase the amount of rate material and sales aids—at least each loan interest rate will require separate support. This increases the possibility of errors in handling. Other practical considerations, such as storage area limitations, must also be considered.

The refinement complicates dividend comparisons—both current illustrations and actual histories. How does the consumer compare policies with different loan rates and dividends? Are competitive comparisons (both internally and externally in published data) illustrated at each loan rate or by state of issue?

The refinement may actually encourage some existing policyowners to borrow by emphasizing the favorable loan rates. They may feel that, as long as they are being treated in the same way as borrowers, they might just as well borrow. If this were to occur, dividends would be affected further.

V. DIVIDENDS REFLECTING ACTUAL POLICY LOAN EXPERIENCE

A. *Introduction*

Earlier we pointed out that, for the entire period from 1890, when policy loans first became generally available, until the first credit crunch in 1966, the policy loan rate had always been set high enough above the current price of long-term money to protect the interests of the nonborrowing policyowner. A higher rate is not a serious detriment to the borrower, since he has the alternative of using the policy cash value as collateral and borrowing elsewhere at the market rate. Since 1966 inflationary pressures have pushed new investment rates to record levels—unprecedented in at least 175 years—that are considerably higher than the fixed policy loan rates. By 1969 the Canadians had responded to this increase, and the previous informal agreement between the companies and the authorities to limit the loan rate was changed to permit reasonable rates in the marketplace. As a result, Canadian companies were permitted to restore the policy loan rate to its traditional relationship with the money market for new issues, and many have done so. Similar freedom does not exist in many parts of the United States.

Thus the company cannot set a policy loan rate consistent with general market rates in all states. Nor can the loan provision be left out of the policy. As a result, the policyowner does not have a choice. He must buy a policy with a loan provision whether or not it is wanted, and must pay for it whether or not it is used. This is a "combination" sale. The voluntary actions of others can and will establish a higher cost for insurance because of this built-in right unless some changes are made.

As long as the policy loan rate is comparable to that of alternate sources of funds, the present surplus distribution system works effectively. Policyowners can borrow as needs arise, and each policy carries its own weight. If the loan rate is higher, the policy loan assets will contribute more to surplus than the nonloan assets. However, the number of such cases will be small, since the borrowers have alternate sources of loans available to them. Therefore, in this situation we do not consider the practical result of the current distribution system to be inequitable. On the other hand, when the policy loan rate is lower than prevailing market rates, the fairness of the present surplus distribution system (which makes no distinction) breaks down. In contrast to the previous situation, the nonborrower here has no alternatives. The policyowner no longer receives "insurance at actual cost," contrary to the basic principle of participating insurance. Thus the failure of some states to approve higher rates and the inability to increase 5 or 6 percent rates for existing business have created an increasing inequity among policyowners in current dividend

payments; in effect those who borrow are being subsidized by those who do not. How can equity be restored? Is there a fair and practical way to allocate dividends between the borrower and the nonborrower?

Of the ten alternatives discussed in Section III, there is one that addresses the problem of equity more directly and more effectively than any of the other nine for both new and existing participating insurance—direct recognition. If the present distribution system were modified to reflect the actual loan experience for specific policies, it would achieve greater equity, since it would recognize the difference in contributions to investment earnings of the borrower and the nonborrower. It would credit interest gain in proportion to a policy's contribution to that gain. Some will say without further analysis that such an approach is illegal. However, the legal issues presented by this approach have never been litigated and are not specifically covered by statutes or regulations.[6] Thus, possible legal questions should not prevent an in-depth analysis from the actuarial standpoint.

Our objective in this section is to propose such an application and to show that this distinction is consistent with established actuarial principles. *The equitable distribution of surplus is primarily an actuarial matter.* It is the obligation of actuaries to carry out this responsibility. Therefore, we believe that now is the time to set down the actuarial analysis of the surplus distribution problem created by policy loans and to determine how to apply basic actuarial principles to this new condition.

B. *Description*

This dividend refinement, which recognizes policy loans directly, would probably be limited to the interest factor for the same reasons given in Section IV. The interest gain credited would be based on the proportions of policy loan assets and non–policy loan assets attributable to each policy.

The dividend interest gain would be computed by crediting the average portion of cash values borrowed during the past policy year with one dividend interest rate, and the average portion not borrowed with another dividend interest rate. One way to determine the average amount borrowed is to set up a weighted-average policy loan balance field on the policy's master record. At the time of a new loan, the loan balance is multiplied by $\frac{1}{365}$ times the number of days remaining to the next policy anniversary; the result is entered into the "average" field. If the loan balance is increased or decreased during the policy year, the amount of

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[6] For a discussion of the legal issue involved see Donald J. Schuenke's paper "Dividends to Policyholders—1974," presented to the legal section meeting of the American Life Insurance Association, November, 1974.

increase or decrease is multiplied by $\frac{1}{365}$ times the number of days remaining to the next policy anniversary, and that result is added to the average field. After the average field has been used in the dividend calculation, it is erased (although it will be retained in some historical record). On the policy anniversary the current loan balance is entered into the average field for the next cycle of loan events.

The dividend interest rate credited to the average portion borrowed is the policy loan rate after expenses and federal income taxes. For the average portion not borrowed, the dividend interest rate is based on the company's portfolio rate after expenses and federal income taxes on assets other than policy loans.[7]

Theoretically, the dividend interest rate on the borrowed portion might be reduced further by recognizing "what might have been." If the portion of aggregate policy assets borrowed had been smaller, the nonloan assets would have been larger. In today's economy this change would have increased the dividend interest rate applicable to the nonloan assets

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[7] The "net rate after taxes" must also be defined, since it no longer has an absolute meaning under the 1959 tax law. There are at least three ways to define an after-tax rate. To simplify matters, it is assumed that the company is a Phase 1 taxpayer and that there are no tax-exempt, interest-paid, or qualified reserve items. The first we shall refer to as the *constant-deduction method,* which is analogous to a "combined company" approach. Let us define the following terms:

i^{NBT} = Net rate after expenses and before taxes for a specific investment;

i^{NAT} = Net rate after taxes for the specific investment;

$\quad i^x$ = Net rate after expenses and before taxes for *all* investments as defined in the tax code;

$\quad i^v$ = Average valuation interest rate for total reserves;

$\quad V$ = Mean of the company's mean reserves;

$\quad A$ = Mean of the company's total assets.

On the assumption that the tax is 48 percent of i^{NBT} (except for the statutory deductions expressed as a rate), we have

$$i^{NAT} = i^{NBT} - 0.48i^{NBT} + 0.48i^x(1 + 10i^v - 10i^x)V/A .$$

Under this method, the required interest deduction does not vary with the investment rate.

The second method is a varying deduction method, analogous to a "separate company" approach. Here it is assumed that the statutory deduction is based on i^{NBT} rather than i^x. This leads to the relationship

$$i^{NAT} = i^{NBT} - 0.48i^{NBT} + 0.48i^{NBT}(1 + 10i^v - 10i^{NBT})V/A.$$

Since the statutory deduction is not based on i^{NBT}, the weighted after-tax rate for all investments under this method will not be equal to the after-tax rate of the company.

The third method is the marginal investment method, under which equivalent before-tax rates rather than after-tax rates are computed by assuming that the new investment replaces an existing one and is taxed at marginal rates. These marginal rates are described in John C. Fraser's paper, "Mathematical Analysis of Phase 1 and Phase 2 of 'The Life Insurance Company Income Tax Act of 1959,' " *TSA,* XIV, 51.

for each policy. The reason for the "might-have-been" enhancement is that most of the borrowing in recent years forced companies to divert cash flow into policy loans. Anticipated policy loan demand also diverts cash flow to highly liquid, lower-yielding investments. This meant forgoing investing in other assets at rates that would have raised the portfolio yields. The calculation of the amount of such yields forgone could be based on a portfolio-type version of alternate investments to policy loans over the last eight or ten years; some would go further and base the calculation on the rate that could be obtained if the borrowed values were repaid and the funds reinvested in other assets currently. This concept is debatable, and at first blush we question its advisability, but it demonstrates the diversity and complexity of this subject. We would welcome reactions to these alternatives.

1. NUMERICAL ILLUSTRATIONS

Current dividend payments to specific policyowners would be changed significantly by this refinement, but the total amount of dividends paid would not be changed. For example, assume for simplicity that all policies have a 5 percent loan rate; assume a non–policy loan net after-tax portfolio investment rate of 5.5 percent and a 4.2 percent net earnings rate for a 5 percent policy loan rate after expenses and taxes; and assume that 25 percent of the total available cash value has been borrowed. Although these figures are hypothetical, they are reasonably similar to those of a number of companies. A policy with no loan contributes 5.5 percent of its cash value to the company's total investment income, and a policy fully borrowed contributes 4.2 percent, a differential of 1.3 percent. If two 35-year-old buyers purchased $10,000 ordinary life policies twenty years ago, and if this interest differential were reflected in their current dividend, the one with no loan would receive $50 more than the one with full borrowing ($200 versus $150, assuming a $3,700 cash value). The result for those between the two extremes is proportionate, as shown in the accompanying table.

Percent of Cash Values Borrowed	Dividend Interest Rate	Approximate 20th-Year Ordinary Life Dividend
0%	5.50%	$200
25%	5.18	188
50%	4.85	175
75%	4.53	163
100%	4.20	150

These dividend payments are substantially different from those based on the company's overall portfolio rate including policy loans. Without this refinement, the dividend interest rate would be 5.18 percent, and every policyowner would receive a $188 dividend. Under this system, which is the one used by most companies today, the nonborrower loses $12, or 0.32 percent (5.50 percent minus 5.18 percent) of the cash value, while the maximum borrower gains $38 due to an unearned extra 0.98 percent. The borrowers gain more because their number is smaller. In addition to this subsidy, the astute borrower may reinvest the funds at a higher rate.

This phenomenon has a reverse side too, because these funds will probably flow back when attractive alternatives dry up. In this case the borrower gains a further subsidy at the expense of the nonborrower by being able to buy back into the then more favorable portfolio rate. Thus, the borrower receives insurance at lower cost than the nonborrower.

The dividend interest rate differentials will increase as the nonloan portfolio rate increases. This will probably occur for a number of years, making some refinement imperative. On the other hand, if interest rates were to come down, the differentials would decrease. In the example, if the portfolio rate were 4.20 percent, everyone would receive the same dividends.

C. *Effects of This Refinement*

1. ON THE BORROWER

This refinement would reduce substantially the unintended subsidy of the borrower's dividends by the nonborrower. Dividends would no longer necessarily increase in a regular pattern as the policy aged, nor could they be expressed as a fixed amount per $1,000 of coverage.

The occasional borrower will continue to have the convenience of policy loans at a very attractive rate. However, the borrower will also have to consider that the cost of the insurance protection is relatively higher, since the dividend no longer is subsidized by nonborrowers. Some borrowers may find it advantageous to shift their policy loans to a bank or other financial institution. Some may even shift from minimum deposit to term insurance. The borrower who practices arbitrage will now find that the advantage of the investment rate differential has been partially offset by higher insurance costs due to the difference in dividends.

2. ON THE NONBORROWER

During periods of high interest rates, this refinement increases the dividends significantly for the nonborrowers, since they no longer will be

subsidizing the borrowers. Dividends will reflect with much greater accuracy each policy's contributions to distributable surplus.

3. ON THE COMPANY

The most important effect on the company is that it will have carried out more fully its obligation to distribute dividends equitably. This refinement, however, is not trouble-free. It could lead to fewer sales; it will make dividend illustrations more complicated (e.g., what should be shown to the prospective buyer?); and there could be systems implementation problems.

This refinement should have little impact on surplus. The higher dividends to nonborrowers will be paid from a redistribution of the payout between borrowers and nonborrowers. Also, if policy loan activity were to subside and the new-money rate continued to be greater than the loan rate, dividends would increase for all except those fully borrowed.

D. *Rationale in Favor of This Refinement*

Participating insurance is designed to provide insurance at actual cost, but at not more than the guaranteed gross premium. Sufficient margins are built into the premium to cover most unfavorable contingencies, thereby permitting each block of business to be self-supporting. If, as actual experience evolves, some of these margins are no longer needed, they are paid out as dividends. These dividend payments must be determined as equitably as is practical if the insurance is to be provided at actual cost.

These two basic principles—that it be equitable and that it be practical—govern surplus distribution. Equity is the only theoretical requirement, yet perfect equity is unattainable in practice, as Maclean and Marshall have pointed out,[8] so we must strive for the degree of fairness that is reasonably attainable. Many systems are fair and rational; some are fairer than others. The more homogeneous the group, the closer we come to theoretical equity. The guiding principle for practicality is that, whenever a substantial improvement in equity can be obtained at a modest increase in cost, the refinement should be undertaken. Nothing other than practicality should constrain the drive to achieve equity among policyowners.

1. EQUITY

Equity requires that surplus be distributed to policyowners in proportion to their contribution to it. The system must also be adaptable to changing conditions and cannot ignore any significant experience element

[8] Joseph B. Maclean and Edward W. Marshall, *Distribution of Surplus* (New York: Actuarial Society of America, 1937), p. 13.

of gain or expense between different groups of policies. Dividend apportionment based on the contribution theory has been established as accomplishing equity. As Daniel Wells in 1892 stated in his paper on the contribution method,[9] the very essence of the contribution method is that "no member or class of members shall be made to pay for the insurance furnished to any other member or class of members; that the cost of insurance shall not be increased to any individual or class because of the insurance of any other individual or class."

The equitable distribution of surplus is a well-established part of actuarial tradition and practice. Inequity necessarily will arise to a greater or lesser extent in any practical plan of surplus distribution. Periodic corrective actions have been taken whenever needed to maintain or improve equity. For example, as acquisition expenses increased in the 1960's, higher early expense charges were introduced to restore equity between the early terminator and the persisting policyowner. Other recent refinements have included recognition of policy size, sex of the insured, and tax status. Computers have made some refinements economically feasible that earlier had been too expensive to implement.

Today, it is apparent that the present surplus distribution practices should be reexamined, because current circumstances have created gross inequities without a means of remedy. Presently, one member is being forced to pay part of the insurance cost of another at the will of the latter —clearly an inequitable arrangement. The restoration of reasonably attainable equity between the borrower and the nonborrower is both necessary and desirable. Indeed, most state insurance statutes require an equitable distribution of surplus and insist that insureds in similar circumstances be treated consistently. For example, Wisconsin requires that "the remaining surplus shall be equitably apportioned and returned as a dividend to the participating policyholders . . . entitled to share therein" (section 632.62[4][b] of the Wisconsin Statutes). And in New York, "no life insurance company . . . shall make or permit any *unfair* discrimination between individuals of the same class and of equal expectation of life . . . in the dividends" (section 209 of the New York Statutes; emphasis added). The refinement of the contribution method through recognition of actual loan experience is the most direct and effective means available to improve equity.

Traditionally, policyowners have been charged for the right to use an option or a feature, rather than for the actual use. An example is the dividend adjustments made on many older policies with very liberal settlement option rates. All were affected, not just those policyowners who

[9] *TASA*, II, 361.

took advantage of the favorable rates. Of course, no dividends were paid on these settlements, so consideration of an assessment is strictly academic. Robert Jackson suggested[10] that it would have been equally equitable to reduce the terminal dividends for those electing the favorable options. Thus he may support our viewpoint that it would be as equitable to charge those who elect and/or benefit from a provision, whenever it is possible to do so.

Since equity is the cornerstone of this approach, let us restate the problem of inequity inherent in today's policy loan problem. The present surplus distribution system does not distribute surplus in proportion to the policy's contribution to it. The policy with substantial loans contributes less than the dividend interest gain received whenever the dividend interest rate exceeds the net after-tax policy loan interest rate. The additional amount paid to the borrower can come only from earnings on the nonborrower's assets. The refinement described is more equitable than the present system in that it reflects more correctly the actual contributions of each policy to distributable surplus.

The degree of equity attained depends on the experience elements recognized in each dividend class. This refinement would require adding the variable of the degree of borrowing to those usually recognized. The new variable must be recognized if insurance is to be provided at cost. It is different from the others in that it is based on an independent investment decision that directly affects surplus. It is not a life-contingent event.

Basically, insurance companies are established to assume risks involving contingencies that can be measured and to provide policyowners with protection against the occurrence of loss through risk transfer based on a grouping process. The insurable risk (hazard measured by probability) must be an unexpected and uncontrollable event and must be measurable as to time, place, and amount. The pricing system—the gross premiums, reserves, cash values, and dividends—is based on this ability to measure the likelihood of the occurrence of a life-contingent event. Policy loans do not fit into the "normal" measurable risk category. Unlike most other contract features, the loan provision may be used repeatedly whenever the policyowner desires. Use normally is not triggered by events beyond the policyowner's control. The probabilities of utilization are not determinable, and groupings of risks with like expectations are not possible.

Accordingly, the usual insurance principles fail to operate. The policy loan provision, while a contractual right, is not an insurance risk in the usual sense. Since the policyowner has complete control over the timing of borrowing and repayment, the only identifiable measure is whether or

[10] "Some Observations on Ordinary Dividends," *TSA*, XI, 781.

not borrowing has occurred during an interval of time and to what degree. Therefore, we believe that the degree of borrowing, a newly emerging significant experience element, should be recognized as a new variable to determine the excess interest attributable to a policy. In short, proper application of contribution theory may require individual policy recognition.

2. PRACTICALITY

Having argued that the refinement would improve equity, let us now consider its practicality. Equity must not be sacrificed for simplicity, yet refinements that cost more to implement than they redistribute should not be considered. The additional cost to implement this refinement is quite small relative to the impact on individual policyowner's dividends. One field must be added to the basic policy master record to carry the average loan balance. A modest subroutine must be written to compute the interest gain in two portions (as described in Sec. V, B). Once these are done, the only additional work required is to establish the interest rate annually for the nonborrowed portion. The total additional cost to accomplish these changes, as compared to the cost of the existing system, is modest. (Prior to the computer age, this refinement would not have been economically feasible.)

Although this refinement requires modification of traditional practices, it is consistent with the basic principle of providing insurance at actual cost. The refinement could be viewed as simply an extension of current practices based on traditional principles.

3. OTHER APPLICATIONS THAT SUPPORT THE POLICY LOAN USAGE VARIABLE

In the development of variable life insurance, it was recognized that the policy loan provision of fixed-dollar contracts would be incompatible with equity among policyowners. The NAIC model regulation for variable life segregates policy loans from other investments, and the insurance benefits for individual policies vary with the amount borrowed on each policy. Loans on one policy thus do not affect the insurance benefits or costs of any other policy. This situation is achieved by crediting the borrowed policy with an appropriate blend of the investment experience on its policy loan and non–policy loan assets. The dividend refinement we have described is essentially similar.

The refinement may also be required in future "life cycle" or flexible policies. It is conceivable that a policy with various risk benefits and various optional savings vehicles will be offered. If so, this product, like variable life, could require direct reflection of individual investment-type selections, including policy loans, to ensure equity.

