

**THE ACTUARY'S ROLE IN INVESTMENT STRATEGY
FOR NEW LIFE INSURANCE COMPANIES**

THURSTON P. FARMER, JR., AND ANTHONY J. HOUGHTON

INTRODUCTION

THE investment of life insurance company funds produces the investment income which is one of the major elements affecting the cost of insurance. The task of investing these funds is handled in large companies by a separate investment department, which may include economists, security analysts, city and farm mortgage appraisers, and legal advisers. These large companies may accept direct placement of bonds amounting to millions of dollars and finance large office buildings, housing projects, and shopping centers, in addition to making the more usual investments in government and publicly offered corporate bonds, mortgages on single-family homes, preferred stocks, and common stocks. As the size of the company decreases, the scope of the possible investments decreases.

Occasionally the company's actuarial department may be involved in investment decisions, but usually it only supplies technical evaluation of complicated financial proposals. The Society of Actuaries includes material in the study syllabus concerning investments, but to most actuaries who remain in actuarial positions it is only used as background material. In other countries actuaries play a much more important role in the actual investment of company funds. In the United States this has not been the tradition, and, because of the experts available to large companies, the need for actuaries to take a more active role has not been evident. Because of this tradition the actuary often does not participate fully in basic investment decisions, even when there is a lack of other qualified personnel.

This paper discusses the special problems of new and, as a class, the smallest life insurance companies. For the purposes of this paper a "new" company is defined as one less than five years old. This paper will suggest the reasons why an actuary should play a role in the over-all investment policy of the new company and what some of his duties should be. It will not cover all situations or suggest strategy for all situations, since one of the primary duties of an actuary in a specific instance will be to identify the company's specific financial characteristics and see that the investment policy is consistent with the company's financial situation.

OBJECTIVES OF AN INVESTMENT PROGRAM

The objectives which guide a life insurance company in selecting specific investments differ from the investment objectives of an individual, an investment company, or another kind of corporation. Some of the considerations involve achieving positive advantages and others involve avoiding disadvantages. Life insurance company investments, because of the nature of the business and the laws and regulations promulgated by the various states relating to legal investments and the valuing of such investments in the annual statement, sometimes appear to place more weight on avoiding the disadvantages than on achieving the positive advantages.

Positive objectives are (1) high yield, (2) possibility of capital gain, and (3) useful by-products by reason of investment.

The objectives which relate to freedom from disadvantages are (1) safety of principal—avoidance of capital loss; (2) liquidity—marketability; (3) stability; (4) ease of ascertaining value; (5) economy of obtaining, maintaining, and disposing of investment; (6) legality; and (7) minimizing tax and reserve requirements.

Most of these objectives are well known and easily understood. Naturally, a life insurance company wishes to acquire an investment with a high yield that may increase in value and that will enhance its reputation. However, the investment must be one allowed by the investment laws and regulations of the state insurance code, and it should merit the confidence of the policyholders and stockholders. It should be reasonably inexpensive to administer, and it should have a ready market where its value can be established and the investment traded without undue sacrifice. Since it is desirable to avoid undue surplus fluctuations, the stability of the value to be shown in the annual statement is important.

It is obvious that few investments have all the favorable features and none of the unfavorable ones. Therefore, the company must modify its objectives so that it best meets the investment requirements. The legal requirements, of course, are overriding, and all other objectives are subject to the investment's being legal. Let us consider how these objectives apply to certain types of investments.

United States government bonds.—None of the disadvantages are present. They are safe, liquid, and marketable. They can be bought without restriction as to size. They are not subject to the criticisms of undue risk or favoritism in making the investment. Their value is stable since they are always amortizable, and their value is always ascertainable. They do not require a Mandatory Securities Valuation Reserve. However, the yield is normally less than that of other stable investments.

State and municipal bonds.—The bonds in this category vary widely in degree of safety, liquidity, marketability, and stability. As a whole, yields on this category of bonds are lower than those on other bonds because interest on them is exempt from federal income tax. The attractiveness of tax exemption varies among life insurance companies, but the attractiveness is generally less than that for other types of corporations or individuals in a high income-tax bracket. Further, the exemption is of no value to companies incurring operating losses, and many new companies are in this category. The Mandatory Securities Valuation Reserve requirement is relatively low for high-quality state and municipal bonds. Sometimes a factor in the purchase of state and municipal bonds is the expectation of a useful by-product, that is, public relations in the particular state or municipality.