Likewise, one could view, and perhaps should view, the present policy-owner as making a "loan/no loan" selection of investments on existing policies. This selection should be recognized in the dividends to maintain equity among policyowners, since the financial impact is no longer inconsequential.

4. REFINEMENT WITHIN BOARD OF DIRECTORS' DISCRETIONARY POWERS

The board of directors is responsible for apportioning surplus equitably and for establishing reasonable classes. For example, New York Statute 57.1 governing the payment of dividends provides: "In declaring and paying such dividend, the Board of Directors may make reasonable classification of policies, and shall declare and pay such dividend in such manner as shall be fair and equitable to the policyowners." Courts have been reluctant to interfere with the boards' decisions and have given them broad discretionary powers to exercise this right and to carry out their responsibilities.

The board has the right and responsibility to determine as many classes as it deems necessary and may use broad discretion in determining the amount of surplus to be distributed, as long as it does not act in bad faith or abuse its discretion. Distributions based on the respective contribution of each class to surplus are well established as being equitable. The contribution method based on this principle has been used for over a century. If this interpretation of a new classification of contributions to surplus holds up under the scrutiny of our profession, it would seem to be well within the board's discretion to recognize this new classification.

5. HISTORICAL REFERENCES

The ongoing refinement process is a natural part of dividend distribution. Careful reading of classic surplus texts suggests that refinements such as this one may have been contemplated or, at the very least, were not deliberately excluded. For example, Edward Marshall in his paper for the Centenary Assembly of the Institute of Actuaries (1948)[11] suggested as one of his five principles of equity: "Within each block of policies, equity should be maintained so that each policy will receive dividends approximately in proportion to its contribution to distributable surplus, taking into account plan, age at issue, policy duration, and any *special benefit* provided" (emphasis added). It would seem that policy loans at 5 or 6 percent rates have become an unintended "special benefit" that should be taken into account.

Allen Mayerson, former actuary of the New York State Insurance Department, could also have contemplated this type of refinement when he

[11] *Proceedings of the Centenary Assembly of the Institute of Actuaries*, II, 28.

stated that "it [equity] requires that each group of policies be self-supporting and depend for its dividends upon its own surplus earnings; no group should contribute excessive amounts to surplus and thereby support other groups of policyowners."[12] Many other references could be cited, but they would be somewhat repetitious, since all essentially discuss providing insurance at cost equitably.

E. *Other Considerations*

I. DOES THIS REFINEMENT INDIRECTLY INCREASE THE LOAN RATE?

It may appear that, in effect, a higher loan rate has been charged because dividends for two otherwise identical policies vary as a result of the difference in amounts borrowed. If lower dividends for borrowers are regarded prima facie as equivalent to charging higher interest on policy loans, this refinement would violate the company's contractual obligation to provide policy loans at a specified rate of interest. In some states this also might exceed the maximum rate permitted. However, if a reduction in the dividend interest rate is construed to be equivalent to an increase in the policy loan rate, it should equally be contended that, whenever the dividend rate is greater than the policy loan rate, the policy loan rate actually assessed is *less* than that specified in the policy contract. It seems that this criticism, therefore, should be directed also toward the present system for its failure to assess the stated rates on outstanding loans. Carrying this argument to the ultimate, the only time the *correct* rate is charged on policy loans is when the dividend interest rate is equal to the net policy loan earned rate!

From an actuarial viewpoint, the policy loan interest rate and the dividend apportionment are two separate and distinct items. Each has substance. Policy loans are made and interest is charged as specified in the contract. Policy loans affect divisible surplus. This impact is reflected in the dividends paid, since the contribution method distributes surplus in proportion to the policy's contributions. The refinement that recognizes borrowing directly is consistent with this firmly established method of distributing surplus. It does not attempt in any way to increase the policy loan rate. It simply distributes surplus more equitably.

Policy loans and dividends are necessarily linked, just as other experience factors are linked to dividends. This does not, however, change the loan rate. The policyowner's choice of investing in the company's nonpolicy loan assets or in its policy loan account is recognized, and the dividend interest gain is proportional to the policy's contribution to investment income based on that choice.

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[12] *Examination of Insurance Companies*, III, 56–57.

2. IS IT EQUITABLE TO RECOGNIZE AN EMERGING EXPERIENCE FACTOR
THAT WAS NOT RECOGNIZED AT THE TIME THE POLICY WAS ISSUED?

The actuarial principle that underlies the contribution method, we believe, supports the recognition of all sources of surplus as they emerge. The gross premium calculation is based on the anticipated cost of providing the insurance benefits. Dividends provide "insurance at cost" by reflecting emerging experience. It seems unduly restrictive to limit subsequent recognition to sources of surplus that happened to be significant and practical to recognize at the time of issue. Such a limit frequently results in inequity when unanticipated changes, such as policy loan problems, occur. Obviously, the subsequent recognition of any factor always involves judgment, yet to preclude the choice requires a narrow interpretation of an equitable distribution of surplus.

A number of precedents exist for subsequent recognition of emerging experience. Some companies recognized policy size and sex retroactively when these characteristics were introduced for new issues, although there were no such distinctions in the original premiums or dividends. Others did not. Each of these refinements has been accepted and has not been challenged. Interestingly, when Congress granted special treatment to tax-qualified business in the 1959 tax law, every company that we know of passed this credit on to existing business even though it had not been recognized at issue. Apparently, some companies concluded that the qualified business tax credit did not change the original rules but the sex and policy size adjustments did, so they accepted the former and rejected the latter two. Granted, dividend adjustments for policy size and sex were redistributions of existing divisible surplus, while the pension credit arose from a new source of funds; nevertheless, each was a dividend refinement made after issue. Each, of course, was defined in terms of policy characteristics existing at issue, though not then specifically recognized in the dividend scales.

Several other precedents, less widely known, exist for subsequent recognition of a factor. For almost twenty years after they were first imposed on life insurance, a major mutual company reflected the premium taxes of each state in the dividends of the residents. Other companies also recognized these taxes in this manner for a number of years. The National Convention of Life Insurance Commissioners had recommended this refinement, which was made to maintain equity among policyowners residing in different states. It was never challenged. Subsequently, it was abandoned due to high administrative costs. Recent events and current computer capability suggest that a premium tax refinement could again become appropriate.

Another precedent that has not been challenged is the increase in dividend mortality charges for older business to provide for the immediate payment of claims and for pro rata premium refund at death, after these benefits were extended to old business. This action could be viewed as a reclassification of the insureds after issue.

Some companies introduced higher expense charges for qualified business many years after issue to reflect the increasing difference in operating expenses between qualified and personal business. At issue the expected differences were not thought to be large enough to recognize.

Many companies began paying termination dividends on existing policies when they introduced this practice for new issues. Since this was not part of the original pricing basis, it could be considered as another precedent.

Some have varied dividends by premium frequency for existing business in order to be consistent with the changes in premium frequency factors introduced for new business.

Other precedents for after-issue dividend adjustments have involved policies with disability or accidental death benefits (both positive and negative adjustments), policies with what turned out to be very liberal guaranteed settlement options, and policies with differing impacts of federal income tax, depending on reserve basis.

Perhaps the most directly comparable precedent for the proposed refinement is the dividend practice that distinguishes between two types of premium payment. Here the policyowner, in effect, selects the dividend class. If home collection (debit) rather than payment by mail is chosen, a lower dividend is paid, because of the increased expenses of the collection operation. This practice has not been challenged.

3. PRACTICAL PROBLEMS

There are a number of practical problems that must be considered: dividend patterns may be less understandable, the dividend illustrations for new sales will be more difficult to prepare and compare, and adverse reactions from borrowers could lead to higher lapses. Also, some companies have sold policies that stressed borrowing, but with no difference in dividend illustrations. Since most policyowners are nonborrowers, we believe that most would welcome this action. In fact, the average buyer would probably understand it and consider it to be the fairest thing to do.

4. ULTIMATE IMPACT

What is the ultimate result of taking this action as compared with continuing the present system? Ideally, this action would simply restore the industry to its position prior to the policy loan problem. By contrast, a

possible logical outcome of continuing the present system would be for all to become borrowers. Equity would be achieved if all borrowed. However, many have good reasons not to borrow, and a good solution should not require them to become borrowers to protect their self-interest.

5. WEAKNESS OF THIS REFINEMENT—ARBITRAGE

This proposed action will solve the earnings equity problem between the borrower and nonborrower, but not the arbitrage problem. To solve the latter problem, a new-money rate rather than a portfolio rate would have to be used to calculate the respective contributions to surplus. The potential for financial antiselection exists whenever the policy loan rate is less than the current new-money rate. As long as the company credits dividend interest on a long-term portfolio basis and the loan provision gives the policyowners, in effect, a "demand account" that can be withdrawn or repaid at any time, the conflicting interests will sometimes lead to financial antiselection. In the long run, the company's results depend on its ability to take maximum advantage of long-term investment opportunities offered by fluctuating markets, unimpeded by policy loan demand. Although this refinement cannot entirely ensure that result, it is a big step in that direction.

An alternative that addresses the arbitrage problem more directly is to establish a nominal policy loan rate that reflects the current investment market. The excess of this rate, if any, over the actual policy loan rates charged can be applied to individual policy loan balances and the total (after adjustment for taxes) added to the company's investment income. The result is a higher portfolio interest rate. The interest portion of the dividend is then determined by applying this higher portfolio rate to the initial reserve and subtracting the charge made against the loan balance initially. If the policy loan rate is completely out of touch with the market, this may require some adjustment to avoid negative dividends. If so, this is simply an indication of how bad the potential for arbitrage has become. At least one company uses this approach for part of its operation.

6. SUMMARY—DIVIDENDS REFLECTING ACTUAL POLICY LOAN EXPERIENCE

The voluntary action of borrowing policyowners has reduced investment income for the nonborrowers. The failure to recognize this in surplus distribution has led to inequity. Our responsibility is to identify and reflect emerging experience factors in the best way possible. Introducing a new variable—the amount borrowed—to surplus distribution would restore practical equity. Today, the computer gives us the capability to recognize this factor. Historical references on equitable distribution of

surplus provide guidance, even though they were not concerned with the current issue. We believe that this refinement, which recognizes the proportions of investable assets in policy loans and in other investments, is consistent with contribution theory.

The law allows considerable discretion in apportioning dividends. Some companies may choose to introduce this refinement; others may not. We have attempted to establish its propriety. Actual implementation will require company judgment, as is true of any dividend refinement.

VI. SUMMARY

Over the years, actuaries have paid little attention in their professional deliberations to the policy loan provision. That is understandable, since policy loans have seldom been a significant factor in the usual areas of actuarial interest, such as pricing, product development, experience studies, and tax matters. Until ten years ago, policy loans were largely of administrative and operational interest, except for a period during the 1930's. The history of policy loans is interesting and relevant to actuaries.

Today policy loans *are* a significant factor in the actuarial context. The traditional type of borrower, who borrowed for occasional special purposes, is being superseded by the sustained, substantial, systematic borrower. Policy loans are increasing rapidly in volume; they are reducing the effectiveness of the life insurance policy; they are introducing inequity among different classes of policyowners; and they are interfering with the role of life insurance companies in accumulating capital and meeting the needs of major borrowers. In short, there is a policy loan problem that needs the attention of actuaries.

The numerical dimensions of the problem are highlighted by noting the relationship of policy loans to ordinary life reserves. The 1974 ratio of 18 percent was exceeded only during the early 1930's. But the 1932 ratio of 21 percent was a peak figure, while there is every indication that the current ratio will continue upward. If conditions do not change and the present trend continues, we could easily reach a ratio of 24 percent in 1979, 29 percent in 1984, and 34 percent in 1989—one-third of the reserves in policy loans for the entire industry! This development would be extremely serious for both the life insurance industry and the economy.

The policy loan problem is complex. It has causes and effects not always clearly discernible. It is convenient to think of the policy loan problem as having three levels; using a medical analogy, we have the symptoms, the diseases that are reflected by the symptoms, and the underlying conditions that cause the diseases. The symptoms of the policy loan problem are severely restricted cash flow of investable new money and inequity

between borrowers and nonborrowers, among others. The related diseases are (1) policy loan interest rates that are much lower than current interest rates (a money-pricing inconsistency), (2) a policy with a loan appearing to be cheaper than one without (a product-pricing inconsistency), and (3) a potential conflict of interest for the agent (a distribution-pricing inconsistency). And the underlying conditions are (1) the inflationary economy, (2) state regulations that restrict loan rates to 5 or 6 percent, and (3) tax deductibility of policy loan interest.

Potential solutions to the policy loan problem are numerous, with varying degrees of feasibility and effectiveness. The solutions we have considered include the following.

1. Control inflation so that the price of money may decline—very high effectiveness, low feasibility.
2. Remove the unnatural ceiling on policy loan interest rates imposed by various states—very high effectiveness, high feasibility (however, the current move to 8 percent has only medium effectiveness).
3. Eliminate the deductibility of policy loan interest for income tax purposes—medium effectiveness, very low feasibility.
4. Design products without a policy loan provision—very high effectiveness, low feasibility.
5. Design a policy that is priced to anticipate the effects of policy loans—very low effectiveness, very high feasibility.
6. Design a dividend scale that varies with the maximum policy loan interest rate specified in the policy—medium effectiveness, very high feasibility.
7. Design a policy with policy loan interest rate linked to guaranteed reserve interest rate, and with dividends modified accordingly—medium effectiveness, low feasibility.
8. Design a dividend scale that reflects actual policy loan experience for specific policies retrospectively—high effectiveness, medium feasibility.
9. Design commission scales and honors systems that lead the agent to avoid encouraging policy loans—low effectiveness, very high feasibility.
10. Persuade policyowners to repay existing policy loans and to borrow only for emergency purposes—very low effectiveness, very high feasibility.

Several companies have begun recently to use solution 6. This solution provides dividends that vary by classes according to the maximum policy loan interest rate (5, 6, and 8 percent); the difference in dividends reflects the proportion of cash values borrowed and income received from policy loans in that class. It does not distinguish between borrowers and nonborrowers in that class. This has been an effective and worthwhile step, but it does not go far enough.

Another solution through dividend distribution that comes closer to being "ideal" is solution 8, in which the dividend scale reflects actual

policy loan experience for specific policies. Its appeal lies in its ability to restore practical equity between the borrower and the nonborrower for both new and existing business. It involves a current application of traditional actuarial principles, but there are several serious questions that must be considered. However, this is the solution that we believe would be most effective, short of eliminating the policy loan provision or conquering inflation.

With respect to the remaining solutions, concurrent efforts should be directed toward controlling inflation, increasing or removing the 5 and 6 percent policy loan interest rate ceilings, and persuading both the agents and the policyowners that increasing amounts of policy loans are not in their long-term best interests.

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DISCUSSION OF PRECEDING PAPER

DAVID R. CARPENTER:

Messrs. Kraegel and Reiskytl have given us a very extensive treatise on the subject of policy loans and equity. It should prove quite useful to many of us.

The subject of equity is a very difficult one, for what may have been deemed equitable in our society in the past is not necessarily equitable today. I am sure we all can think of several examples that would substantiate this statement. I somehow have the feeling that the authors' recommended solution to the policy loan problem concentrates on equity much more as it relates to traditional mutual company management than as it relates to the consumer in general or the life insurance industry as a whole.

I am not sure I can accept the statement that "the traditional reason for making policy loans still applies today—namely, the occasional use of the policy loan provision with the expectation of repayment in a relatively short time." If one is truly concerned with the industry problem of providing a major source of long-term capital, I submit that a more real culprit has been our declining ability to attract the savings dollar of the consumer. So I propose that it is preferable to view this overall problem from the standpoint of the consumer; and, if one does so, I believe he will not necessarily agree with the preferred recommendation of the authors.

The authors agree that "policy loans may be used in place of commercial loan sources for reasons of convenience, privacy, availability, credit position, and repayment flexibility." Would it not seem preferable, then, to move in a direction that would allow us to make this service more freely available to the public? Availability on this basis should create a fairly stable loan pattern, thereby allowing the actuary and investment people to price and plan adequately for the future.

I believe the Canadian companies have the right idea. It seems desirable to marshal our forces in the direction of a completely flexible loan rate that would be tied to the market rate for personal secured loans. (It would be of interest to know how well the market rates for personal secured loans have correlated with the new-money rates for long-term bonds. The authors seem to assume that the correlation is nearly perfect. If it is not, I believe that this would have an effect on several segments of the paper.)

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I fully realize that we have many jurisdictions in which to do battle, but we also have the Canadian situation as a precedent. It has been my experience that the public and the legislators have not been educated properly with regard to the policy loan phenomenon and its effect upon the cost of the product. I believe a little education would go a long way toward winning the battle.

It is also my belief that the Canadian solution is more equitable for the life insurance industry as a whole. Guaranteed cost companies are not in a position to assess the policy loan costs retrospectively on a user basis. So, if you wish to talk about antiselection, imagine what could happen if the participating companies moved toward the proposed solution of assessing a significant cost retrospectively on a policyholder use basis. Theoretically, prospective policyholders who had no inclination to utilize the policy loan provision would be swung toward the participating companies, since the guaranteed cost companies would be forced to price the additional cost across all policyholders.

I believe that consumer expectations are a part of the equity question. If we have sold a participating policy with a fixed policy loan rate of, say, 6 percent, I believe it is only natural to conclude that the policyholder expects to pay on the order of 6 percent interest if he wishes to exercise that contractual right. Although the authors have done an excellent job of presenting an extensive list of theoretical arguments as to why participating companies should be allowed to change the rules of the game, it is important to remember that a determination of equitable treatment does not necessarily rely upon logic. I expect that a large number of the precedents discussed by the authors were successful mainly because they had low visibility, were not challenged adequately in the courts, or were challenged in a day when the determination of equity was on a basis different than it would be today.

Before leaving the subject of equity, I will note that I am also disturbed by the opinion of the authors that there is no problem of equity as long as the loan rate being charged is at least as great as the current rate on the money market. From the standpoint of equitable treatment, it is not adequate to take a position of "let the buyer beware." Although it may be true that a policyholder can always use his policy as collateral and obtain a personal loan elsewhere at a lower rate, I am not completely sold on the idea that we have no obligation to permit that same policyholder to borrow his cash value at an interest rate that is reasonable at that point in time.

In summary, I feel quite strongly that now is the time for us all to be concentrating on ways to present to the consumer life insurance pro-

grams that are as attractive as possible compared with alternative forms of savings. The consumer believes he has every right to borrow on his cash value, for he believes that money to be his (after all, he has a right to surrender the policy). Unfortunately, he also believes that he should have the right to borrow that money at an unrealistically low interest rate, probably at a rate closer to the cash-value interest rate than to 5 or 6 percent. Let us educate the public, strike a positive profile, gear up our computers to handle efficiently policy loans and the techniques of repayment encouragement, and fight for a flexible rate that correlates with the rate in the secured loan market.

Time does not allow a thorough discussion of the paper point by point; however, I would like to add a few miscellaneous comments.

In Section II, B, a list is presented representing the advantages of policy loans at fixed low rates. I believe that the authors have confused this subject with the subject of minimum deposit. For example, an agent does not have to be an expert to sell a policy form with a fixed low rate, nor is it especially challenging work. Also, the items listed as disadvantages to the nonborrowing policyowner hint of double counting.

In Section II, D, it is stated that "more recently, we understand, the level of policy loans is beginning to be recognized in pricing for nonparticipating policies, in which case the nonborrower in effect will subsidize the borrower." I do not believe this is a recent development. It always has been true that the interest rate assumption used in the pricing of guaranteed cost policies had to be set at a level that the actuary felt could be earned by the company on a composite of all its investments, including policy loans. The shareholders expect a reasonable return on their equity, so in the end the policyholders must pay for the total costs of the benefits being provided.

The authors have made the assumption that it is obvious the minimum deposit policyholder automatically suffers if the policy loan rate is increased. Although it may be true, I do not believe it is obvious. It would be interesting to see a pencil put to this. There are many variables. If the loan rate goes up, it is expected that dividends will go up or premiums will come down. Another variable that must be considered is the policyholder's tax bracket.

Although I have disagreed with the authors on various points, it has not been my intent to deprecate in any way this very fine effort.

MICHAEL J. COWELL:

For mutual companies in the United States, especially those offering low-net-cost individual life insurance, heavy policy loan utilization

continues to present serious practical and philosophical problems. Messrs. Kraegel and Reiskytl have rendered an invaluable service with their scholarly treatment of this subject. Particularly helpful is their definition of the problem in terms of three kinds of pricing inconsistencies (money, product, and distribution), the conditions underlying these inconsistencies, and the winners and losers in the zero-sum policy loan "game."

The authors observe that if companies were permitted to make policy loans at market rates, there probably would be no policy loan problem. This suggestion assumes that higher policy loan interest rates will discourage borrowing, although within the range of rates involved here it is questionable whether higher interest rates, by themselves, would be a sufficient deterrent. The relationships between policy loan interest rate levels and loan utilization have not received adequate scientific inquiry. However, the few investigations that have been made, including those cited by the authors, tend to suggest that tight credit and high borrowing costs are fundamental determinants of policy loan utilization, and that higher policy loan interest rates—at least up to then current interest rates for short-term borrowing—are only a nominal deterrent to loan utilization.

If policy loan rates were set at market interest rates, it is probable that the money-pricing problem would be eliminated, product-pricing inconsistencies would be reduced substantially, and the extent to which borrowers, by lowering investment returns, penalize nonborrowers would be limited. Higher loan interest rates, however, will not eliminate high lapsation of borrowed business with its attendant impact on costs to persisting policyholders. In fact, to the extent that higher policy loan financing costs erode policy values even faster, the lapsation problem for heavily borrowed business may be aggravated further by higher loan interest rates.

In comparing the traditional pattern of policy borrowing—occasional use with expectation of repayment—with the practice of maximum borrowing of values as fast as they accumulate, the authors describe the former as relatively slow and stable but the latter as "erratic" and leading to high policy loan levels. That maximum borrowing leads to high policy loan levels is indisputable. That it is highly undesirable from the company's standpoint also prompts little disagreement. Its description by the authors as erratic is, however, quite surprising; if anything, it would seem to be more stable and predictable than occasional special-purpose borrowing.

In their description of the extreme scenario of term insurance and

heavily borrowed permanent insurance, the authors portray a weakened industry increasingly vulnerable to regulatory changes and multilife catastrophes. Such a condition obviously would be much more likely for the specialty individual life insurers than for the diversified multiline companies where individual life insurance represents an ever shrinking share of total premium income.

As to the authors' proposed alternative solutions, I would make the following comments:

Solution 1: Control inflation.—I concur fully, but consider this essentially out of our hands except through persuasion on the political scene.

Solution 2: Remove unnatural ceiling on policy loan interest rates.—With the exception of a handful of states, this is becoming a fait accompli at *current* monetary rates. However, while higher policy loan rates will help to reduce or eliminate a money-pricing inconsistency, they will not solve the underlying policy loan problem.

Solution 3: Eliminate tax deductibility of policy loan interest.—This is a surprising solution to be coming from the insurance community. The Carter administration's tax reform package, does in fact, propose to place a dollar limitation on personal loan interest deductions. Some "relief" may be forthcoming if any part of this proposal survives the legislative process.

Solution 4: Design a product with no policy loan provision.—We already have such a product—it is called term insurance! For permanent insurance, the unhitching of reserves and nonforfeiture values under the proposed laws may provide much-needed relief in this direction.

Solution 5: Design a policy priced to anticipate policy loans.—This may be a solution in the case of insurance products intended for business or estate purposes, where a series of policies is designed especially to provide high early cash values, without particular regard to net cost.

Solution 6: Design dividend scales varying by policy loan interest rate.—Several companies have adopted this approach. Like solution 2, while this approach reduces the money-pricing inconsistency it does not resolve the basic policy loan problem.

Solution 7: Link policy loan interest rate to guaranteed reserve rate.—The authors express concern that artifically low loan interest rates may encourage borrowing. There is no solid evidence that policyholders borrow simply because loan rates are low. Tight money and policyholders' credit needs are the more likely determinants of loan utilization, especially when the policyholder is attempting to maintain a financed life insurance program on the basis on which it was sold. While a lower policy loan interest rate makes borrowing more attractive, there is no strong indication that an 8 percent rate discourages borrowing nor that a 6 percent rate encourages borrowing, as long as both rates remain below the prevailing cost of money.

Solution 8: Reflect actual policy loan experience for specific policies retro-spectively.—This is, as the authors suggest, a solution that attacks the equity problem head on, and it is instructive to have their excellent presentation of an approach that most of us have assumed to be illegal. It is hoped that the authors' findings will serve to open up questions as to the legal status of this approach. In the interim, we still have to answer the criticism that it would create separate classes of business after issue, although, as the authors indicate, there is some precedent for doing that. While these questions are being re-searched, another practical though slightly less effective solution may be to vary dividends by a more identifiable classification, namely policy size. I shall address this later.

Solutions 9 and 10: Design commission scales and incentives that lead agents to discourage loan utilization; persuade policyowners to repay loans and to borrow only for emergency purposes.—These solutions represent opposite sides of the same coin—how our agents represent policy loan features, and what our policyholders believe they have been sold. We, as an industry, have created this problem in our enthusiasm to promote the positive side of the policy loan feature. While most of us will agree with the thrust of the authors' solution, it seems unrealistic to expect that we should look entirely to the agents and the policyholders to solve it for us. It is a little like saying (if we were car dealers), "Here, we have built this option into our cars, an option that we have reflected fully in our price, but we are going to ask our dealers not to promote this feature in their sales approach, and will urge our customers not to use it too frequently, because it will impair the operating efficiency of their vehicles."

After reviewing the solutions considered by the authors, and in an attempt to enlarge the range of solutions that are both effective and feasible, I would like to suggest one approach that I have not seen proposed.

To ensure equity between classes of policyholders, we make every reasonable effort at the time a policy is issued to classify it according to expected mortality characteristics as determined by the age, sex, and health of the insured. Over the past few decades we have extended this classification further, through the mechanisms of premium banding and policy fees, to recognize different expectations in expense characteristics between small- and large-sized policies. As the authors note, our dividend scales also have recognized policy size and sex retroactively, when these characteristics were introduced for new issues.

I will not attempt to belabor the issue of what constitutes a class for such purposes, but would point out that many companies have a larger differential in their cost per thousand between the largest and the smallest policy size than they do between standard and slightly impaired risks. The point is that in our price structure we do reflect factors representing

different expectations as to mortality and expense and are beginning to reflect different expectations as to interest earnings. We also have solid evidence that policy loan utilization rates increase sharply with policy size in the cost-competitive mutual companies. Loan values on policies of $100,000 and higher may be borrowed as much as four times as heavily as those on policies under $10,000. As the authors illustrate, even small differences among policy loan utilization rates can justify appreciable differences in dividends over the long run. This suggests the possibility of reflecting these differences in the dividend scale not only for new issues but, if the differential warrants, for in-force business also. This approach is effective—it charges equitably the class of policyholders that has loaned its values—although not quite as effective as the authors' solution that would reflect actual policy loan experience for specific policies. It is also feasible, since the class (policy size) is well established, is created at issue, and is a convenient distinction used in illustrating many cost features.

Again, I would like to thank the authors for creating this forum to discuss such a timely issue, and will look forward to seeing other possible solutions to the problem that I am sure their fine paper has elicited.

<div style="text-align:center;">L. BLAKE FEWSTER:</div>

The authors of this paper are to be commended highly for the extensive survey they have conducted of the current policy loan problem. While many of their statements and conclusions may seem obvious, the paper has been compiled in such a readable fashion that it should be an effective reference document for nontechnical purposes. It also should be of great interest to actuaries and might be useful as reading material for the actuarial examinations.

In Section IV, A, of the paper, there is a brief reference to the dividend amendment approach of one company. The authors may be referring to their own company, which I understand adopted such a procedure about a year ago. Because of the potential educational value of their paper, it would be of great benefit if they could share their company's experience with the rest of the profession. It would be interesting to know such things as (1) what steps were taken to contact policyowners, (2) what percentage of the policyowners proceeded with the amendment, and (3) what side effects, if any, were experienced, such as new loans or loan repayments. Any such practical information would be a useful supplement to the valuable contribution the authors already have made with their analysis of the policy loan problem on this continent.

HENRY S. HUNTINGTON:

Wil Kraegel and Jim Reiskytl have given us a landmark treatment of the intractable problem of too little interest income on too much policy loan indebtedness. In particular, their presentation of the *individual policy approach*, under which the dividend for an individual policy reflects the actual indebtedness on that policy, is much needed if this way of dealing with the problem is to receive due consideration as an alternative to the *block average approach*. Under the latter, dividends vary with the loan interest rate, but without regard to the actual loan activity under the individual policy. This discussion essentially will supplement and amplify the treatment in the paper of these two "solutions."

Since the problem is basically one of distribution of surplus, it seems natural to consider it in terms of the fundamental criteria of a good distribution system—in the words of Maclean and Marshall, the system "should be equitable and it must be practical."

Equity

As Kraegel and Reiskytl bring out clearly, the existence of policy loans today generally reduces the insurer's gain from interest below what it would have been in the absence of such borrowing. The question essentially is how the resulting reduction in divisible surplus is to be distributed among individual policies.

Under the block average approach all policies on a given premium rate basis are classified according to policy loan interest rate. The reduction in divisible surplus described above is then determined, as a function of policy loan interest rate, with respect to the policies in each loan interest rate classification. Finally, the dividend interest rate for the policies in each loan interest rate class is set to recognize the divisible surplus reduction for that class. The dividend under any individual policy is not affected by that policy's loan activity.

The individual policy approach, in contrast, may be thought of as treating the interest contribution to the policyholder's dividend as being composed of two parts. The first part arises from the interest earned on policy loan indebtedness, if any, and the second part arises from the policy's share of the investment return on all other assets. The propriety of treating these two components separately is obviously of central importance in considering the relative merit of these two approaches. If this dual view of assets and investment return is acceptable, it seems obvious that from the standpoint of equity the individual policy approach is superior to the block average approach, since it avoids the subsidization of borrowing policies by nonborrowing policies within each loan

interest rate class. If not, the latter must be our choice, although we should still be mindful that we may strike an intermediate gray area in applying this criterion.

An examination of the characteristics of the policy loan assets and the interest earned thereon reveals at least two bases for the separate treatment needed under the individual policy approach. First, from the standpoint of company investment operations, the policy loan assets are unique in that the amounts so invested are determined by the individual policyholders, not by the company as in the case of all other types of investment. On the face of it, this condition may be considered to imply a direct relationship between the individual policyholder and the investment return on the portion of the policy value that the policyholder has chosen to borrow.

The second way in which we recognize the uniqueness of policy loan assets is in allocating investment income by line of business. Instead of treating policy loans and the interest earned thereon as just additional components of the company's investment activity and including them in the asset and earnings aggregates to be allocated by line through use of standardized methods, the asset and earnings associated with each policy loan are allocated to the line of business of the particular contract securing that loan. It seems clear that continued application of this principle of associating policy loan interest earnings with the particular contract involved would lead ultimately to determining individual policy dividends by means of the individual policy approach. It is only by breaking with the principle at the level of some subdivision of a line of business that individual policy indebtedness can be ignored in determining the share of any particular policy in the divisible surplus.

It may be argued that in treating certain other types of income and disbursement—claims are good examples—allocations by line of business are made on the basis of the particular contract involved, but that this principle is not carried through to charge the full claim against the individual policy giving rise to it. Why should we not treat policy loan interest similarly? Indeed, this is just what is done under the block average approach, where the loan interest rate is the basis for separating dividend classes.

As Kraegel and Reiskytl have explained carefully, such pooling with respect to insurable risks is the essence of insurance, but policyholder borrowing is simply *not* an insurable risk, since it lies entirely within policyholder control. There are certain other types of income and disbursement, such as commission expense, that in effect are allocated to the individual policy in determining its share of divisible surplus. How-

ever, in those cases the decision as to the amount involved is made by the insurer and has essentially the same effect per $1,000 of insurance on all policies in the particular cell of business, so there is no need from the standpoint of equity for distinctive treatment of individual policies within the cell. Policyholder borrowing is unique by being both uninsurable and subject to individual policyholder control of amount.

A word is in order here on the relationship of the individual policy approach to the concept of dividend class. We think customarily of dividend classifications as being in terms of policy specifications, such as plan, age, issue year, amount, and so on, that generally are fixed from the time of issue. (On rare occasions some insurers have split classes after issue, such as upon introduction for new business of dividend class refinements with respect to policy amount and sex, and as between policies with and without disability coverage in order to recognize deteriorated disability experience.) It seems incompatible with the stability normally associated with a policy's dividend classification to consider differences in loan indebtedness among otherwise similar policies, or from time to time under a given policy, as calling for class distinctions. However, if the interest contribution to the dividend is viewed as consisting of a "policy loan" component and an "all other" component, this apparent problem may be obviated.

In the last analysis it should be borne in mind that the underlying reason for the individual policy approach is to promote equity among individual policyholders in the distribution of surplus and that *class is the servant of equity*.

Practicality

In their treatment of the individual policy approach, Kraegel and Reiskytl speak of the need to add a field to the basic policy master record to carry the average loan balance; they still conclude that the cost of implementing this approach is modest. Actually, an additional field should not be needed for this purpose. Since policy loan interest for the policy year is determined by applying the loan interest rate to the same average loan balance, the dividend adjustment needed under this approach may be calculated directly from the loan interest amount as determined for billing purposes without having any such field. The specifics follow:

Let

i_0 = Dividend interest rate on the excess of (i) the total base for the year's interest contribution over (ii) the year's average policy loan indebtedness;

i_{Lr} = Dividend interest rate on the year's average policy loan indebtedness under policies providing for loan interest at yearly rate r;

i_G = Guaranteed or valuation interest rate;

$_n(IB)$ = Total dividend interest base for policy year n;

$_n(AL)$ = Average policy loan indebtedness for policy year n; and

$_n(LI)$ = Policy loan interest for policy year n.

Then the interest contribution to the dividend for policy year n is

$$(i_0 - i_G)[_n(IB) - _n(AL)] + (i_{Lr} - i_G) \, _n(AL) \,, \qquad (1)$$

which may be written as

$$(i_0 - i_G) \, _n(IB) - (i_0 - i_{Lr}) \, _n(AL) \,. \qquad (2)$$

Now

$$_n(LI) = r \, _n(AL) \,, \qquad (3)$$

and, substituting from equation (3) in equation (2), we have

Interest contribution $= (i_0 - i_G) \, _n(IB) - [(i_0 - i_{Lr})/r] \, _n(LI) \,. \quad (4)$

It may be noted that the first term in this expression gives the interest contribution for a loan-free policy, and that the second term involves multiplying the year's policy loan interest by a factor that for a given i_0 (hence a given dividend authorization year for a given premium rate basis) is constant for any given loan interest rate.

Contractual and Legal Considerations

Presumably, the main question involved here is whether or not use of the individual policy approach is considered to be in conflict with the statutory restrictions on the policy loan interest rate. Also, if this question could not be settled finally until after the approach were implemented, the degree of financial risk involved in its implementation would become vitally important. It is to this main question that Mr. Donald J. Schuenke addresses himself in his excellent paper "Dividends to Policyholders, 1974—Legal Considerations in Dividend Apportionment," prepared for the November, 1974, meeting of the American Life Insurance Association.

The legal case *against* the individual policy approach rests essentially on the view that the adjustment to the dividend in relation to the loan indebtedness under the particular policy has the effect of nullifying the statutory and contractual limits on the interest rate that may be charged on such indebtedness.

In its briefest form, the case *for* the individual policy approach is based on the argument that the charge for policy loan interest is made

in strict conformity with the statutory and contractual provisions involved. The next step in the reasoning is that the insurer is required by statute in many states to apportion its divisible surplus "equitably" each year among the eligible policies (e.g., New York Insurance Law, sec. 216, paragraph 1). The key question then is whether it is more "equitable" (1) to reflect in each policyholder's dividend the reduction in divisible surplus due the policyholder's own borrowing or (2) to reduce every policyholder's dividend contribution from interest by the same proportion (of what it would have been if the policy loan assets had been invested at the portfolio rate earned on other assets), regardless of the loan status of the particular policy. This question has been treated in the paper and in this discussion under "Equity."

To round out the treatment of this extremely important aspect of the choice of approaches, the financial risk to an insurer of implementing the individual policy approach in the face of uncertainty on this central legal question needs to be discussed. It would be feasible to apply this approach not only to new business but to all business in force. However, the financial risk of doing so could easily be prohibitive, since an adverse court decision several years after implementation would probably result in the insurer being required to pay retroactive additional dividends to borrowing policyholders in the amounts by which this approach had reduced their surplus distributions.

Also counseling against applying the individual policy approach to old business is the general principle of not changing the rules in the middle of the game. In other words, when policies now in force were originally placed, no dividend distinction was made in relation to the loan status of individual policies. It would seem to be rather harsh treatment of old borrowing policyholders to introduce such dividend reductions after issue even though there would be dividend increases for nonborrowers; such a development would seem likely to hurt policyholder relations more than it would help them.

When the individual policy approach is considered in terms of application only to new business, the roadblocks of financial risk and changing rules in midstream practically disappear. At the time a court action challenging the approach would be settled, the company's potential liability would still be very small. In fact, an early "friendly" suit might be desirable in order to ensure final settlement of the legal question before the cost of an adverse decision became significant. As for the rules-changing aspect, by taking appropriate measures in training agents, preparing sales proposals, and the like, it certainly should be possible to alert new policyholders from the start to the dividend conse-

quences of borrowing. Accordingly, from the legal and contractual standpoint the individual policy approach seems potentially acceptable when limited to new business. It may seem that such limited adoption of this approach would be tantamount to locking up the barn after the horse has been stolen. With a continuing 6 percent maximum rate in a number of states and considerable uncertainty as to how the 8 percent loan interest rate will compare with future normal investment yields, it still seems worth the trouble.