Corporate bonds.—High-quality corporate bonds have few disadvantages. However, many states impose restrictions on the percentage of assets that may be invested in any one corporate issue, such that the maximum investment by a new life insurance company in any one issue is usually quite small. Furthermore, many industrial bonds are privately placed in relatively large amounts, so that smaller companies may not have access to many issues. The Mandatory Securities Valuation Reserve requirement is relatively low for high-quality corporate bonds. The yield is generally better than that on United States government bonds.

Preferred stocks.—Preferred stocks avoid most of the disadvantages to some degree. Now that preferred stocks "in good standing" are valued at cost, there is a stability in the statement value. In some cases there is a tax advantage; however, this is of no value to a new company which is incurring an operating loss. The Mandatory Securities Valuation Reserve requirement is moderately severe. Usually the yield is fairly high. Occasionally a preferred stock will have a feature that allows conversion to common stock. In this case, the possibility of a capital gain is present.

Common stocks.—Publicly traded common stocks are marketable and easily valued. The possibility for a substantial capital gain or capital loss is present. There are often legal limits on the percentage of assets which may be invested in common stocks as a class and in individual companies. The ultimate yield rate is not determinable since the price and/or dividend can change from time to time; however, the current yield is apt to be fairly low. The attractiveness of common stocks is the possibility of capital growth in addition to yield. The Mandatory Securities Valuation Reserve requirement represents a problem which is discussed in detail elsewhere.

Mortgages.—This type of investment has the advantage of a high

yield and the possibility of a useful by-product if the mortgage is on a property within the market area of the life insurance company. The disadvantage is the administration cost of inspecting and servicing if only a small portfolio is maintained. Refinancing and reinvestment of principal repayments as well as interest is a problem which must be considered. There are no Mandatory Securities Valuation Reserve requirements in connection with mortgage investments.

Real estate.—This type of investment may have all the positive advantages, but it has most of the disadvantages as well. The yield is less certain than it is with other investments unless the real estate is under long-term lease to a stable organization. The possibility of capital loss is present, and the administration requires more professional and technical assistance than other investments do. Valuation for annual-statement purposes is more complicated and may require periodic appraisals in order to determine the admitted asset value. There are no Mandatory Securities Valuation Reserve requirements in connection with real estate investments.

STATE REGULATION OF INVESTMENTS

Each state passes laws and makes regulations for domestic life insurance companies which regulate the investment of their funds. The laws usually specify certain classes of investments in which life insurance funds may be invested and impose various quantitative and qualitative restrictions for each class. Both the aggregate amount which may be invested in a class and the amount which may be invested in a specific issue are limited, usually to a percentage of the life insurance company's admitted assets. Certain investments, such as United States government direct obligations, are not limited in amount. An example of the investment regulations¹ for industrial bonds is:

- a) The corporation shall be incorporated under the laws of the United States of America or any state of the United States of America;
- b) The corporation shall have tangible net worth of not less than \$500,000;
- c) No such obligation of the corporation has been in default as to principal or interest during the 5 years preceding the date of investment, but the corporation need not have had obligations outstanding during that period and need not have been in existence for that period, and obligations thus acquired may be newly issued;
- d) A company shall not invest more than 33½ per cent of its admitted assets in industrial bonds; and
- e) A company shall not invest more than 2 per cent of its admitted assets in the obligations of any one such corporation.

¹ Excerpt from Illinois Insurance Code, Ch. 73 #737.9a.

A new company with \$1,000,000 in assets could invest no more than \$333,333 in corporate bonds and no more than \$20,000 in the bonds of one corporation under the law stated above. Because of similar limits on public utility bonds, municipal bonds, individual conventional mortgages, and so forth, a new life insurance company must make a great many small investments if it wishes to invest in these classes of investments. Since many new life insurance companies desire to limit their initial investments to a relatively small number of issues for economy and simplicity, United States government bonds which do not have restrictions on amounts are favored.

INVESTMENT PERSONNEL

In many large companies the board of directors initiates or approves general investment guidelines and perhaps appoints a committee of directors which approves specific investments. Often large companies elect to their board of directors businessmen with financial backgrounds who are knowledgeable in corporate investments and economics. The board of directors of smaller companies is less likely to have members who can give guidance to the insurance company's personnel in investing the company funds.