Other Aspects

It is important to consider ease of explanation to policyholders, and understanding by them. In general, it would seem that the individual policy approach should be reasonably easy to understand, once it is recognized that interest earnings available for dividends may be reduced substantially by policyholder borrowing. The case for the block average approach seems more difficult to make, particularly to the nonborrower with a low loan interest rate as to why his dividends are lower than those for a nonborrowing counterpart with a higher loan interest rate.

A final point worth touching is the relationship of the individual policy approach to the policyholder's federal income tax. From the insurer's standpoint the dividend adjustment on loaned policies would compensate for the constructive loss of interest (aside from arbitrage effects). However, because additional loan interest would be tax-deductible for the policyholder while a dividend reduction would not, the borrowing policyholder whose dividend has been reduced does not end up in the same position as if he had paid the same amount as additional loan interest. For this reason, use of the individual policy approach could provide a bit of leverage to legislative efforts to raise low ceilings on policy loan interest rates.

ROBERT H. JORDAN:

Messrs. Kraegel and Reiskytl have done an admirable job of examining and describing the policy loan question. We are in their debt for their thoughtful analysis of the problem.

As I read it, the authors have arrived at the conclusion that the best solution to the problem many companies face, including my own, is to provide an interest credit in the dividend formula equal to the sum of (a) the net interest earned on the loan on that policy and (b) net interest at the portfolio rate (excluding loans) on the remainder of the cash value.

Under current conditions this approach has a very strong appeal, for it charges any decrease in interest earnings caused by loans directly against those who are responsible. Notwithstanding its appeal, I have the following reservations about it:

1. I doubt that it will stand up to court action, but I must leave to others better versed in the law (or to actual experience) the proof of this contention.
2. It is not in accord with my concept of equity. As I see it, equity should be determined on a class basis, not on an individual basis, and the classes should be determined (or be determinable) at issue. Under my concept all 6 percent policies can be classed together and treated differently from 8 percent policies. This concept does not permit differentiation based on an act taken by a policyowner, such as the making of a loan, nor on something as individual as the amount borrowed.
3. Its element of appeal is at the same time an element of concern, for the principle involved could be applied to many other areas where its application clearly seems inappropriate. For example, policyholders found to have become uninsurable (whether such change is within their control or not) might have their dividends cut to reflect their higher expected mortality. Similarly, policyholders found to have changed to hazardous occupations could be reclassified for dividend purposes.
4. It may lead to a serious loss of confidence in participating life insurance on the part of both our agency forces and the public. The major concern here is that two new elements not anticipated at issue would be introduced into dividend classification: a distinction between borrowers and nonborrowers, and a refinement of that distinction to take into account the amount borrowed on a policy-by-policy basis.

As much as I would like the *result* of the application of this idea to the policy loan problem, I feel that the means would not be proper and hope it will not be found an acceptable technique.

<div align="center">DONALD B. MAIER:</div>

This paper does an excellent job of bringing together the history and the many facets of the "policy loan problem." It clearly will be a fine source of comprehensive background information on policy loans for many years to come. This makes it especially desirable that the paper be read carefully by the members and that discussions be presented. It is in this vein that this discussion is written.

In my opinion Section V, "Dividends Reflecting Actual Policy Loan Experience," is rather heavily weighted toward the conclusion that it is entirely reasonable and proper to vary dividends according to the existence and amount of policy loan activity on an individual policy. While I do not take a completely opposite point of view, I feel that this

is such a significant conclusion that it ought to be exposed to greater scrutiny, even if ultimately it may be generally accepted.

I do not intend to argue the technical legal considerations. I also agree that the approach may be technically more equitable in reflecting actual policy costs. It is easy to see how this makes sense from the point of view of the nonborrower, assuming that policy loan interest rates are on the low side—the nonborrower would not have his dividend reduced because funds which might otherwise be invested at a higher return were tied up in policy loans on other policies.

However, I do not think that this argument is so clearly logical from the point of view of a policyholder who wishes to take advantage of the policy loan provision. The provision says that the charge for a policy loan is 6 percent, not 6 percent plus a lower dividend. Many policyholders undoubtedly were told of the valuable loan provision at the time of sale. No doubt it did not occur to either the prospect or the salesman that the exercise of this provision could trigger a reduction in dividends below the level that otherwise would have been paid. What policyholder in need of cash and considering a loan would realize that borrowing could result in lower dividends in addition to the contractual interest charge?

The authors' argument seems to be that, whenever the policy loan interest rate is different from the distributable interest rate used to calculate dividends, the distributable rate is affected by the amount of policy loans. Therefore, the cost of a policy loan is the guaranteed rate plus or minus the amount by which the distributable interest rate is increased or decreased from what it would be if there were no policy loans. This may be so, but the effect of policy loan activity would be the same whether a particular policyholder had taken a loan or not. A policy with a loan and one without would get the same dividend. Thus, the cost of a loan to the borrower is only the guaranteed interest charged for the loan.

In Section IV, "Dividends Varying with the Policy Loan Interest Rate," the authors state: "Offering existing policyowners the opportunity to amend their contracts is consistent with past efforts to make policy improvements available to existing policyowners whenever possible. Thus, the policyowner who is primarily interested in long-term, low-cost life insurance protection can obtain higher dividends without giving up the immediate availability of a policy loan." From the viewpoint of the borrowing policyholder, however, the effect would be much the same as varying dividends according to actual policy-by-policy loan experience. The borrower or potential borrower who opted to keep his 6 percent

loan provision would end up in a class with significant loan activity and would receive reduced dividends as the price of continuing to be able to pay 6 percent on a loan.

The authors give a number of examples involving the equity of recognizing emerging experience that was not anticipated at the time a policy was issued. For example, they refer to retroactive recognition of policy size, sex, tax treatment, disability and accidental death experience, and other items. However, in all these examples the policies affected are of a particular, albeit newly recognized, class, and the adjustment in dividends applies equally to all members of the class. This is quite different, in my opinion, from variations in dividends depending on the individual action of each member within a class.

In defense of recognizing individual action by a member of a class, the authors rely heavily on the fact that *voluntary* action by the member triggers the dividend distinction. Their case for equity is stated in these words: "Presently, one member is being forced to pay part of the insurance cost of another at the will of the latter—clearly an inequitable arrangement." The authors cite several other instances involving election of an option where the earnings of the class will be reduced so that all policyholders of the class, rather than just those who have elected the option, are forced to receive lower dividends. The authors suggest that in each of these cases a variation in dividend, depending upon whether an option is elected, may also be justified. This principle deserves very careful consideration before it is accepted as generally appropriate.

The authors cite the example of certain older policies that have very liberal settlement options, and suggest that terminal dividends could be reduced for policyholders who elect these options. While it could be argued that this is "equally equitable," I am not so sure that it is reasonable from the point of view of the policyholder electing the favorable option. Let us say that the policyholder wishes to surrender his policy for cash and is quoted the total cash surrender value, including any terminal dividend. His settlement option provisions tell him the amount of payment he will receive per $1,000 of policy proceeds and often give him a certain amount of time to make up his mind. He then multiplies the settlement option rate by the total value he was quoted and expects to receive this amount periodically. If we now tell him that he is going to get less because the terminal dividend is reduced or eliminated when he elects a particular option, would he argue that in effect we have changed the guaranteed rate per $1,000 of proceeds stated in the policy?

Certain policyholders continually pay their premiums close to the end of the grace period, while others pay their premiums on or before the

specified due date. Clearly, the company is losing interest in the former cases, and "one member is being forced to pay part of the insurance cost of another at the will of the latter—clearly an inequitable arrangement." However, there is no indication in the provision that describes the grace period that dividends could be affected adversely because of such a later payment.

Most policies show cash values for a limited number of durations, usually twenty years. The table of values indicates that values for durations not shown will be quoted by the company on request. It clearly costs the company to comply with such requests made by certain policyholders, resulting in a reduction in the amount of dividends that otherwise would be payable. Can we institute a special charge for this service or achieve the same result by reducing the dividends of those policyholders who request the service?

I am not arguing from a strictly legal or equitable point of view that reductions in dividends in any of the above cases clearly would be inappropriate. However, I do feel that it is a step that should be taken only upon very careful consideration of the appropriateness of including guarantees in a participating policy and then, if a guarantee turns out to be too liberal, reducing dividends only for those who use the benefit. It seems to me that an argument could be made that this practice abrogates, at least partially, the value of the guarantees set forth in a participating policy.

JOHN C. MAYNARD:

This fine paper certainly will be a permanent reference source on the subject of policy loans.

In the spring of 1977, the Canadian federal government budget included a proposed change in the treatment of policy loans for individual income tax purposes. The change was to treat a policy loan as the payment of a policy benefit in advance and the policy loan interest as a premium. The change would make policy loan interest always non-deductible to the policyholder and would trigger the reporting of income when benefit payments exceeded premiums less dividends to date. The proposal was introduced because the tax officials felt that large policyholders have been able to defer or avoid tax unfairly by taking policy loans. There has been much opposition to the change, but it now appears that it will take effect.

In the paper, attention is drawn to the inequity between borrowers and nonborrowers. Studies show clearly that policy loans are heavier on large policies than on small ones, so that the inequity also can be thought of as being between large and small policyholders.

A strong case in equity is made for modifying dividend scales to reflect actual amounts of policy loans and their rates, but is it proper and justifiable to introduce differences between borrowers and nonborrowers when no such differences were made at time of issue? It would be proper to do this if the voluntary actions of borrowers were seen to be obstructing the effectiveness of the contract for nonborrowers. This can be seen to be the case if we examine an insurance contract with dividends taken as paid-up additions. Inflation brings high interest rates and should bring high dividends. However, if differences in dividend classification are not introduced, the actions of borrowers will cause smaller additions to the sum assured for nonborrowers, and the death benefit will not increase as much as desired and needed in inflationary times.

<center>ARTHUR R. MC MURRICH:</center>

Actuaries owe a debt of gratitude to the authors for their fine contribution to the literature on policy loans. It really is quite surprising that until now no paper has been published in the *Transactions* on policy loans during the 1970's, particularly in view of the growing ordinary life policy loan problem and the attention devoted to a variable life policy loan provision. The authors have taken a leadership role within the profession in addressing the policy loan problem, just as their company, the Northwestern Mutual, has taken such a role in addressing the problem on behalf of the life insurance industry.

When we are addressing a problem as widespread and complex as this one, it is important that as many viewpoints as possible be considered. A loan to a policyholder is regarded as an investment, and as an asset of the insurance company. However, the policy loan does not have many of the characteristics of an investment, nor does it have many of the characteristics of an asset. It has no market value. Unless the policyholder chooses to repay the loan, it never matures but rather is written off at death or surrender. Its standing as an asset can last only as long as there is a corresponding liability. If it were not the prevailing opinion that policy loans are to be regarded as assets, I suspect that the accounting profession would object to labeling them as such and would probably prefer that they be accounted for as reductions in liabilities.

In this discussion, I will address the policy loan as a reduction in policy reserves rather than as an investment or asset. Viewing the policy loan in this way puts the authors' third proposed solution—elimination of the tax deductibility of policy loan interest—in a different perspective.

Unless specifically stated otherwise, my comments will be confined to

the world of theory. I will consider a whole life policy of amount 1 issued at age x, against which a loan of amount $\$L$ was taken at duration t. No other loan activity takes place under the policy. Loan interest is paid annually in advance. The traditional approach would define the reserve at duration t as

$$_tV_x = A_{x+t} - P_x\ddot{a}_{x+t}. \tag{1}$$

Let $_tV_x^L$ represent the corresponding terminal reserve, using the approach that the policy loan is a reduction in reserve. It follows that

$$_tV_x^L = {_tV_x} - L. \tag{2}$$

Using the identity $1 = A_x + d\ddot{a}_x$, we can rewrite equation (2) as

$$\begin{aligned}
_tV_x^L &= (A_{x+t} - P_x\ddot{a}_{x+t}) - L(A_{x+t} + d\ddot{a}_{x+t}) \\
&= (1 - L)A_{x+t} - (P_x + dL)\ddot{a}_{x+t}. \tag{3}
\end{aligned}$$

This prospective reserve equation suggests that we are dealing with a policy of amount $(1 - L)$ and premium $(P_x + dL)$. The reduction of $\$L$ in the face amount of the policy is an expected consequence of the loan activity. The emergence of the loan interest payable in advance, dL, as a premium element will be the subject of the next section.

Policy Loan Interest as a Premium

The policy loan is, of course, really a policy advance. The insurance company gives the policyholder $\$L$ and, provided that interest is payable annually (and, for purposes of this discussion, in advance), will deduct this amount from any sums later payable under the policy unless the loan has been repaid. If an advance is viewed simply as a means of obtaining $\$L$ from an insurance policy, there are at least the following two other means of doing so, both of which are well known to students of the variable life insurance policy loan provision:

1. *Partial withdrawal.* At duration t of a whole life policy issued at age x, the policyholder withdraws $\$L$. The policy face amount is reduced by L/A_{x+t}. The premium remains at P_x.
2. *Partial surrender.* The policy is split into two portions. One portion, of amount $L/_tV_x$, is backed by a reserve of $\$L$. The remaining portion, of amount $(_tV_x - L)/_tV_x$, is backed by a reserve of $(_tV_x - L)$. The first portion is canceled, and the policy continues in force for an amount of $(1 - L/_tV_x)$ with a premium of $P_x(1 - L/_tV_x)$.

These two techniques result in face amounts and premiums after the loan is taken against the policy that are different from those obtained with the advance approach. Nevertheless, both approaches involve

level face amounts and *level* annual premiums. There is much to be gained by analyzing the difference between each of these approaches and the policy advance approach.

Consider the difference between the policy advance and partial withdrawal approaches. After the L has been withdrawn from the policy, the policy advance approach has an excess premium of dL and an excess face amount of

$$(1 - L) - \left(1 - \frac{L}{A_{x+t}}\right) = \frac{L(1 - A_{x+t})}{A_{x+t}} = \frac{L\ddot{a}_{x+t}}{A_{x+t}} = \frac{dL}{P_{x+t}}.$$

The loan interest thus is seen to be in the nature of a premium. It is precisely the level annual premium at attained age $(x + t)$ for insurance of amount dL/P_{x+t}. An interesting variation on the above demonstration is to consider the effect of a loan on a paid-up insurance policy. The same coverage increment gives rise to the same increment dL in premium. When does a paid-up policy become premium-paying? When it has a loan on it!

The demonstration of the nature of loan interest in the case of a paid-up policy can be extended to whole life policies by considering part of the face amount as being "funded" and part "unfunded." First, the case of the policy without a loan will be described (see Guy L. Fairbanks, Jr.'s, discussion of the landmark paper "Analysis of Basic Actuarial Theory for Fixed Premium Variable Benefit Life Insurance" by John C. Fraser, Walter N. Miller, and Charles M. Sternhell [*TSA*, XXI, 343]). The "funded" amount at duration t is the amount of paid-up insurance that can be bought by the tth-year terminal reserve; it is the same as the reduced paid-up value. The "unfunded" amount is the balance of the face amount; at duration t it can be shown that this amount is P_x/P_{x+t}. At any duration t, therefore, a whole life policy can be split into two parts: a paid-up portion of amount equal to the reduced paid-up value, which naturally carries no premium, and an amount of P_x/P_{x+t}, which at attained age $(x + t)$ has a premium P_x. In other words, at any duration the whole life policy can be split and refinanced on partly a paid-up and partly a premium-paying basis.

The same approach can be taken with a policy that has a loan. The reduced paid-up value of a policy with a loan L outstanding is $({}_tV_x - L)/A_{x+t}$. The "unfunded" amount can be shown to be $(P_x + dL)/P_{x+t}$. The premium for the combination is, as before, the attained-age premium for the unfunded portion, or $(P_x + dL)$. The combination can be described in a manner precisely parallel to that for the unborrowed policy: a paid-up portion of amount equal to the reduced paid-up value, and an

amount that at the attained age $(x + t)$ requires the entire premium for the policy. The borrowed whole life policy can also be split and refinanced on a paid-up/premium-paying basis.

Another refinancing approach to the whole life policy with a loan on it can be obtained by analyzing the "partial surrender" technique. It can be shown that the excess premium payable under the policy advance approach, $[dL + (L/{_t}V_x)P_x]$, is precisely enough to purchase $(L/{_t}V_x - L)$ of whole life insurance at attained age $(x + t)$. As opposed to the previous refinancing approach, this approach refinances the policy entirely on a premium-paying basis. The two components are as follows:

1. A portion of amount $(1 - L/{_t}V_x)$ issued at age x with premium of $(1 - L/{_t}V_x)P_x$.
2. A portion of amount $(L/{_t}V_x - L)$ issued at age $(x + t)$ with premium of $(L/{_t}V_x - L)P_{x+t}$.

The sum of the face amounts is $(1 - L)$, and the sum of the premiums is $(P_x + dL)$.

In the above text there are two specific examples of how loan interest refinances or helps to refinance portions of insurance at the attained age at which the loan is taken. In doing so, the loan interest has the characteristics of an attained-age premium. What happens at durations subsequent to the refinancing if no further loan activity takes place? Examination of the terminal reserve equation (4) and the reserve build equation (5) at a duration $(s + t)$ subsequent to the loan activity also indicates that the behavior of dL is similar to that of a level premium.

$$_{s+t}V_x^L = {_{s+t}}V_x - L = (1 - L)A_{x+s+t} - (P_x + dL)\ddot{a}_{x+s+t}; \qquad (4)$$

$$\begin{aligned} [({_{s+t-1}}V_x - L) &+ (P_x + dL)](1 + i) \\ &= ({_{s+t}}V_x - L) + q_{x+s+t-1}[(1 - L) - ({_{s+t}}V_x - L)]. \end{aligned} \qquad (5)$$

The above two equations are appropriate for each one of the following plans or plan combinations:

1. A whole life policy of amount 1 issued at age x, with a loan of amount L taken at any previous duration t.
2. The sum of (i) a reduced paid-up policy (or a directly purchased paid-up policy) of amount $({_t}V_x - L)/A_{x+t}$ that became effective at any previous duration t and (ii) a whole life policy of amount $(P_x + dL)/P_{x+t}$ purchased at the same duration t.
3. The sum of (i) a whole life policy of amount $(1 - L/{_t}V_x)$ with premium $(1 - L/{_t}V_x)P_x$ purchased at age x and (ii) another whole life policy of amount $(L/{_t}V_x - L)$ with premium $(L/{_t}V_x - L)P_{x+t}$ purchased at duration t.

The above three packages are different in form but identical in substance. Assuming no problems with evidence of insurability, the second and third packages could be constructed by a policyholder who wished to obtain SL. However, only the first package gets tax relief on part of the premium. The question is not whether the other packages should also have favorable tax treatment, but why the first package has it at all!

The extensive bibliography generously provided by the authors was a source of some interesting additional reading on the policy loan question. The article "Interest on Policy Loans—Tax Deductible or Not?" by Leonard L. Stark, published in the Spring, 1966, issue of the *CLU Journal*, describes the conditions that must be met before policy loan interest can be deductible. In that article, the author makes the point that "payments which are described as 'interest' but which in fact are a part of the purchase price of the property are not deductible." The author refers to a 1943 tax court case that established this principle. In view of the behavior of policy loan interest as demonstrated above, this principle would appear to apply to policy loan interest. According to my company's law department, the principle has not been challenged directly by other tax court decisions; it is still "good law."

Tax-favored Status of Life Insurance

Interest credited to bank savings accounts is reportable for tax purposes by the account holder in the year earned. Similarly, interest credited to dividends on deposit under an insurance contract is reportable by the policyholder in the year earned. The view could be held, then, that holders of life insurance policies are being favored by the tax laws, since they do not have to report interest credited to their reserves on a current basis. An income tax liability can exist if the policy is surrendered, but will not exist if the policy matures on the death of the insured.

All that I know about the nature of the life insurance contract suggests to me that there is no place for taxation of any increase in value of the contract on a year-to-year basis. My knowledge of the industry and my vision of the industry's place in society cause me to bristle at the prospect of such taxation. Nevertheless it is interesting to examine the amount that might be subjected to taxation each year if the tax status of the in-force life insurance policy were ever to change. My purpose in doing so is *not* to suggest that such amounts ever should be subjected to tax on an annual basis but rather to identify the extent to which, in comparison with other financial instruments, the life insurance policy enjoys favorable tax treatment.

Let TFE_t represent the tax-favored element in a whole life insurance policy in policy year t. This item is easier to label than to define. The least offensive definition, and the one most in conformity with current income tax laws regarding surrenders, can be written in parallel fashion as follows:

1. The excess, if any, of the interest credited to the initial reserve over the cost of insurance based upon the net amount of risk.
2. The excess, if any, of the increase in terminal reserve over the premium paid.

In symbols, these definitions can be written as follows:

$$TFE_t = [i(_{t-1}V_x + P_x) - q_{x+t-1}(1 - {_t}V_x)] \geq 0 \tag{6a}$$

$$= [({_t}V_x - {_{t-1}}V_x) - P_x] \geq 0 . \tag{6b}$$

It is clear from examination of equation (6b) that this approach would tax on a current basis what is now taxed only at surrender of a policy.

For a policy with a loan outstanding, if the loan is viewed as a reduction in reserve and the loan interest is viewed as a premium, the tax-favored element (always nonnegative) is

$$TFE_t^L = i[({_{t-1}}V_x - L) + (P_x + dL)]$$
$$\qquad - q_{x+t-1}[(1 - L) - ({_t}V_x - L)] \tag{7a}$$

$$= [i(_{t-1}V_x + P_x) - q_{x+t-1}(1 - {_t}V_x)] - i(1 - d)L$$

$$= TFE_t - dL \tag{8}$$

$$= [({_t}V_x - {_{t-1}}V_x) - P_x] - dL$$

$$= [({_t}V_x - L) - ({_{t-1}}V_x - L)] - (P_x + dL) . \tag{7b}$$

Equations (7a) and (7b) correspond to equations (6a) and (6b). Of more interest, however, is equation (8), which shows that the tax-favored element under a policy with a loan on it is *less*, by precisely the amount of loan interest, than the corresponding amount on an unborrowed policy. Since the amount of loan interest is regarded as a premium in any event, this result is not surprising.

The mathematics is somewhat laborious, but it also can be shown for each of the two refinancing techniques described in the previous section that the sum of the tax-favored elements equals the amount shown in equation (8). It would appear, then, that all three packages—the borrowed policy and the two refinancing combinations—should receive the same tax-favored treatment. It is obvious, however, that in practice the three packages do not receive the same tax-favored treatment. The policy with the loan on it is receiving more favorable year-to-year

income tax treatment, precisely to the extent of the amount of so-called loan interest. Why is this happening? Examine the following ledger representation of the tax situation:

Situation	Tax-favored Element—Not Includable as Current Income	Amount Tax-deductible as Loan Interest Paid
A...........	TFE_t	0
B...........	$TFE_t^L = TFE_t - dL$	0
C...........	TFE_t	dL

Situation A shows the unborrowed policy; nothing is includable as income and there is no deduction to consider. Situation B shows what would happen under either of the two refinancing approaches described above and what, in my opinion, *ought* to happen under the borrowed policy; the tax-favored element is reduced, or kept at zero, but there is no tax deduction. Situation C shows what *does* happen on the borrowed policy. Both the tax-favored element and the tax-deductible interest paid are increased by the amount of loan interest. In my opinion, a tax deduction has been created out of thin air! If substance rather than form ruled the income tax laws, policy loan interest would not be tax-deductible.

Consider the simple explanation given to the borrowing policyholder of why interest must be paid on his "own money." The policyholder is told that the insurance company's premiums assume that the entire reserve is invested and is earning interest that serves to reduce the policyholder's cost of insurance. The company is prepared to give the policyholder use of his "own money" by means of a loan but must obtain the interest that it otherwise would earn by investing the money. It would seem to be a simple extension of this explanation to point out to a policyholder that the investment income that the insurance company earns, and that goes to reduce the insurance cost, is not taxable to the policyholder. Consequently policy loan interest—money that the insurance company earns for him that is not taxable to him—cannot be tax-deductible by him.

Conclusions

If policy loans were regarded as reductions in policy reserves rather than as assets, extensive modifications to current methods of financial reporting would be required. Both assets and liabilities of all insurance companies would be reduced. Although surplus itself would not be impaired, the ratio of surplus to liabilities would rise in many instances,

sometimes significantly. Policy loan interest would be treated as premiums rather than as investment income. The income tax consequences probably would be monstrous. I am not familiar with the fine points of insurance company taxation, but I suspect that the reduction in taxable investment income caused by considering loan interest as premiums rather than investment income would cause many companies to change their tax situations; a company's entire financial strategy might be affected by a change in tax status.

Although I personally find the reduction in reserve approach more appealing from an intellectual point of view, I would rather not have to deal with its wrenching short-term consequences for the insurance industry. The approach does not have to be rejected for all purposes, however. Some relationship must exist between the two areas, but there is no reason why the logic underlying policyholder income tax treatment must be the same as that underlying financial reporting practices. The above comments would support policyholder income tax treatment as follows:

1. Policy loan interest would not be tax-deductible as interest on a year-to-year basis when paid.
2. At surrender of a policy that has had a loan on it, any interest actually paid to the insurance company would be considered as part of the cost basis of the policy. For a policy that has had a loan on it, any loan interest paid would shelter part of the proceeds at surrender rather than being tax-deductible in the year paid and ignored at surrender.
3. If the policy is held until death, the loan will not have, or have had, any income tax consequences.

When viewed from the traditional point of view, the case for elimination of the deductibility of policy loan interest is perhaps outside the scope of the paper, as the authors point out. The above arguments provide a basis for distinguishing policy loan interest from other types of interest. I would hope that these arguments might help in the realization of the authors' third proposed solution.

Additional Comments

The following comments refer to some of the other solutions proposed by the authors.

Their first proposed solution is to control inflation. It is ironic that policy loans contribute to the very inflation that magnifies the policy loan problem. The availability of credit of one kind or another is definitely one of the most powerful engines of inflation. Given the ease with which policy loans can be obtained, their artificially low price creates a bias in

favor of consumption over investment and makes it easier for individuals to live beyond their means. The future obligations that we create for ourselves by living beyond our means, either individually or collectively, are a great contributor to inflation.

The single solution that best meets the policy loan problem directly is the authors' proposed second solution, removing the ceiling on policy loan interest rates. What is needed is not simply a higher maximum interest rate, although the 8 percent maximum helps, but the removal of the ceiling. Given the current state of affairs, however, the industry cannot expect to have total freedom of choice on setting the rate. Perhaps a suitable index of interest rates in other financial institutions could be constructed that could serve as a guide for policy loan interest rates. The objective would be to set policy loan interest rates high enough that potential borrowers would be inclined to seek loans from financial institutions better equipped to be providers of short-term capital. Life insurance companies then could stick to what they do best, investing on a long-term basis. Our policies could, of course, provide collateral for loans from other financial institutions.

It seems to me that the overall solution to the policy loan problem requires that life insurance policies be able to serve as collateral for loans taken from other financial institutions. If a policy is to provide satisfactory collateral, and if the insurance industry wishes to enable policies pledged as collateral to function effectively in that regard and yet remain in force, it would not make sense to design a product without a policy loan provision. It would be extremely unfortunate if it were necessary to *surrender* a policy simply to obtain the funds with which to repay an overdue loan to another financial institution. For this reason, I must reject the authors' fourth solution as being not only impractical but also undesirable.

The suggestion to remove the policy loan provision can come only from the "asset" approach to loans. The suggestion is pointless when loans are viewed as reductions in reserves, particularly when the refinancing alternatives are available. From the latter point of view, the suggestion could be made that loans not be repayable, or be repayable only at the option of the insurance company; clearly this idea is incompatible with the asset approach to loans because it would not make sense to limit opportunities for maturity of the investment. This idea also can be rejected on several practical grounds.

The authors' fifth solution—pricing to anticipate the effects of policy loans—has been tried by many companies. By such techniques as not

providing first-year loans, refusing to offer a fifth dividend option, or not providing minimum deposit policy illustrations, a company can avoid most minimum deposit business. A company that wishes to isolate its minimum deposit business in a particular product can offer all these frills. The policy pricing, of course, must anticipate a high level of policy loans and must reflect the persistency pattern of minimum deposit business. The price of the product delivers a clear message—"We don't want the business"—and that message is heeded!

The authors' ninth solution suggests compensation incentives for agents with relatively low policy loan levels, or penalties (perhaps not monetary) for agents with loan ratios significantly in excess of company averages. Such compensation techniques do enjoy some success, but they have many drawbacks. They are resented bitterly by agents, who feel that they are being made to pay for the manner in which the policyholder makes use of his policy. The techniques do not distinguish, for example, between "legitimate" needs for money and systematic borrowing; perhaps automatic premium loans should be given special consideration. Furthermore, the leverage provided by such incentive compensation is sufficient to make "close calls" very important to the agents, and standards set by companies for such incentive compensation often are very easy to manipulate. Much valuable home office and field office agency management time, not to mention selling time, is wasted deciding special situations.

Finally, I should like to make two more comments concerning the reduction in reserve approach to the policy loan. First, by using this approach it is easy to see why minimum deposit business is so attractive; part of the premium is tax-deductible! Second, the fact that loan interest is regarded as a premium under the approach is one reason why I could not live with its full consequences. I could not stand the thought of paying commissions on minimum deposit loan interest! On the other hand, perhaps the fact that commissions are not paid on loan interest is precisely the kind of simple, clean-cut compensation disincentive that is needed in such a situation.

DAVID E. MORRISON:

I found this paper to be interesting, informative, and timely under the current circumstances of generally increasing policy loans, asset yields well above policy loan interest rates, and legislation allowing policy loan rates to exceed previous norms. My comments will be restricted to some observations from the Canadian scene and the concept of dividends based on actual loan activity by an individual.

Canadian Scene

Reference was made in the paper to the freedom enjoyed by Canadian insurers to charge interest at rates above the previous level of 6 percent. In general, insurers have charged rates at "reasonable" levels but not rates reflective of actual long- or short-term private borrowing activity. This practice has assured participating policyholders greater dividend returns through increased investment income from policy loans. However, did it affect the level of policy loan activity? I was able to observe the ratio of policy loans to available loan value for policies issued before and after 1968. Policies issued after 1968 with the higher loan interest rates are borrowed substantially less if they are not of the high early-cash-value type. For these latter policies the rate of borrowing seems comparable for the two periods, indicating that the general intention at the time of sale is to borrow substantially against the policy values.

Reference also was made in the paper to government policy on interest deductibility. In Canada, policy loan interest has been deductible to individuals if it can be offset against investment income and the loan can be shown to support a specific investment. This has not been too difficult to document for most individuals with investment income. However, government policy on the subject of life insurance taxation in Canada has been reviewed recently and revised substantially in the latest budget presented by the federal authorities. Tax changes are proposed at both the insurance company level and the policyholder level.

In its simplest terms, a tax on investment income at the insurance company level has been removed, and a tax has been imposed at death on the policyholder. At death, "gain" is computed on a policy-by-policy basis as the excess of the cash value available just prior to death over the cost base of the policy until death. An important element (policy loan interest) has been introduced in computing the cost base of the policy. Coincident with the inclusion of policy loan interest in the cost base of policies for surrender, maturity, or death gain calculation purposes is the disallowance of policy loan interest as a deductible item against other investment income. At least two important results should emerge from this legislation. Policy loan activity, especially of an arbitrage nature, should be reduced in the future, and the trend toward the sale of term insurance should be accelerated. We probably will see attempts to design policies that have low premiums and cash values to avoid any tax at death. Other extremely important changes in the tax law at the company level have been proposed, but they are not pertinent to this discussion.

It is interesting that in Canada, where insurers are generally accorded wider latitude, companies did not approach existing policyholders with an offer to switch their policies to the variable interest rate provision in return for higher dividends, while in the United States this kind of activity appears to be at least in the consideration stage with most companies. I believe it to be generally true that in Canada when the variable loan provision was introduced dividend scales differentiated in favor of the new variable loan provision policies.

Dividends Based on Individual Policyholder Actual Loan Activity

The paper points out that policy loan activity is completely under the control of the policyholder, and from an equity viewpoint it would make sense to vary dividends by a policy loan factor. While I believe the concept should be pursued, I do not think that noncontractual dividend computation is the right approach. Rather, the best approach is to charge an appropriate interest rate for the policy loan. Otherwise, insurers would be permitted to do indirectly what they cannot do directly. In no way am I defending the type of legislation currently in effect in the United States. However, it does appear that it is intended to limit by contractual right the amount of interest charged to an individual policyholder. I believe that policyholders could complain legitimately that they had purchased a contract in which the bold print giveth (policy loan rate) and the fine print taketh away (dividend provision). The best answer lies in a truly variable loan interest provision that permits charging directly for loans at an equitable rate when the loan is taken. This would seem to require further legislative change. Of course, this does not address the problem on existing policies, but I believe that these policies should be treated as a block. In Canada I believe that the Department of Insurance has taken this point of view with respect to dividend scales for policies with a nonvariable loan interest provision.

General Observations

There is an old saying that a borrowed policy is a persistent policy, probably because the insured understands and appreciates the purchased commodity. However, in the interest of dividend scale equity I thought I would relay some of my findings on the policy loan question. On a very old block of policies issued in the United States prior to 1944 on a 6 percent loan interest basis, the policy loan level is one-fourth to one-third of the level on policies issued since 1944 on both 5 percent and 6 percent loan interest bases. There are a number of possible conclusions to be drawn from this information:

1. Long-term policy persistency is lower for borrowers than for nonborrowers.
2. Smaller-sized policies are less likely to be loaned.
3. The type of permanent sale has changed over time to one that emphasizes use of cash values to a greater degree.
4. Longer-duration policies should receive different dividend scale treatment as a result of fewer loans.

C. NORMAN PEACOR:

I am sure I will be joining with many others in thanking Messrs. Kraegel and Reiskytl for their paper on policy loans. As one who has been close to the subject for many years, I found the bringing together of the history and development of policy loans extremely interesting. They also have articulated well the question of equity and the problems of achieving it.

I would like to offer a few comments in connection with solution 7—design a policy with policy loan interest rate linked to guaranteed reserve interest rate, and with dividends modified accordingly. I proposed this in April, 1972, as the paper indicates, and it is worthwhile commenting on a retrospective review of the proposal. It was made at a point in time when interest rates were still "reasonable." There was primary emphasis on trying to solve the problems created by having a large amount of our business written on a minimum deposit basis. In our minds, this created a substantial problem in regard to equity between borrowers and nonborrowers. Also, it appeared that it would take several years to get a substantial majority of the states to a rate such as 8 percent. Hence, my proposal appeared to present a reasonable solution that could be acted upon quickly.

In retrospect, the problem referred to in the paper would have turned out to be very real. When the credit crunch occurred in the mid-1970's and interest rates soared, the presence of a low interest rate on borrowable funds would have led, I believe, to a tremendous cash outflow—disintermediation. To the extent that rates as "high" as 5 or 6 percent slowed down the outflow, the problem must have been eased. An interest rate such as I proposed of only 3–4 percent surely would have made the situation worse. The question of equity would have been solved, but at a price that could have hurt the company seriously.

It might be of interest to note one specific problem that slowed down the utilization of this solution. It is also, I believe, a bar to the utilization of solution 8, which the paper develops more extensively. This information was developed at the time we were giving serious consideration to reflecting policy loan experience on an individual basis. In the process

of conducting the company research on the question, the law division developed an opinion that there were ten states with policy loan statutes that appeared to prohibit the type of differentiation for dividend purposes that we had in mind. This meant that we would have to attempt to have the statutes in those states modified in order to be certain that we could act on a national scale. We did not wish to undertake what appeared to be a long and tedious process, and so, in effect, we abandoned the approach. I would suggest that this question must be resolved before there is any deep consideration of solution 7 or solution 8.

I also would like to comment briefly on solution 9—design commission scales and honors systems that lead the agent to avoid encouraging policy loans. The Massachusetts Mutual has had for several years a general agents' incentive growth plan that offers financial rewards for results. Those rewards, however, are tempered by taking into account both lapse rates and policy loan rates that are above or below the company average. The tempering goes so far as to provide a "knockout" factor if either lapse rates or policy loans exceed a specific level. We also have just instituted an agents' incentive plan, and that, too, has recognition in it for lapse and policy loan experience by agent. I agree with the authors that this plan ranks at the highest level of feasibility (fortunately, because of the presence of computers). As to effectiveness, I think it ranks at least at the level of 2 assigned by the authors (on a scale of 1–5) and, for our company, perhaps even at a level of 3.

In Section IV the authors deal with the question of dividends varying with the policy loan interest rate. We have carried this forward quite extensively at the Massachusetts Mutual and find it to be an effective, although somewhat cumbersome, method of doing business. It is cumbersome because during 1977 we were working with dividend scales for new business predicated on 5, 6, and 8 percent policy loan rates. Moreover, we distinguish within these categories by policy loan utilization, which differs markedly among distinctive products even though the policy loan interest rate may be the same. For example, we have in our portfolio a high early-cash-value policy with an overall loan ratio of better than 50 percent. Within the same portfolio, a low early-cash-value policy has a loan ratio of around 17 percent; therefore, although these policies have the same policy loan interest rate, there is a marked difference in the interest element of the dividend. By the way, before I get into another controversy, may I also point out that we use as the point of departure a basic portfolio rate for all the ordinary non–tax-qualified policies.