A new life insurance company usually has no officer who is experienced in life insurance investments and probably could not justify the cost of carrying such a man until the volume of funds to be invested increases considerably. This may leave the investment of the funds to a chief operating officer who may be experienced in agency matters or home-office operations but often is not experienced in life insurance company investing. Occasionally such a chief operating officer has been successful in his personal investments and has confidence that his personal experience has prepared him to invest the life company's funds. Other executives who are responsible for the investment of funds may rely on the advice of stock- and bond-brokers, corporate trustees, bankers, and even occasionally consulting actuaries. Some new life insurance companies turn their entire investment-management function over to corporate trustees who determine the investments, contact the brokers, hold the bonds, collect the coupons, prepare the annual-statement exhibits, and report periodically to the company.

The investment of life insurance funds involves some principles which are common to other types of investments, but there are also special considerations which are unique to life insurance companies. In addition, an investment which is a good investment for Company A may not be a good investment for Company B. For example, it might be reasonable for

an investor to sell a bond with a low nominal yield at a market price well below the purchase price in order to purchase another bond that over the life of the bond will produce greater income. But for an insurance company with low surplus the capital loss, to the extent it cannot be offset against the Mandatory Securities Valuation Reserve, can be very embarrassing. Many times, if a bond is amortizable, it is better to retain the bond and accept the lower yield.

Many of the people who are now investing the funds of new life insurance companies are not aware of the objectives of life insurance investing, the effect of the Mandatory Securities Valuation Reserve, and the effect of income taxes on life insurance companies. Other people who are knowledgeable in life insurance are not trained or experienced in corporate investing. This condition may be recognized by some executives of new small companies, but a satisfactory solution is not evident to them. It would seem that the actuary, with his great knowledge of life insurance operations and regulations, is in a position to be of great assistance, even though his knowledge of investment matters is of a general nature.

ADMINISTRATION OF INVESTMENT PORTFOLIO

The life insurance company must collect the coupon periodically for each bond. When the bond is purchased, the company must prepare one or possibly two schedules (NAIC, IRS) showing amortization of premium or accrual of discount. The company must check the financial press for notice of calls and so forth. The company must make individual calculations of amortization of premium or accrual of discount and accrued interest if the bond is sold in the middle of the year, record all information on a bond-record card and in the accounts, and prepare the appropriate information in the investment schedules of the annual statement. Naturally, the more bonds one has to deal with, the more expense this job entails. In addition, the cost of doing this work for a \$10,000 bond is as great as the cost of doing it for a \$100,000 bond. Therefore, the company which has a great many small bonds will have a relatively high investment expense.

The administration of mortgages is also quite expensive per unit of investment unless one has a large mortgage department. Before placing a mortgage, a lender must have an appraisal, make sure that there is adequate insurance, obtain a credit report on the borrower, and so on. Upon making a mortgage, the lender usually must prepare an amortization schedule. Periodically it must collect the mortgage payment and separate the payment into principal and interest. In the event the borrower defaults on his mortgage payments, the company must institute foreclosure proceedings and eventually may be forced into assuming

ownership of the property. All these things require special knowledge and cannot be handled effectively and economically as a side line.

Ownership of the home-office building in which the remainder of the building is sublet to tenants also involves many problems. A company may have to replace tenants periodically and assume the many other problems which are a part of office-building management. Further, ownership of a building may restrict the life insurance company in its plans for expanding or moving its home office.

Common stock purchases require considerable skill in selecting the proper stocks, knowledge of the long- and short-term prospects of the issuing company, knowledge of the stock market itself, and knowledge of whether the life insurance company is depending upon a reasonably high yield from the investments or can sacrifice yield now to obtain a capital gain later on. Since common stocks require constant supervision, the effort spent on supervising any common stock portfolio might be excessive for a small company which is only investing a relatively small portion of its assets in common stocks.

Some of the tasks of administering investments might be turned over to people who specialize in certain areas. For example, a bank or trust company might act as a custodian for bonds or stocks, collect the coupons, and prepare a schedule of the bonds and stocks held periodically. Other banks and trust companies might accept the responsibility of actually making the investments of bonds and stocks for a higher fee. A mortgage correspondent might do the work of a mortgage department, and it is possible to get packages of mortgages which are FHA-insured through a correspondent. If the life insurance company owns a home-office building which it wishes to rent or lease, a professional office-building management team might handle that for a fee. A stockbroker might be willing to give advice and counsel on the purchasing of common stocks and bonds. In many cases, while these people may be able to do a good job, the cost of providing their services will make the investment expenses quite high. Because of the many problems associated with other types of investments, United States government bonds are quite popular with small companies. These bonds can be bought in large amounts, they are safe, they have no Mandatory Securities Valuation Reserve requirement, and they are acceptable as deposits by all state insurance departments. Unfortunately, however, they do not have the highest yields.