The authors are quite right that this process does not eliminate the

inequity between the borrower and the nonborrower. It does, however, reduce this inequity substantially. In addition, with so many states now moving to an 8 percent ceiling on policy loans, the effectiveness of this procedure is increased greatly.

I do think that one other event is taking place that inadvertently may help to alleviate the policy loan problem, albeit in a negative fashion. The authors refer to the impact of inflation in several places in the paper, but not to one outcome of it. If inflation is severe enough, insurance buyers will attempt to cope by shifting increasingly to term-type products on which borrowing generally is not possible. We see marked shifts in this direction today, not only with increased sales of term insurance but also with the continual lowering of premium rate levels that, in large part, is a reflection of higher interest rates. Certainly no one would suggest that high rates of inflation are good because they provide a solution to the policy loan problem.

Again, my compliments to the authors. Many of us will follow with considerable interest further developments in connection with the recognition of policy loans on an individual basis.

HARRY PLOSS:

Messrs. Kraegel and Reiskytl are to be congratulated for having written a comprehensive paper on a subject of current interest. I found the paper of great historical and theoretical interest, but I shall limit my comments to illustrations of minimum deposit plans.

The authors state that "the minimum deposit approach may be the most-used and least-understood financing technique in the business. . . . Minimum deposit is difficult to understand. The concept adds a number of variable factors to the insurance equation; none of these is too difficult by itself, but in combination they become complex." The actuary's task, therefore, is to separate these variable factors in the insurance equation in an appropriate, logical manner so that the true advantages and disadvantages of minimum deposit can be understood. It is all too easy to exploit the complexity of minimum deposit plans to "demonstrate" false appearances to the unwary. The professional responsibility of the actuary to review policy illustrations for clarity and fair representation does not seem to be resolved completely. I trust the authors will continue the analysis of minimum deposit illustrations in the discussions.

This analysis will be limited to policyholder financial considerations rather than marketing, portfolio management, or other company considerations. As illustrated in the authors' Tables 7A, 7B, and 7C and in

Table 1 included with this discussion, the important variable factors in the illustrated policy are as follows:

1. The federal income tax deductibility of policy loan interest.
2. The after-tax rate of interest used to accumulate money.
3. The arbitrage effect of having a 6 percent policy loan rate and a 7 percent before-tax investment rate.
4. The effect of dividend additions versus dividends in cash.

My table is prepared consistently with Tables 7A, 7B, and 7C of the paper, but for a policyholder in the 0 percent tax bracket. It apparently shows that the 0 percent taxpayer outperforms significantly the 25 percent and 50 percent taxpayers in Tables 7A and 7B, respectively. The reason is that arbitrage is the strongest force in these illustrations. This is not, although it appears to be, a demonstration that minimum deposit is a better deal for a low as compared with a high tax bracket policyholder. This appearance arises because the high-income taxpayer loses 50 percent of his arbitrage income to the IRS. A better test of the minimum deposit concept occurs when the investment rate is equal to the policy loan rate, thereby making the 0 percent tax bracket taxpayer indifferent to the use of policy loans.

The substitution of dividend additions for dividends in cash has an effect on the tables. The authors say in a footnote: "Although dividends are used to purchase additions for the minimum deposit policy, they are used to reduce premiums for the policy without borrowing; this makes cumulative payments more comparable." This justification appears unnecessary because of the authors' excellent design of Table 7A, where the footnote says that the net death benefit and net cash value for minimum deposit "includes the fund (minimum deposit advantage under cumulative payments)." Thus the minimum deposit advantage for cumulative payments is not very relevant, since this item can be corrected overnight by a policy loan. The real advantage of minimum deposit is to be appraised by the net death benefit advantage and the net cash value advantage. By the addition of dividend additions to the insurance equation, the evaluation of minimum deposit has been clouded further. The effect shown in Table 5B of a minimum deposit disadvantage of $4,357 in net cash value at forty years for a 25 percent tax bracket is due to the addition of this extra variable to the equation. If Table 5B were redone without dividend additions, the borrowing policyholder would retain the advantage of arbitrage until death.

Therefore, to isolate the first two tax factors, it is important that we

TABLE 1

MINIMUM DEPOSIT (MINIMAL PAYMENT VARIATION) VERSUS LIFE INSURANCE WITHOUT BORROWING: A COMPARATIVE SUMMARY AT THE 0 PERCENT INCOME TAX BRACKET LEVEL (BASED ON TABLE 6 OF THE PAPER)

CUMULATIVE TO END OF YEAR	CUMULATIVE PAYMENTS*			NET DEATH BENEFIT			NET CASH VALUE		
	Minimum Deposit	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing	Minimum Deposit Advantage	Minimum Deposit†	Without Borrowing‡	Minimum Deposit Advantage
5.........	$ 11,209	$ 12,233	$ 1,024	$102,787	$100,000	$ 2,787	$ 7,165	$ 7,214	−$ 49
10........	15,721	27,202	11,481	107,377	100,000	7,377	18,062	17,980	82
15........	22,049	46,067	24,018	113,123	100,000	13,123	28,506	28,049	457
20........	32,920	70,537	37,617	118,681	100,000	18,681	39,498	38,568	930
25........	56,167	102,281	46,114	123,687	100,000	23,687	48,799	48,062	737
30........	92,415	145,021	52,606	125,326	100,000	25,326	55,982	57,147	− 1,165
35........	148,540	203,493	54,953	122,006	100,000	22,006	59,105	65,649	− 6,544
40........	234,254	284,233	49,979	110,918	100,000	10,918	54,982	73,296	− 18,314

* Each set of payments is accumulated with interest at 7 percent.

† This includes the fund (minimum deposit advantage under cumulative payments).

‡ This includes dividend then payable.

eliminate the last two investment factors that have just been discussed. We eliminate arbitrage by making this investment rate equal to the policy loan rate of 6 percent, and we eliminate dividend additions from the minimum deposit plan. After redoing Tables 5A, 5B, 7A, and 7B, we notice the amazing result: there is no minimum deposit advantage in either net death benefit or net cash value! A little thought tells us why this should be; the 6 percent interest on the loan that we deduct on our tax return is offset by the 6 percent interest on the cash loan that we earn by investment. If we lose the tax deduction of interest, as in Tables 5C and 7C, or if the tax liability on surrender is accounted for, this balance is destroyed. The use of an after-tax interest rate essentially eliminates the financial effect of the tax deduction. Thus the strongest force in the illustrations is arbitrage! Let us work further at analyzing the policy loan interest tax deduction. We must do something with the after-tax rate of interest; we need a tax shelter or an exempt investment that earns more after tax than 3 percent (50 percent of 6 percent). Municipal bonds will not do the trick because the Internal Revenue Code says you cannot deduct interest on money borrowed to buy tax-exempt bonds. Nevertheless, I shall assume that the 50 percent taxpayer is resourceful enough to find a better investment on an after-tax basis.

If we redo Tables 7A and 7B using a 6 percent after-tax interest rate for accumulation, we see the value of larger tax deductions. Now that we finally have isolated the tax deduction, it should be accounted for properly. A liability for "deferred taxes on surrender" should be set up in the illustration. Assuming that at surrender the cash value plus dividends exceeds the premiums, the minimum deposit disadvantage at surrender is taxable income equal to the sum of all the interest-paid tax deductions. The reader can verify this by noting that paying premiums increases the "cost basis" for tax purposes and therefore the amount deductible at surrender, while interest is immediately deductible.

To summarize this analysis, the real advantages of minimum deposit are arbitrage and tax deferral. The arbitrage arises from the fact that the policyholder borrows at a rate of interest below both the dividend interest rate and current market rates. The interest earned on the deferred taxes coupled with the cancellation of the tax liability on death produces the real tax advantage. If there is any substantial chance of surrender, the high tax bracket policyholder must earn on an after-tax basis close to the full policy loan rate on the policy loan to compensate for the tax liability on surrender. I suspect strongly that high tax bracket policyholders already have been oversold on the tax advantages of

minimum deposit even assuming no change in the tax law. Many other variables can be added to complicate the insurance equation and obscure the analysis. The central issue, as the authors state so clearly, is arbitrage versus policyholder equity.

LEWIS P. ROTH:

Messrs. Kraegel and Reiskytl have written a very comprehensive report on the background and problems of the overutilized policy loan privilege. They also offer us ten solutions with varying degrees of feasibility and effectiveness. The paper will be quite useful as a reference as companies continue to offer their own solutions to this very nasty problem. It is particularly impressive that in all its length there is not one actuarial formula given as a solution to the problem. This speaks well of the actuary's place as a businessman and as an executive dealing with serious business problems in terms of practical solutions. However, in spite of the paper's length, some areas of the policy loan question are not as well developed as others.

For example, in discussing the effect of the policy loan situation on the company, only casual mention is made of the cash-flow problem. This problem, to my mind, is much more serious than the pricing problems. The company actuary can price for any level of policy loan utilization, and even if such pricing is not competitive a sound product can at least be derived. On the other hand, "loan shock" cannot be priced for. The difficulty of quantifying the risk of "loan shock" and the effect of holding lower-yielding, more liquid assets to absorb the loan shock make this problem a much more serious one. Consider, for example, policies outstanding with 5 and 6 percent policy loan interest rates. When these policies were first issued, these rates may not have been particularly attractive and did not induce excessive borrowing. The same may be true today of the 8 percent policy loan interest rate. As companies sell these plans, they are building a "bank" of loanable funds with what have turned out to be in the 5 and 6 percent cases, and may very well turn out to be in the 8 percent case, very attractive interest rates. This bank of loanable funds is like a time bomb ready to be set off as soon as the interest rate becomes attractive. It grows quickly, not only because of new business but also because many companies issuing plans with high early cash values do not have first-year loans available. The four-out-of-seven rules for minimum deposit business also has a deferred impact on the loan question. Actuaries, investment people, and company management should take a hard look at this very serious question of cash flow.

The numerical illustrations in Section V might give the impression that the higher the percentage of cash value borrowed the lower the dividend. This is true only if the net policy loan earnings rate is less than the net non-policy loan earnings rate. However, most companies currently have a non-policy loan interest rate that is much lower than the net yield after taxes and expenses on an 8 percent policy loan. In such a situation, the higher the utilization rate the larger the dividend, which seems just contrary to the purposes of establishing different dividend classes. The anomaly arises because of the mixture of the traditional approach of using a portfolio rate of interest in the non-policy loan rate calculation and a new-money approach to the policy loan interest income. The companies that have expressed a distaste for the generation interest method for dividend purposes should recognize that they are already using it if they are differentiating among policy loan interest rates. Even if we assume that the utilization rate for all policy loan interest rates within the same class will be the same, the actual experience may be different. If, for example, a 30 percent utilization rate is assumed, and experience on the 8 percent policy loan contracts is only at the 20 percent level, the traditional method involving a portfolio interest rate calls for a dividend decrease even though the product was designed to encourage a lower utilization rate. Of course, if the utilization rate turns out to be lower than expected, more money at higher rates of interest will be available and the portfolio rate will climb faster than anticipated, allowing for better than illustrated dividends in the future. An advantage of the investment-year method is that proper equity and recognition are given from the outset.

The authors suggest that the ratio of policy loans to individual life reserves is more meaningful than a similar ratio to all policy reserves or assets. This is certainly true. Perhaps it is the most meaningful one we can obtain for intercompany comparison purposes. However, for internal examination of the extent of the policy loan problem and judgment of whether or not improvement is being made, a ratio of loans to available loan values would be more meaningful. By using available loan values as the denominator, we get a more realistic view, since in many cases first-year loan values are not available and the effect of surrender charges is eliminated. An even more interesting comparison is the increase in policy loans as a percentage of the increase in available loan values (or the increase in life reserves if loan values are not available). This will indicate whether the problem is growing faster or slower for your company than for other companies and will give a better current reading on whether your actions are working. In dealing with intercompany com-

parisons, it is necessary to pay particular attention to the reserve basis if the comparison is made to individual life reserves. For example, a ratio to net level premium reserves would be more serious than a similar ratio to Commissioners' reserves.

In their paper the authors state that "borrowing will normally be heavier at the lower loan rates." At Mutual of New York we made a fairly extensive review of our policy loan situation and found that this was not the case at all. In our particular instance, policies with a 5 percent policy loan interest rate had 28 percent of the available cash value borrowed, whereas policies with a 6 percent policy loan interest rate had 32 percent of their cash values borrowed. When interest rates generally available are very high, it apparently makes little difference whether your rate is 5 percent or 6 percent.

The authors pay particular attention to a suggested solution involving the theoretical equity of giving an option to existing policyholders. The theoretical equity is very appealing. The practical equity may turn out to be disastrous. First, some 6 percent nonborrowers are barred legally from going to 8 percent. Second, there will always be some nonborrowers who did not pick up the option or who do not use it to the maximum degree. Finally, the borrowers will constitute a group that eventually will derive almost all its interest income from policy loans.

One further comment on the paper is in connection with the section where the authors ask for reaction to a dividend reflecting "might have been" enhancements. It certainly is true that if we had not had to put our money into 5 and 6 percent policy loans we would have put it into investments with more attractive yields. Furthermore, the anticipation of policy loan demand required that we hold more cash and divert our investments into more liquid, lower-yielding securities. Had we not done this, we probably would have been able to pay better dividends to nonborrowers. However, the facts are that we did, and dividends are supposed to reflect actual experience. The concept of "might have been" enhancements has implications well beyond the policy loan situation. No such adjustment can be made with regard to the loan factor without thoughtful consideration of all the other factors in the dividend scale on a "might have been" basis. The cost of retaining this low interest rate borrowing option that was part of the original sale might become unconscionably high.

Equity is best served by the solution that bases dividends not on the right to borrow but on the actual level of borrowing. This suggested solution may or may not be legal and may or may not be practical, but as yet it is untested and it is certainly worthy of our further consider-

ation. I am extremely hopeful that some company will bite the bullet and try it.

CLAUDE THAU:

The authors have made a valuable contribution with their discussion of the history of policy loans, their description of current problems, and their analysis of possible future action on the part of the industry. As their emphasis is on the policy loan problems of mutual companies, I would like to discuss the handling of policy loan considerations in guaranteed cost pricing.

As in a mutual company, policyholders taking loans on guaranteed cost policies in a stock company can take advantage of arbitrage. However, neither those taking loans nor other policyholders in their class nor other in-force policyholders suffer (except possibly in such minor ways as through lower interest rates on premium deposit funds) as long as the company remains solvent. In general, shareholders suffer reduced profits due to policy loan activity but, in nominal dollars at least, policy loans probably produce a higher yield than was expected in the original pricing. In addition to shareholders, future policyholders also can be affected adversely by heavy policy loan activity on in-force business:

1. The company may introduce a more conservative loan provision and/or decide upon a higher premium in anticipation of future loan activity on new business.
2. If policy loans have caused emerging profits on in-force business to be disappointing, a higher expected profit margin may be established for new business.
3. Policy loans on in-force business may cause new business to be priced with lower new-money interest rate assumptions, thereby resulting in higher premiums.

The last point identifies a potential problem of nonparticipating pricing. Policy loans are allocated to the ordinary life line of business. A new-money rate for the ordinary life line is determined by weighting new bonds and mortgages (in a total amount equal to the difference between newly invested ordinary life funds and policy loans) with the policy loans. Thus, policy loans on in-force business drag down the new-money rate used in pricing new business. At least to the degree to which cash flow and rollover of investments on in-force business can provide the necessary funds for meeting in-force policy loans, such loans should not be allowed to depress assumed new-money rates used in pricing.

In addition to determining a basic new-money rate exclusive of policy loans, nonparticipating pricing could benefit from using investment-year assumptions in prospective asset shares. The practice of converting a

string of expected new-money rates into future aggregate interest rates (for future business) unnecessarily fails to recognize that the incidence of investable funds by duration varies by plan, age, and so on. The direct use of new-money rates results in different aggregate investment rates according to cash flow. In conjunction with such an approach, the availability of cash values can be recognized by multiplying the cash value by an assumed utilization rate (for policy loans) and crediting a return equal to the policy loan rate net of expense. Less money would then be invested at the projected new-money rate typical of bonds and mortgages.

With typical interest assumptions, policy loans would have little negative impact upon pricing. According to the current Part 8 study notes, a typical interest assumption might be 8 percent reducing to $3\frac{1}{2}$ percent over a forty-year period. These interest rates are probably aggregate rates; the underlying new-money rate assumptions would decrease more sharply. The interest rate pattern is such that an 8 percent policy loan rate would be higher than the new-money rate almost immediately, and a 6 percent policy loan rate might exceed the anticipated new-money rate soon after ten policy years. As cash values become more significant, the assumed new-money rate decreases, so loans are likely to increase rather than decrease the expected yield.

Obviously the limitation of the loan rate should *increase* the premium. The weakness pinpointed by policy loan pricing is that frequently only expected results are studied. The risk of the policy loan provision is that, if new-money rates rise beyond the policy loan rate, policy loans could deny the insurance company the advantage of the high-yield opportunities. In an inflationary environment, the insurance company might need such returns to meet expected profitability in "real" money. Alternatively, the possibility of higher "real" profits under inflation may be necessary to balance the risk of lower profitability should experience deteriorate.

In the *Journal of Risk and Insurance* (September, 1973), Richard W. Ziock published a relevant study. He tested a nonparticipating whole life plan for a male aged 37 over a forty-year period with twenty-five different new-money rate scenarios. Policy loan utilization and federal income taxes varied with the new-money rates. Assuming a constant "real" interest rate of 3 percent, he determined an inflation rate and varied both an interest charge for surplus strain and a portion of his renewal expenses according to projected inflation. The present value of profits (in excess of a 2 percent "real" after-tax return on surplus strain) were discounted to real-money units. His results were quite interesting:

INTEREST RATES	AVERAGE RATE (EXCLUDING LOANS) OVER 40 YEARS	PRESENT VALUE OF REAL DOLLAR AFTER-TAX PROFITS	
		Phase I Company	Phase II Company
Low..........	3.90%	$ 7.68	$ 6.57
Average......	6.06	13.30	12.41
High.........	8.39	9.11	9.69

In each case, Mr. Ziock's new-money rate array started at 8 percent with a bias toward the historical average rate of 4.3 percent. His results show that both unusually high and unusually low interest rates can cause real profits to deteriorate. Mr. Ziock indicates that federal income taxes and inflated renewal expenses each have more impact than policy loans, but his results do indicate the cost of a policy loan provision under an inflation scenario. The additional premium he determined for a 5 percent policy loan provision was $0.32 per thousand for a Phase I company and $0.51 per thousand for a Phase II company.

Michael F. Davlin, A.S.A., an associate of mine, recently performed a similar exercise. He concluded that a 6 percent fixed loan provision should require a premium about $0.75 greater than the premium for an 8 percent fixed loan provision (assuming a male aged 35, whole life plan, minimum cash values graded to net level reserves over twenty years, and a 4 percent/$2\frac{1}{2}$ percent reserve basis). He also found that a lower loan rate results in a more predictable profit result in nominal terms but that it would add to the variance in a real profit analysis. The chosen profit criteria and many other assumptions affect the results, but the main reason that Mr. Davlin's results attributed a higher cost to the loan provision is that his model assumed that future interest rates would be biased toward the current 8 percent level, whereas Mr. Ziock had a built-in bias downward toward 4.3 percent.

ROBERT C. TOOKEY:

The authors have provided actuarial literature with a very exhaustive treatment of the policy loan problem and a splendid bibliography upon which much of the article was based. They apparently employed the brainstorming or idea-tracking technique, which implies that every alternative shown in Table 9 ("Comparison of Solutions") should be considered and given some kind of weight for effectiveness and feasibility. They are to be complimented further on the fact that, consistent with the brainstorming approach, they even introduced some concepts that are

widely considered almost heretical, such as solution 3, eliminate deductibility. They perhaps should have placed a feasibility factor of zero on that one.

My discussion will focus on the following points: (1) a stock company's policy loan experience with respect to participating and nonparticipating business; (2) current developments and proposed tax reform that relate to tax deductibility of interest paid and taxation of the inside build-up of cash value; and (3) miscellaneous observations that I hope will provide some additional input into this very grave problem that faces the insurance industry today.

Policy Loan Experience of One Company

One large stock company very kindly supplied the following information on policy loans between participating and nonparticipating lines:

END OF YEAR	POLICY LOANS AS A PERCENTAGE OF ORDINARY RESERVES	
	Nonparticipating Business	Participating Business
1966	11.2%	21.2%
1968	12.3	23.1
1970	15.4	26.8
1972	14.9	26.4
1974	16.8	29.5
1976	16.6	29.6

Note that the percentages of participating reserves that were borrowed do not differ significantly from the percentages for most of the mutual companies shown in Table 2 of the paper.

Renewal lapse rates under borrowed policies were about double those under policies without loans.

Pending Tax Changes (Reforms)

Included among the many Internal Revenue Code changes that are reported to be on President Carter's "laundry list" are the following: an overall limit on the amount of total loan interest that can be deducted from taxable income and a tax on the so-called inside buildup of cash values, that is, the interest factor.

A limit on total loan interest deductibility would affect policy loan utilization and perhaps would reduce indirectly the incidence of policy loans where the loan interest rate is quite low relative to bank loan interest rates,

mortgage interest rates, and the like. This could lead to "reverse arbitrage," where the taxpayer might retain debts that offer the most favorable tax result. It should be intuitively obvious that, all considerations being equal, a borrower would realize less tax savings on a 5 percent policy loan than on a 10 percent mortgage. It is important to keep in mind that we are analyzing the policyholder who has several debts that require servicing, policy loans being only one of them.

If the proposed tax on the inside buildup is enacted (which is not likely in view of past treatment of the concept—e.g., it was confuted very effectively in 1963 by Eugene Thore, general counsel of the then Life Insurance Association of America), the policy loan problem could become academic because of the near demise of permanent life insurance. "Buy term and invest the difference," a battle cry of many years, would become doctrinal, and term insurance would enjoy primacy.

Miscellaneous Observations

The first miscellaneous observation is taken from the Old Testament: "What ye brew today, ye shall drink tomorrow." The policies that were programmed on the so-called mini-dip approach should be expected to continue on a fully loaned basis simply because they were sold that way and the applicant anticipated continuing on that basis because of certain benefits he would receive through tax deductibility.

It should be observed that the authors represent a very low net cost company in the family of mutual life insurance companies, and the company has stressed low net cost to the buyer. That buyer, being cost-conscious, can see the obvious advantages of arbitrage even though the mini-dip approach was not necessarily assumed at the time of issue. However, many other mutual companies are catering to the same sophisticated clientele and are faced with similar and even less favorable experience on policy loans.

In perusing Table 2, we find it quite apparent that the mutual companies that have a large volume of debit business have much lower ratios of policy loans to available permanent life reserves than the mutuals that were not active in the debit field. This would seem to indicate, of course, that if one were to separate the business into debit and ordinary the companies that had been active in the debit field perhaps would display ordinary policy loan rates comparable to those set forth in the authors' company. Possibly this already has been brought out in discussions of the percentage loan rate as it varies by policy-size category.

Perhaps the main point of the paper was to advocate "tailoring" the

dividend for a given policyholder to reflect the percentage of the cash value that is borrowed. Several rather cogent points were mentioned to support this position. One wonders whether it would be worth doing. First of all, once you justify the tailoring of dividends on an individual basis, it would appear that you may have established a precedent, although the authors state that there are past precedents that would support such an approach. For example, since statistics prove that lapse rates vary with the frequency of premium payment, why not introduce further classes based on mode of premium payment?

Other examples could be brought forth. Would this not provide a wedge for the hyperactive consumerist to question other parameters in dividend scales from the standpoint of fairness and equitable treatment of policyholders?

It is my understanding that most companies already are utilizing solution 6—that the dividends reflect the loan rate—and that this is done by reducing directly the investment interest factor in the dividend scale. With the use of broad classes, the availability of a loan interest rate is considered a policy benefit, and therefore all policyholders who have that privilege should bear the cost of the privilege whether or not they utilize it. The technique now employed by many mutual as well as stock companies that have significant amounts of participating business is simply the suggested solution 6. There is some evidence that its effectiveness might be more than indicated by the authors' index of 3. It very possibly could accomplish its purpose, provided that the policy itself was not sold on the basis of an extremely competitive loan provision and accompanying low interest rates.

Another miscellaneous observation is that many years ago, when the 6 percent policy loan interest rate was prevalent and the industry's average investment interest rate dropped below 3 percent (around the year 1945), a number of sophisticated policyholders did not utilize the policy loan provision. When they needed funds, they took the policy to the bank and were able to obtain a loan interest rate somewhere between 4 and 5 percent, graded downward by size of loan, because of the low interest rates then prevailing. Did anybody suggest that the unsophisticated policyholder who borrowed in accordance with the loan provision and paid a higher than average rate should get a break on his dividend because he really was helping to increase the company's earned interest rate? Apparently not. The rationale perhaps was that the company required a higher rate of interest to cover the loan-servicing expenses, which were assumed to be very high, and also that the existence of such a provision in the future could lead to the same cashing in of

assets that occurred during the depression. Thus it might seem that we had a one-way street in years gone by. No individual recognition was given to the policyholder who was increasing the company's investment rate by paying a 6 percent interest rate and therefore subsidizing the nonborrower and the sophisticated borrower who went to a bank.

Another miscellaneous question arises with respect to disclosure to existing policyholders of the effect on their dividends. This concerns the policyholder who suddenly has a need for emergency funds and perhaps has never borrowed against the life insurance cash value. Should the policyholder be notified immediately upon borrowing that, while the money will be available at the 5 or 6 percent interest rate, the policy dividend will be reduced to reflect the effect on company earnings? It certainly would seem incumbent upon the company to make this disclosure to the borrowing policyholder when the loan is initiated and to the existing borrowed policyholder when the dividend scale is "individualized" between borrowers and nonborrowers.

The solution that is obviously favored by the authors would not present a problem to new applicants because it would be possible to make two dividend net cost illustrations—one assuming no borrowing and the other assuming total borrowing. Perhaps with guidance from the agent, the applicant then could use linear interpolation for different borrowing percentages; this should approximate the actual financial results for all practical purposes. This certainly would alert the individual who is buying a policy, possibly with a mini-dip plan in mind, to the true cost of insurance should the borrowing privilege be utilized fully. With the majority of states having adopted a maximum loan interest rate of 8 percent for new issues, perhaps our problem will be minimized greatly unless, as the authors suggest, inflation becomes rampant. Should the latter happen, none of the other nine solutions would help very much. Solution 1, controlling inflation, is the primary means for keeping cash-value life insurance as a viable product and investment, maintaining the stability of this country's entire structure, and above all maintaining life insurance in its present form.

CHARLES L. TROWBRIDGE:

For entirely too long the formal actuarial literature has included little on the rather substantial issues surrounding policy loans. Messrs. Kraegel and Reiskytl have remedied this deficiency with a most comprehensive paper. All actuaries interested in individual life insurance should welcome this addition to their literature.

It was a surprise to this discusser to learn that in 1910 the United

States Supreme Court determined that a policy loan is not a debt—that a policy loan is not a "loan" after all. I long have had a similar viewpoint, and have thought that what we call a policy loan is better viewed as an offset to the life insurance company liability.

Perhaps the recounting of a personal experience will help the reader see why I have been led in this direction. At one time I needed to withdraw some funds from an interest-bearing savings account at a commercial bank. I found that I would lose five months' interest if I withdrew on June 1 but would receive six months' interest if I waited until July 1. At my banker's suggestion, I "borrowed" from the bank for one month (at a rate above that which the bank was crediting to savings accounts), at the end of which time the savings account and the "loan" were simultaneously extinguished. Although for one month I had *in form* made a loan and *in form* the savings account was still in existence, the real transaction was simply the withdrawal of the savings account on June 1 (on somewhat more favorable terms than under the normal rules). The arbitrage principle was at work, and the "loan" was only a means to an end.

Much the same thing is going on in the typical policy loan transaction. The insurance company holds funds (in the amount of the cash value) that in some sense belong to the policyowner. The policyowner could obtain these funds by surrendering, but by doing so he would give up something that he finds of value (his insurance protection). To avoid this penalty, the life insurance industry invented the policy loan. Although it appears that the insurance company and the policyowner each owe the other, in reality the policy loan has no substance; it simply offsets some or all of the cash-value liability. A policy loan then is really a cash-value withdrawal, temporary or permanent. We probably make an analytical mistake if we view it in the traditional way.

The reader's immediate reaction may be that the whole issue is moot. As long as the two pieces of the transaction are viewed symmetrically, does one not get the same result either way? This gets to the heart of the matter. The pieces are not treated symmetrically; hence, it does make a difference. Once again, the arbitrage principle works. The policyowner, if he has a choice, can be expected to act in his own best interests. This is the source of the inequities between borrowers and nonborrowers that the paper describes so clearly.

There are at least two forms of asymmetry, and hence two areas of maneuver: (1) the interest rate on the policy loan is not the same as the rate effectively being credited by the insurer on the policyowner's value, and (2) the two kinds of interest are treated differently in the

policyowner's federal income tax return. If these two asymmetries could be corrected, most of the insurer's problems with policy loans would disappear.

If the policy loan interest rate were high enough, policyowners would have no reason to use the policy loan for arbitrage. If policy loan interest were nondeductible, there would be no tax incentive to invest and borrow simultaneously. However, with the combination of (1) today's tax treatment and (2) policy loan interest at unnaturally low rates, we can expect a continuation or even an acceleration of the effects that the authors have noted.

The authors' discussion of the various possible solutions to the policy loan problem is well thought out and certainly complete. I am less optimistic than the authors appear to be as to solution 8, but consider solution 4 more feasible than the authors view it. Otherwise, I feel quite comfortable with their analyses.

The use of dividends reflecting actual policy loan experience (solution 8) is essentially an attempt to correct the interest rate asymmetry indirectly. Dividend theory is used to correct a flawed policy loan theory. There is much to be said for this solution, but it smacks of being too cute, too complicated, and too indirect. Moreover, it does nothing about the tax asymmetry.

The elimination of policy loans (solution 4) is dismissed by the authors as "not currently possible." They point rightfully to the legal requirement in some forty states and to the strong tradition built around the policy loan feature in this country (different indeed from Europe). The theoretical reason for a policy loan requirement, however, is that the policyowner is entitled to the use of the funds tied up in his cash value *without* losing his insurance protection. Up to now it has been assumed that only a policy loan accomplishes this most desirable end. Those of us who have worked with the adjustable life concept have come to realize that there may be a better way—a cash-value withdrawal without policy surrender may be feasible. If so, the states may see fit to change their laws, and the policy loan requirement may gradually disappear.

Let me once again congratulate the authors on a significant paper. It challenges conventional thinking, and may lead to new and better solutions.

(AUTHORS' REVIEW OF DISCUSSION)

WILFRED A. KRAEGEL AND JAMES F. REISKYTL:

It was our hope that this paper would generate considerable and diverse discussion. Although we are by no means satisfied that the topic has yet been treated exhaustively, we are delighted with the number of dis-

cussions and their diversity. We are particularly pleased with the additional perspectives provided and the depth of insight shown as to the nature of the problem and its alternative solutions.

Our approach to this review of the discussions will be to consider the points made in the context of the six sections of the paper. We will not necessarily respond to each point but will summarize the major areas of conflicting and corroborative views as we understand them. In order to facilitate reference to the fifteen discussants, we list them here: David R. Carpenter, Michael J. Cowell, L. Blake Fewster, Henry S. Huntington, Robert H. Jordan, Donald B. Maier, John C. Maynard, Arthur R. McMurrich, David E. Morrison, C. Norman Peacor, Harry Ploss, Lewis P. Roth, Claude Thau, Robert C. Tookey, and Charles L. Trowbridge.

I. *Background*

REGULATION

Significant developments have taken place, both in Canada and the United States, since the paper was completed in late 1976. The important change now pending in Canada, as described by Messrs. Maynard and Morrison, is that policy loan interest no longer will be deductible by the policyowner as an interest expense.[1] Instead, it will be considered as a premium and will become part of the cost basis of the policy, along with other premiums paid less dividends. In effect, this change, coupled with the ability to use a current interest rate, should eliminate completely the policy loan problem for new business in Canada! If it does, this would be a good model for the United States to follow, as suggested by Mr. Trowbridge.

The important development in the United States has been the continuing passage of legislation permitting the 8 percent policy loan interest rate. As of June, 1976, the 8 percent rate was permissible under the statutes of thirty-four jurisdictions including the District of Columbia. As of November, 1977, this had increased to forty-three (including New York effective January 1, 1978). Efforts to obtain such legislation will continue in the remaining eight states.

MINIMUM DEPOSIT

Minimum deposit illustrations are explored in greater depth by Mr. Ploss. His analysis demonstrates that from the policyowner's viewpoint the strongest force is arbitrage, followed by tax deferral (or avoidance, if the policy becomes payable by death). Mr. Ploss also expresses concern

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[1] We were told by Mr. Maynard very recently that the deductibility may be reinstated, according to an announcement by the finance minister of Canada.

about the exploitation of the complexities of minimum deposit in demonstrations to the unwary applicant. To lessen the chances of misunderstanding, he proposes that the illustration include a liability for taxes on surrender; we think that is a good idea. It may be difficult to select an appropriate tax bracket, but perhaps the illustrations should include as a minimum an estimate of the potential increase in taxable income upon termination. His further insights into minimum deposit illustrations provide a most useful addition to the paper.

Mr. Carpenter asks whether the minimum deposit policyowner suffers automatically if the policy loan rate is increased. We have redone Tables 4, 5A, 5B, and 5C using an 8 percent loan rate instead of 6 percent and a dividend scale that reflects the differential between the two policy loan rates. A comparison with the original tables on the 6 percent basis shows that the 8 percent loan rate figures are consistently less advantageous than those for 6 percent, except for the death benefit in the first fifteen years in Table 5A, the first eight years in Table 5B, and the first nine years in Table 5C. This relationship would change as the dividend scale changes. Although we did not perform the additional calculations, we suspect that the same relative results would apply in a similar comparison for Tables 7A, 7B, and 7C. We will make the revised tables available to anyone requesting them.

This is a logical result in view of the fact that currently the improved dividends for fully borrowed 8 percent policies offset only partially the difference in loan rates. The reduction in the arbitrage factor is greater than the improvement in the dividends. The variable factors in minimum deposit conceivably could produce a different result under some circumstances, but we are not aware of any.

II. *The Policy Loan Problem*

The nature of the policy loan problem is expressed in different terms, as in Mr. Trowbridge's "two forms of asymmetry." There also are different emphases. Mr. Roth believes that the cash-flow problem is worse than the pricing problem; we regard the cash-flow problem as very serious also, and we have it heading the list of symptoms, with the pricing inconsistencies as the underlying diseases. Mr. Roth is the only one to comment on the "what might have been" point of view; he feels that view would not be appropriate to use, and we are inclined to agree. Mr. Carpenter subscribes to the Canadian approach, suggesting that we "marshal our forces in the direction of a completely flexible loan rate that would be tied to the market rate for personal secured loans." We would be happy with that solution for new business, and we rated it

high on our comparative chart. Being very well acquainted with the difficulties of achieving an 8 percent maximum in all states, however, we believe the time has not yet come for this further step—perhaps it will become more feasible after the 8 percent change has been assimilated. We agree that education about the nature and effect of policy loans, particularly among the agents, will be a vital interim step.

In connection with Mr. Carpenter's question about the correlation between the interest rate levels for different investments, we did not attempt to be specific as to the appropriate level for a flexible loan rate. We used the long-term bond rate only to illustrate significant trends in interest rates over the span of almost two centuries. Nevertheless, his question prompted us to examine further the relative interest rates for various types of loans. Perhaps residential mortgage loans could be included in the category of "personal secured loans," at least for comparison with relatively large policy loans. However, policy loans have no prepayment penalty to restrain financial antiselection. Even higher rates could well be justified for small policy loans, analogous to the rates for other kinds of personal secured loans. A comparison of rates for the past eleven years follows:

Year	AA Industrial Bonds*	Prime Rate†	Residential Mortgage Loans‡
1966....	5.15%	5.62%	6.14%
1967....	5.55	5.63	6.33
1968....	6.24	6.28	6.83
1969....	7.05	7.95	7.66
1970....	7.94	7.91	8.27
1971....	7.23	5.70	7.59
1972....	7.11	5.25	7.45
1973....	7.40	8.02	7.95
1974....	8.64	10.80	8.92
1975....	8.90	7.86	8.75
1976....	8.59	6.84	8.76

* Moody's AA Industrial Bonds; average of the twelve average monthly rates.

† *Business Conditions Digest*, September, 1977, series 109.

‡ *Business Statistics*, 1975, and *Survey of Current Business*, November, 1977. Data are for conventional first mortgages on new-home purchases.

A quick review of these rates reveals considerable variation within each sequence of rates and varying relationships among them. We have not studied these relationships enough to know which, if any, would be most appropriate as a basis for policy loan rates. Ideally, the policy loan rate should be regarded as unique, fluctuating according to its own

competitive patterns. Those patterns would be influenced by alternative investment choices, the cost of liquidity required to meet uncertain loan demands, and the cost of potential financial antiselection.

In the paper we noted our inadequate treatment of policy loans on nonparticipating policies. We are pleased that Mr. Thau has remedied this with his enlightening discussion. As we understand it, existing policyowners are not affected, while future purchasers may have to pay higher premiums that reflect the higher cost of the policy loan provision. Apparently the effect would not be great, however, since typical interest assumptions now might begin with 8 percent and reduce to $3\frac{1}{2}$ percent over forty years on an aggregate basis. Although the shareholders would feel the impact on profits of the higher policy loan activity, they probably would earn more than was expected in the original pricing.