In summary, the cost of administration can be quite expensive, and a new investment line, such as home mortgages, should not be initiated without careful consideration of the ability to make substantial future

investments in this category, no matter how attractive the present investment opportunity appears.

MANDATORY SECURITIES VALUATION RESERVE

One special requirement which should be considered in setting investment policy is the Mandatory Securities Valuation Reserve (MSVR). The MSVR is a special liability required of life insurance companies to be held as a buffer against fluctuations in the value of bonds and stocks. As of December 31, 1966, it consists of three components: (1) bond and preferred stock reserve component, (2) common stock reserve component, and (3) temporary excess reserve component.

No portion of the reserve relates to mortgages, real estate, policy loans, or any assets other than bonds and stocks. In discussing the effect of the MSVR on investment policy, the temporary component will be ignored, since it will not affect permanent investment policy.

Bond and preferred stock reserve component.—This component is increased by annual accumulations and by realized and unrealized capital gains, less federal capital gains tax, and is decreased by realized and unrealized capital losses. The annual accumulation is a percentage of the annual-statement value of bonds and preferred stocks held at year end as follows:

Category of Investment	Annual Rate of Accumulation
United States Bonds	None
Other bonds passing Test 1*	$\frac{1}{8}$ of 1%
Other bonds not passing Test 1 but passing Test 2*	$\frac{1}{2}$ of 1%
Other bonds not passing Test 1 or 2*	1%
Preferred stocks in good standing†	$\frac{1}{2}$ of 1%
Preferred stocks not in good standing†	1%
Federally insured savings and loan shares	$\frac{1}{8}$ of 1%

* Bonds qualify as passing Test 1 by having high ratings by recognized bond-rating agencies or by meeting various earnings and balance-sheet requirements; they qualify as passing Test 2 by meeting less stringent earnings and balance-sheet requirements.

† Preferred stocks are "in good standing" if they meet certain dividend and earnings requirements otherwise they are not "in good standing."

Lists of securities which qualify in various categories are published by the NAIC shortly after each year end.

The maximum amount required in the bond and preferred stock reserve component is 20 times the current year's annual accumulation.

Common stock reserve component.—This component is similarly increased by annual accumulations and by realized and unrealized capital gains, less federal capital gains tax, and is decreased by realized and unrealized capital losses. The annual accumulation is 1 per cent of the statement value of common stocks. The maximum amount required in

this component is 33½ per cent of the current value of common stocks (20 per cent of the value of shares of controlled or affiliated companies valued at book value).

Modification for new companies.—The MSVR requirements are more severe for companies during their first five years of operations, because of the following modifications: (1) the annual rates of accumulation are doubled and (2) realized and unrealized capital losses may not reduce the reserve. Nevertheless, realized and unrealized capital gains increase the reserve.

These modifications impose a severe strain on a new company which invests in securities which are apt to fluctuate in annual-statement value or in those which require high annual accumulation rates. The effect of the requirement that new companies increase the MSVR by the amount of capital gain but not decrease it by the amount of capital loss is severe, particularly when statement values fluctuate from year to year. In such a case, a capital gain in one year would be absorbed by the MSVR, but a corresponding capital loss the next year would decrease surplus, not the MSVR.

Capital gains and losses.—The effect of capital gains and losses on the MSVR is best illustrated by an assumed common stock portfolio. Shown below are year-end market values of two hypothetical common stock portfolios which are purchased at \$100,000.

YEAR	MARKET VALUES—END OF YEAR	
	Company A	Company B
1.....	\$100,000	\$100,000
2.....	110,000	105,000
3.....	100,000	110,000
4.....	110,000	115,000
5.....	100,000	120,000

The amounts in the common stock component of the MSVR are shown in the accompanying tabulation. In this illustration Company A

YEAR	COMPANY A		COMPANY B	
	Regular	New Company	Regular	New Company
1.....	\$ 1,000	\$ 2,000	\$ 1,000	\$ 2,000
2.....	12,100	14,200	7,050	9,100
3.....	3,100	16,200	13,150	16,300
4.....	14,200	28,400	19,300	23,600
5.....	5,200	30,400	25,500	31,000

had no net gain or loss over the five-year period; yet, if it were a new company, an amount of surplus equal to over 30 per cent of its common stock portfolio would be placed in the MSVR. Since Company B had a \$20,000 unrealized capital gain, the surplus strain was \$5,500 for an established company or \$11,000 for a new company.

This illustrates the severe effect of the MSVR on the surplus of new companies which invest in common stocks, particularly if those stocks fluctuate in value.

Although the amount placed in the MSVR is not money spent and it does not reduce the investment ratio shown in the annual statement, any addition to the MSVR reduces surplus. The MSVR requirements strongly discourage investing in, or retaining, weaker bonds, weaker preferred stocks, and all common stocks, while they encourage investing in assets other than bonds and stocks, in United States government bonds, and in other high-quality bonds. The requirements are especially severe for new companies.

Investment policy should not be governed solely by the MSVR requirements. However, those responsible for making life insurance company investments should be aware of these requirements and of their effect on investment policy.

FEDERAL INCOME TAX

The company actuary or consulting actuary of a new life insurance company usually prepares the federal income tax return. Often he is the only person connected with the company who is qualified to determine the tax effect of investment decisions. Some of the areas in which he can offer advice follow.

Tax-exempt interest and dividends received.—Only the portion of tax-exempt interest and the exempt percentage of dividends received represented by the company's share of investment yield is deducted in determining taxable investment income and net gain from operations. For many new companies this is of little or no value, since they incur operating losses. Among companies currently having a taxable income, the tax impact of exempt interest and dividends received varies considerably. Tax-exempt interest and dividends received increase the shareholders' surplus account. This in itself may affect the investment decisions of a life insurance company which pays dividends to stockholders and which has a small balance in the shareholders' surplus account.

Capital gains.—Many new companies currently incurring an operating loss may do well to realize gains on appreciated assets to absorb part or all of the loss. Otherwise the loss carry-over may expire without benefit.

The tax effect of both short-term and long-term capital gains for life insurance companies differs from that for other corporations and differs among various life insurance companies. Management should be aware of the current tax effect of capital gains on its company. The realization of capital gains may help increase the amount in the shareholders' surplus account. When a company's taxable income is below the \$25,000 surtax exemption but is expected to increase above it in subsequent years, it may be well to realize capital gains immediately to have them taxed at lower rates.

Bonds purchased at a discount.—For years 1963 and later, life insurance companies are not required to accrue the discount on bonds in the tax return, except for discount on tax-exempt bonds and the original issue part of the discount on other bonds. Often there is a choice of investing in low coupon bonds at large discounts or higher coupon bonds which are sold at par or at a premium, both of which have similar yields. The tax effect of current investment income versus a future capital gain varies among companies. A new company which is currently incurring an operating loss may be better off with current investment income that reduces its operating loss rather than a future capital gain that might occur when the company has a positive taxable income.

ASSET GROWTH IN NEW COMPANIES

The pattern of growth of assets in new companies can take several forms. In one common form the assets remain stable as the increase in policy obligations is offset by decreases in surplus. Under this circumstance, the investment of funds is limited to reinvesting matured principal, such as bonds which have been called or matured or mortgage principal repaid, and to switching current investments to more favored investments. The volume of the transactions places a practical limit on the expenses which can be afforded for administering this type of investment portfolio. Therefore, it appears highly desirable that the investment policy of a company in this situation be such that a sound financial management may be accomplished with a minimum of supervision. For example, it would not be practical at this time for the company to spend a lot of time keeping abreast of the mortgage market in various areas. The amount of funds that they could invest in new mortgages would be too small to justify the expenses involved. The fact that surplus has been decreased also indicates that the company cannot afford capital losses or investments without reasonably attractive yields.

A second pattern of asset growth is one in which the increase in assets is fairly substantial but there is no substantial increase in surplus. In this

case, there are more funds to be invested each year, and the yield on the funds will be playing an increasingly important part in the operating results. Also, the ratio of surplus to liabilities has decreased, and it is very important to avoid capital losses which might embarrass the company or slow down the increase in new business.