The old saying quoted by Mr. Morrison that "a borrowed policy is a persistent policy" is one we had not heard. We suspect it has a grain of truth in the short run but definitely not in the long run. Mr. Morrison's data centering on 1944 seem to contradict the saying, and Mr. Tookey observes that in one large stock company "renewal lapse rates under borrowed policies were about double those under policies without loans." Mr. Cowell refers to "high lapsation of borrowed business with its attendant impact on costs to persisting policyholders." In this regard, Charles F. B. Richardson wrote to us to point out the relevant data in the paper "Lapse Rates" in *TSA*, III, 338, which he authored jointly with John M. Hartwell; the ratios of lapses for policies with loans to those without loans were consistently 300 percent or more. A study in our company covering 1975–76 also points to higher lapse rates for borrowed policies. Policies on which at least 75 percent of the loan value is borrowed have four times the lapse rates of policies without loans, as indicated below:

LAPSE RATES FOR ALL LIFE PLANS
AT ALL ISSUE AGES

POLICY YEAR	PROPORTION OF CASH VALUE BORROWED		
	0%–2%	3%–74%	75%–100%
2.......	2.3%	13.4%	10.2%
5.......	1.0	2.0	8.5
10......	0.9	1.0	4.0

Several discussants suggest another way to reduce the inequity: adjust dividends to reflect borrowing according to policy size. Messrs.

Cowell, Maynard, and Tookey point out that there is a rather high correlation between policy loan activity and policy size. In other words, the small policy appears to be subsidizing the large. We have noted some evidence of this in our company, as shown by the following table:

TOTAL POLICY LOANS BY SIZE OF POLICY
AS OF YEAR-END 1976

Policy Size	Loans as a Percentage of Cash Value	Percentage of Policies with Loans
Less than $2,500......	10.6%	18.1%
$ 2,501–$ 7,500....	20.3	26.9
7,501– 15,000....	29.6	27.0
15,001– 30,000....	34.3	29.2
30,001– 70,000....	40.3	35.7
70,001– 200,000....	45.9	37.9
200,001 and over....	47.7	37.5

We have only scratched the surface of possible refinements. This one deserves further consideration.

In different ways, Mr. Carpenter and Mr. Tookey ask a similar question: Who worries about the borrower when the policy loan rate is *higher* than the current money rate? We realize that the answer to that has been "the borrower." We believe, however, that the principles applied to the current situation generally should apply also when the reverse relationship holds true. As for the propriety of nonrecognition in the past by most of the industry, we see at least three points that tend to justify that posture:

1. The volume of policy loans was relatively low from the mid-1940's to the mid-1960's, so the disparity in loan rates did not loom large. If we go back to the early 1930's, however, there is no excuse on this score.
2. Data processing capabilities have increased by factors of 100 or 1,000 or more, and what is now routine in dividend calculations was then difficult or impossible.
3. The policyowner in many cases did have a choice among alternative sources of borrowed funds (although not under the unusual circumstances of the Great Depression), and most people were aware that interest rates differed. We believe that there should be a slight disincentive to the use of the loan provision, but the disparity in some of the earlier years probably would be inappropriate according to today's standards and capabilities.

Does a 6 percent policy loan rate stimulate borrowing more than an 8 percent rate, or a 5 percent rate more than a 6 percent rate? Messrs. Cowell and Roth believe that the higher rate does not alter borrowing

patterns significantly, so long as both rates remain below the prevailing cost of money. When the loan rate is increased to the level of prevailing money rates, the stimulus to borrow apparently is removed. This is observed by Mr. Morrison relative to Canadian experience with the higher rates permitted for 1968 and subsequent issues.

In our company, we studied issues of 1970–76 at the end of 1976 and found that policy loans for 5 percent policies were 30 percent of cash values, while loans for 6 percent policies were 23 percent of cash values. It should be recognized that the 5 percent business was issued only in New York. As for the comparison between 8 percent and 6 percent, it is too early to draw any conclusions. The policies with 8 percent loan rates are less than three years old, so the buildup of loan values has barely begun.

III. *Alternative Solutions*

Again the Canadian experience is highly relevant. The use of a flexible policy loan rate during the past decade shows that a successful solution for new policies can be achieved by that route. The current developments no doubt will provide additional valuable experience in the years ahead.

Mr. McMurrich has developed a very useful and thought-provoking theoretical argument for eliminating the deductibility of policy loan interest. We had considered pieces of these relationships but had never put them together as he has done. We appreciate this valuable insight and its addition to the literature. Unfortunately time does not permit us to evaluate this approach fully. From a practical viewpoint, we question whether the traditional view and the two alternative techniques described are the same. It is reassuring that when all the pieces are accounted for they are equivalent. Yet that does not necessarily imply that the practical results of the different approaches are the same or that the tax impact should be the same.

Incidentally, at first we thought Mr. McMurrich's rationale had been developed in the course of the study that led to the recent Canadian tax proposals. Much to our surprise, we learned that he had done this work quite independently, and that he had not been aware of the Canadian situation when he first generated the ideas.

Mr. Cowell comments on each solution, and we welcome the additional points he has made.

Mr. Peacor gives us his updated thinking about solution 7—policy loan rate linked to guaranteed reserve interest rate, with dividends modified accordingly. He agrees in retrospect that the subsequent rapid and unprecedented rise in interest rates would have led to heavy use of

policy loans at the nominally low interest rates if this solution had been adopted. His company's experience with solution 9, commission scales and honors systems, is very useful information for us. If we do not control inflation (solution 1), we agree that it may create its own "solution"—a continual lowering of premium rate levels and a shift to plans with little or no loan value.

Mr. Tookey relates the Carter administration's tentative tax reform proposals to the policy loan problem. The limit on deductible interest may tend to reduce policy loans by some individuals. Regarded as less likely but yet possible, the taxation of the "inside buildup" would accelerate the shift to term insurance and eventually make the policy loan question academic. We agree with this evaluation, other things being equal. On the latter point, however, we would expect some type of trade-off between the current tax on investment income and a new tax on the inside buildup. To do otherwise would be unrealistic, unless Congress had the express intent to eliminate life insurance as a viable savings medium, and that is not likely for a number of reasons.

Mr. Trowbridge questions the need for a policy loan provision in the adjustable life policy of the type currently issued by the Minnesota Mutual and the Bankers Life of Iowa. The design would permit the policyowner to withdraw cash without reducing the insurance coverage. Neither company has carried the approach that far. Although this idea is intriguing, it requires much more discussion. Two questions that come to mind quickly are the following:

1. How does one avoid the potential mortality antiselection that might occur when a policyowner withdraws part of the cash value upon learning of a terminal illness condition? The probable answer is to reduce the face amount by the cash value withdrawn, which is essentially what happens now with a policy loan.
2. Will the policyowner accept the fact that he might have to pay another agent's commission when he "repays the loan" via subsequent higher premiums? One possible answer is to keep track of premium payments in such a way as to pay commissions on a modified basis.

The adjustable policy concept also may support direct recognition of borrowing in the dividends, since the concept contemplates many individual policyowner decisions as to premium and benefit levels that ultimately will be reflected in the dividends.

IV. *Dividends Varying with Policy Loan Interest Rate*

Several discussants gave their views of this approach, which was solution 6 in the paper.

1. Mr. Morrison indicates that this approach was used by Canadian companies when the variable loan rate provision was introduced in 1968. He is not aware of any resulting amendment program to make the new loan rates available to existing business.
2. Mr. Peacor informs us that his company uses this method; in fact, they have extended it to provide different dividend interest rates for different plans of insurance with the same policy loan rate but with significantly different levels of loan utilization.
3. Mr. Tookey believes that most companies already are utilizing this solution. (We believe this includes fifteen of the twenty largest mutual companies.) He suggests there is some evidence to indicate that the effectiveness may be more than we think.
4. Mr. Roth believes that this solution uses the generation interest method for the policy loan interest portion of the dividend. We do not regard it that way. All policies with the same loan interest rate receive the same dividend interest factor, no matter what the year of issue. For example, a 1925 policy with a 6 percent policy loan rate receives the same dividend interest factor as a 1965 policy with a 6 percent rate (assuming the reserve interest rates are the same). Further, if either of these policies is amended to the 8 percent rate, it will receive higher dividends reflecting that higher loan rate. We do not believe that these statements can be made about the generation interest method.
5. Mr. Huntington has provided an especially comprehensive discussion, giving his views of both this solution and solution 8, dividends reflecting actual policy loan experience. He gives valuable additional perspectives on the relative equity and practicality of the two methods, their understand-ability, and their contractual and income tax facets. Mr. Huntington con-cludes that the case for this solution, which he calls the block average approach, is more difficult to make than for the individual policy approach, particularly to the nonborrowing policyowner with a low interest rate.
6. Messrs. Maier and Roth also express concern about the borrowing policy-owners with a low interest rate. They feel that with an amendment program the nonborrowers will leave the loan interest rate class and the borrowers will comprise most of those remaining. Mr. Maier believes that the effect would be much the same as varying dividends by actual policy loan ex-perience of each policy. Mr. Roth is concerned further about "some 6 per-cent nonborrowers [who] are legally barred from going to 8 percent" (pre-sumably those living in states that have not yet adopted the 8 percent rate) and about nonborrowers who did not pick up the option.

Before we comment on these concerns, we would like to share briefly our company's experience with the amendment program, as requested by Mr. Fewster.

Our program consists of individualized computer-prepared offers

mailed to each policyowner approximately thirty-five days in advance of a policy anniversary. The offer includes an illustration comparing the current dividend based on the policy's current policy loan rate with a dividend calculated assuming that the policy had been an 8 percent policy loan contract as of the previous policy anniversary. A toll-free home office telephone number is provided for any questions the policyowner may have. Upon receipt of the owner's signed acceptance, an amendment form is sent for attachment to the policy. This amendment form is filed with the state insurance departments, and the program is not initiated in any state until that form is approved.

Considerable care went into the development of the material presented to the policyowner. This included consultation with the Wisconsin Insurance Department and members of the agents' committees. We tried to draft the offer in terms as fair and simple as possible so that the policyowner would have a reasonable basis for making a decision.

We conducted extensive sample tests of the program prior to introducing it on a nationwide basis. The tests showed an overall acceptance by number of policies of about 28 percent (40–44 percent on policies without loans and 4–5 percent on policies with loans). Home office staff requirements proved to be less than estimated, and the impact on field activity was minimal. Follow-up telephone surveys were conducted by the Management Research Center of the University of Wisconsin–Milwaukee. These surveys found the degree of awareness and readership to be superior to normal direct-mail results. During the samples, loan activity was monitored in comparison with a control group that did not receive the offer. In both groups, the majority of policies had no loan activity during the study period. There were slightly more new or increased loans in the sample group, but also slightly more loan repayments in the sample group. While there was more loan activity, apparently as a result of receiving the offer to amend, the difference was not felt to be cause for concern.

We began our amendment program in twenty-four states on September 1, 1976. As of December, 1977, it is available in thirty-six jurisdictions, including the District of Columbia. The results of this nationwide program have been comparable to those of the samples. To date, offers have been sent out on over 1,100,000 policies involving nearly 500,000 policyowners. The acceptance rate by number of policies has been 32.5 percent. About 7 percent of policyowners have used the toll-free telephone number, and we have corresponded with about 7 percent of policyowners, many of these being follow-ups to toll-free calls. Loan activity experience in the nationwide program, while not monitored as precisely as in the

sample, appears to show the same slight increase. Again, the impact has not been considered significant.

We are pleased with the results of this program and anticipate being able to extend this offer to all remaining policyowners when the rest of the states introduce the 8 percent policy loan rate and approve the amendment form.

Now let us go back to the concerns mentioned earlier by Messrs. Maier and Roth about the amendment program. First, the number of policyowners able to accept the amendment has increased rapidly as more states have approved the 8 percent rate during the past year. Second, it is true that many nonborrowers do not accept the option for one reason or another; it is their choice, however, and the likely reason is their desire to retain the low interest rate for possible future borrowing. Third, our experience to date is that nonborrowers still comprise roughly half of those remaining in the low policy loan interest class.

It is possible that the future will bring greater refinements to this solution, as suggested by some of the discussants. These refinements might recognize policy size, duration, type of owner (business or personal), or plan of insurance.

V. *Dividends Reflecting Actual Policy Loan Experience*

Eleven of the discussants had something to say about this approach. We will try to highlight and respond to those points that provide a significantly different perspective or that question some of our points.

1. Mr. Carpenter believes "the Canadian solution is more equitable for the life insurance industry as a whole." He states that if the participating companies were to move toward dividends that reflect actual policy loan experience, "theoretically, prospective policyholders who had no inclination to utilize the policy loan provision would be swung toward the participating companies, since the guaranteed cost companies would be forced to price the additional cost across all policyholders." We agree that the Canadian solution is preferable for new business, but unless and until it can be implemented in the United States we believe that other solutions must be pursued.

2. As mentioned in the preceding section, Mr. Huntington has provided us with extensive observations on this solution. He sheds new light on the topic by suggesting that this solution is a logical extension of the allocation of investment income by line of business. We believe that is an imaginative viewpoint and deserves consideration. It is another way of emphasizing that investment income from policy loans has unique characteristics that became apparent when current money rates reached such high levels.

3. According to Mr. Peacor, his company studied the legal aspects of this

solution and concluded that "there were ten states with policy loan statutes that appeared to prohibit the type of differentiation for dividend purposes that we had in mind." This point was addressed by George A. Hardy, legislative counsel of the Northwestern Mutual, when he participated in a concurrent session on policy loans at the Society's 1976 annual meeting in Toronto. Mr. Hardy said (*Record*, II [No. 4], 777): "We believe that such adjustments would be permissible under existing law. We are aware that there are a few lawyers who do not agree with us on the substantive legal issues, and we recognize that there are questions involved which have never been resolved in court. However, the principal impediments to such dividend adjustments are in the area of legal procedures, principally the uncertainty as to the appropriate court in which to resolve such questions." Although the legal aspects must be considered, our emphasis here was to establish the actuarial principles applicable to this approach. We do not believe the discussants have refuted our actuarial analysis.

4. If this approach were used for policy loan interest, would it serve as a precedent for reclassification of other types of experience for dividend purposes? This question is raised by Messrs. Jordan, Maier, and Tookey. We believe the answer is "yes and no." The policy loan provision is unique in several respects, but we think it is possible that other types of experience may emerge that may be recognized similarly. We further agree that equity should be determined on a class basis; under this solution a portion of the policy is in one class and a portion in another.

   In a related comment, Mr. Huntington suggests that this solution not be used for existing policies to avoid "changing the rules in the middle of the game." It may be reassuring to say that dividend classes are completely determined (or determinable) at the time of issue, but we believe that is an unrealistic and inappropriate view for a contract that extends over decades, perhaps for a century. The very essence of dividends is to adapt to emerging experience, and it is an inadequate interpretation of experience to restrict it to the conditions existing at issue. Mr. Maynard seems to concur with this view when he states: "It would be proper to do this if the voluntary actions of borrowers were seen to be obstructing the effectiveness of the contract for nonborrowers." We are fully aware of the complications this view poses, both for the companies and for the regulators, but we also are fully aware of the complications created by holding to an outdated interpretation. We believe that if there ever should be any "serious loss of confidence in participating life insurance," quoting Mr. Jordan, it is more likely to come from *not* recognizing today's realities than from doing so. In a similar vein, we feel that this solution does not abrogate a guarantee, as suggested by Mr. Maier, but simply recognizes the differences in contributions to surplus.

5. Mr. Maier concurs with the logic of this solution from the point of view of the nonborrower but not necessarily from that of the borrower: "The [policy loan] provision says that the charge for a policy loan is 6 percent, not

6 percent plus a lower dividend." Similarly, Mr. Morrison characterizes this as "the bold print giveth (policy loan rate) and the fine print taketh away (dividend provision)." We cannot agree with that interpretation of the result of this solution, and we believe we answered that argument in Section V, E, 1, of the paper; none of the discussants challenges our reasoning on that point. However, what if the relationship between the policy loan charge and the dividend paid should be viewed as indicated by Mr. Maier? Even that interpretation gives support to this solution. According to that interpretation, if a policy loan is taken out today at 6 percent, the borrower already is subject to "6 percent plus a lower dividend," as is every policyowner, whether a borrower or a nonborrower. The only question is whether the nonborrower should be forced to join the borrower in receiving a lower dividend.

On one further point by Messrs. Maier and Tookey, we certainly expect that if this solution were used the policyowner would be made aware of the effect of borrowing on dividends.

6. Mr. Roth is "extremely hopeful that some company will bite the bullet and try" this solution. Who will be first?

VI. *Conclusion*

Because a year has elapsed since the paper was completed, let us review briefly the current status of each of the available solutions.

1. *Control inflation so that the price of money may decline.* At this moment inflation is not as high as in the recent past, but 6 percent for the indefinite future is still deadly. No matter what else may be done, this is still a critical and primary objective.

2. *Remove the unnatural ceiling on policy loan interest rates imposed by various states.* Great progress has been made in moving to an 8 percent ceiling. In Canada there has been success in providing even greater leeway in policy loan interest rates. In the United States the various states might be willing to consider this in the next five years or so; this would provide a very effective approach for new business and would be equally effective for participating and guaranteed cost policies, provided that the flexibility is used by the companies in both directions.

3. *Eliminate the deductibility of policy loan interest for income tax purposes.* Some variation of this may become part of a Carter tax reform bill.

4. *Design products without a policy loan provision.* This seems completely unrealistic for traditional plans of insurance, but it may be a possibility in an adjustable policy provided that the antiselection and other obstacles can be overcome.

5. *Design a policy that is priced to anticipate the effects of policy loans.* This is not an important alternative.

6. *Design a dividend scale that varies with the maximum policy loan interest rate specified in the policy.* Many companies now use this approach, but few have yet taken the additional step of providing this opportunity for existing

policyowners. Further refinements may develop, as several discussants suggest.

7. *Design a policy loan interest rate linked to guaranteed reserve interest rate, and with dividends modified accordingly.* Mr. Peacor, the author of this idea, believes it is no longer feasible and should be dropped from consideration.

8. *Design a dividend scale that reflects actual policy loan experience for specific policies retrospectively.* This solution draws a full range of reactions, from strong approval to strong disapproval. We had hoped that more of the discussions would pursue the actuarial theory involved, for if the actuarial theory is sound the legal prerequisites can always be put into place. We believe this solution still has significant potential. Perhaps further consideration can take place in future Society deliberations.

9. *Design commission scales and honors systems that lead the agent to avoid encouraging policy loans.* This is useful but less important than most of the other solutions.

10. *Persuade policyowners to repay existing policy loans and to borrow only for emergency purposes.* This also is a useful but relatively ineffective approach.

Finally, we would like to thank the fifteen discussants for their most interesting and provocative remarks. It is obvious that we regard the subject of policy loans as highly relevant in today's economy, and we are gratified to have this wealth of additional ideas and perspectives added to our paper. We sincerely hope that policy loans "will never be the same" after this extensive dialogue is shared by hundreds of actuaries and other interested professionals.