The third pattern of asset change is one in which both the assets and surplus decrease. In this situation, if the company has been fully invested, it will have to dispose of certain investments. Under this circumstance there can be capital losses on even the most conservative investments, such as United States government bonds, if the current market price is less than the amortized value. Because a company with diminishing surplus can ill afford capital losses, it is necessary to analyze the effect of selling alternate investments. In addition to the general considerations, the special insurance company rules for valuation of assets and the Mandatory Securities Valuation Reserve rules must be reflected in this analysis.

A fourth pattern of asset growth is one in which both the assets and surplus increase and the company has substantial funds to invest and greater leeway in making the investments than in other situations mentioned. In this situation a company may purchase shares of a particular common stock which has a lower yield than is currently obtainable from fixed-dollar investments and which is subject to a greater risk of capital loss than a highly rated fixed-dollar investment. This investment may be justified by the expectation of increasingly higher dividends, which will make the yield rate measured by the cost of the original investment greater than the yield rate of a fixed-dollar investment. The requirement for increasing the Mandatory Securities Valuation Reserve by any capital gain is not so serious a drawback to a company with favorable surplus growth.

IMPORTANCE OF INVESTMENT RESULTS TO NEW COMPANIES

For a new company the investment yield will probably be quite small in relation to premium income or general expenses. For an established company the investment income is apt to be quite large in relation to either premium income or general expenses. For the company in this latter situation the results of its investment policy can significantly affect its operating gain. On the other hand, the investment yield in the early years for a new company is small in relation to other items, and the company's success or failure is unlikely to depend upon a yield rate $\frac{1}{2}$ per cent above or below the industry average. The dollar amount of such investment differential is outweighed by the large amounts of money

which can be expended on unnecessary general expenses, agency-financing, overdevelopment of new products, and so forth. The management of a new company has the vitally important tasks of establishing a profitable, salable product; establishing a field force; and establishing a home-office administration which can give effective policyholder service and maintain good records for premium billing, commission accounting, and annual-statement requirements.

Since management's time and energy are limited, it is absolutely necessary that less important functions be arranged so that the function can be handled adequately without infringing on the primary tasks. This is not to say that investment of funds is not important. It is very important, but the objectives of successful investment policy for a new company are directed more toward safety of principal and simplicity than toward high yield and possibility of capital gains.

The accompanying tabulation shows approximate figures for three companies, illustrating the relative importance of investment income to a mature life insurance company and to two new life insurance companies in different circumstances.

	Company A: 70 Years Old	Company B: 2 Years Old	Company C: 2½ Years Old
Assets.....	\$478,000,000	\$2,850,000	\$2,000,000
Investment income.....	20,000,000	70,000	70,000
Premium income.....	37,000,000	3,300,000	1,400,000
General expenses.....	7,000,000	330,000	620,000
Ratio invest. income/prem. income.....	0.54	0.02	0.05
Ratio invest. income/gen. expenses.....	2.86	0.21	0.11
Gain from operations before F.I.T.....	7,000,000	500,000	-500,000
Increase in pretax gain from operations if yield had been ½ per cent higher.....	2,250,000	10,000	10,000

ADVANTAGES TO NEW COMPANY OF RESTRICTED INVESTMENT POLICY

Every type of investment has characteristics which are unique. A person knowledgeable in corporate bonds may be inexperienced in selecting common stocks or completely unfamiliar with home mortgages. It is difficult enough to do a competent job of investing in one medium, such as corporate bonds; however, to become expert in bonds, real estate, farm mortgages, home mortgages, and common stocks requires great effort and skill. While some people have the ability to learn the skills

required to be effective in all areas, the task of maintaining the level of effectiveness can be overly expensive if only a small volume is transacted in each area.

Because of the personnel and administration problems and other special considerations, it might be advisable for a new company to have a policy which limits investments to United States government bonds, United States agency bonds, and corporate bonds rated in the highest two categories by recognized rating organizations. This is not to say that other media are not excellent investments. Certainly most large companies find mortgage investments particularly attractive. However, let us consider some reasons for adopting the restricted investment policy:

1. The assets will be free from capital loss when held to maturity and will almost always be amortizable.

2. The amortized values will be stable.

3. The assets will be easily marketable.

4. The administration will be simplified by adopting a limited line of investments. The assets can be competently managed with less experienced personnel.

5. The management can concentrate its efforts on sales and policyholder service. Management is relieved of the tension and stress which might ensue should there be any question concerning the value or admissibility of certain assets.

6. The Mandatory Securities Valuation Reserve requirement is relatively low.

7. Often a new company is asked to make a mortgage commitment on local property or to invest in local municipal or religious bonds. A refusal to make such an investment can cause embarrassment if the company considers and investigates the proposal before declining. If, on the other hand, the company has an investment policy that precludes such an investment, the situation can be explained immediately and the explanation substituted for a direct refusal.

THE ACTUARY'S PART IN INVESTMENT DECISIONS

This paper has outlined the reasons why new companies have special problems with regard to the investment of their funds. Because of these problems, an actuary who is an employee of a new company or a consulting actuary to a small company should play a more important role in formulating investment strategy than would necessarily be the case in a large company. This is not to suggest that the actuary would have any special knowledge or ability to choose one investment issue over another. That would be the duty of the investment committee, relying on competent professional advice. It would be the duty of the actuary to make sure that the investment committee had before it all the pertinent facts which are unique to life insurance investments and the specific circum-

stances of the company which should be considered in determining its investment policy.

In some cases it will be unnecessary for the actuary to supply certain information, because the investment officer or investment committee will have the data from other knowledgeable sources. The company's legal counsel or the trust department of a financial institution charged with the investment function may already be completely familiar with all the particular aspects of life insurance company investments. However, to the extent that the data are not supplied by others, the actuary should provide the following types of information:

1. State regulations regarding investments
2. The effect of the Mandatory Securities Valuation Reserve
3. The effect of federal income tax
4. An estimate of cash flow, assets, liabilities, and surplus over the next several years
5. An analysis of the investment yield, Mandatory Securities Valuation Reserve, and surplus under different assumptions as to investments and the results thereof

In general, the actuary should help formulate an over-all company policy on investments which would take into consideration the special nature of life insurance and the company's own situation. He should then help with the detailed guidelines to be sure that they conform to the over-all company policy and review actual transactions to see that they follow the guidelines. Finally, he should maintain the studies that would indicate reconsideration of the company's investment policy or guidelines.

SUMMARY

This paper does not suggest any single investment policy that would be applicable to all new companies. While the paper does suggest that certain investments generally are less suitable for new companies than other investments, there are undoubtedly situations in which circumstances dictate otherwise. An actuary's analysis can certainly be helpful in recognizing the characteristics of each situation. While this paper has dealt specifically with the investment situation of new companies, there is no clear-cut line where the age or size of a company dictates that an actuary's help is essential or unnecessary. In each case the extent of participation of the actuary depends on the knowledge and capability of the personnel charged with the investment function.

DISCUSSION OF PRECEDING PAPER

IRWIN T. VANDERHOOF:

Three or four factors are normally held to be crucial in determining the rates or dividends for life insurance: interest, mortality, expense, and perhaps lapses. The actuarial literature on mortality is extensive, and that on expense and lapses is at least moderate. The actuarial literature in connection with interest rates in this country is practically nonexistent. It is very important, therefore, that Messrs. Farmer and Houghton have chosen to break the ice on this subject, particularly with respect to new life insurance companies.

As has been pointed out, actuaries have the final responsibility for choosing the rate of interest which it is assumed can be earned on funds to be received in the indefinite, distant future. This is an awesome responsibility, particularly since there seems to be no theoretical basis for determining what the level will be. Perhaps this is the reason that actuaries in this country have chosen to write relatively little on the subject—they felt that there was relatively little that was intelligent that could be said. The current decision of many actuaries regarding the level of interest rates to be assumed seems to be either what they have heard that other people were using or rates prevalent on high-grade corporate bonds three years ago. Maybe this is the best that can be done. It may, however, also represent an excellent reason for actuaries, with their particular approach and technical background, to try to do better than would be allowed by the paucity of both data and theory. I understand that in England half the actuaries are primarily concerned with investments.

There has been some movement in this direction here also. Benjamin Graham has commented that bond-investment analysis may actually be a branch of actuarial science. Sometimes it seems an unknown and unstudied branch, but, if we look into the studies underlying the Mandatory Securities Valuation Reserve, we find that they are really based on the Hickman studies of bond defaults. This default study, as updated and modified by Frane, corresponds to a mortality table or risk table of bonds, and the Mandatory Securities Valuation approach effectively charges premium rates on different levels of bonds according to the historically experienced risks of default. Maybe our techniques are more frequently used in investment analysis than we would think.

This means that we have some data to work with, but can we protect ourselves against future change in interest rates? Little or nothing has been published on this subject in this country. Extensive work has been

done in the area of immunization of assets or matching by the actuarial societies in England. These techniques allow a company to protect itself against change in interest rates without knowing what those changes will be or when they will occur. Strangely enough, even though the work in connection with the matching of assets to liabilities has been most recently done in England and Scotland, the work underlying all this was originated by an American named F. R. Macaulay. We apparently lost our technological superiority to the Continent in this area. The most interesting point, perhaps, concerning the concept of immunization is the very great advantage given to companies which place a substantial portion of their assets in equities as opposed to fixed-dollar investments. This method of providing increasing income in the distant future is the best way to match future commitments against future earnings. This theoretical development may have something to do with English companies' investing as much as 20 per cent of their assets in equities.

In view of the work done both in this country and in Europe by actuaries in the investment area and the actual paucity of data upon which most investment men make their decisions, the actuary has little reason for awe of others in this area. I think that most actuaries from companies would be well-advised to give themselves and their profession much more credit for background and aptitude in investment analysis and investment judgment. The contribution to be made by men of actuarial background in the investment area is, I think, greatly unappreciated, and it is up to us to become considerably more aggressive in this area.

Finally, I would like to comment on a few points which I feel the authors have oversimplified, perhaps for the purpose of the presentation, but which may mislead. First, an FHA mortgage portfolio can usually be handled with very little trouble. The choice of an appropriate correspondent reduces it to the receipt of checks and the setting-up of appropriate schedules at the end of the year. These can be handled for the most part through paper work rather than by dealing with actual mortgagors, and so forth. Second, amortization schedules of bonds are commercially available for a few dollars per schedule from a commercial firm in Boston. The most convenient size for a security position, if you are going to attempt to protect against changes in the general level of security prices which may affect your call protection and also to upgrade the security portfolio when that is possible, is in the area of fifty to one hundred bonds, in industrials and utilities. This would imply that, for a company with \$2,000,000 of assets, there might be thirty positions. I do not think that this would be too great for a company to handle without spending an inordinate amount of time on it.

The authors take a position with respect to investment in government bonds for a company whose surplus and assets are decreasing. The feeling seems to be that this is a desirable investment because of security of principal. This is entirely true, but, if the assets of the company are decreasing, it is necessary to plan to liquidate some securities on a regular, periodic basis for a reasonably predictable period in the future. We have just seen over the past two years the effect that changes in the general level of interest rates can have on a government bond portfolio. Investment in government bonds over the past two or three years could have led to a loss of as much as 15 per cent of the principal amount of bonds sold. It would seem more desirable for a company in this position to set up a section of the portfolio in Treasury bills or shorter-term notes, which would more closely correspond to the expected rate of necessary liquidation. This would avoid such an interest-rate risk.

I would like to extend my congratulations to the authors for having written a paper which is, unfortunately, close to unique in American actuarial literature.

NATHAN H. EPSTEIN:

At a recent New York meeting, Jack T. Kvernland, chairman of the Discussion of Subjects of General Interest, stated:

Actuarial science had its beginning with the scientific organization of the mortality table. Over the years much time has been given to the mortality as well as the expense elements of the premium structure, but surprisingly little attention has been focused on the investment element that has such an important bearing on the cost of our product. However, with the rise in the interest rate and with competitive pressures, particularly in our group annuity business, there has been much more attention given to the investment element in very recent years.

The industry has arrived at a point where it must focus its attention on the net investment rate. This must be done not only to meet the keen competition from other investment institutions in the group annuity line but to meet the tremendous market for variable-dollar products in our inflation-conscious age. A fixed-dollar product can be backed by fixed-income securities; a variable-dollar product must be backed by variable-income securities.

Messrs. Farmer and Houghton are to be congratulated for their valuable contribution to this literature and for emphasizing the role which the actuary can play in the investment area. They have emphasized the generalist aspect of the actuary's background as a qualification for a role in that area. I would like to concentrate our attention first on the spe-

cialist aspect of the actuary's background and then on the generalist aspect.

The key phrase in the title of Farmer and Houghton's paper is investment strategy. Strategy implies decisions between various sets of alternatives. It is in this decision-making area that actuaries' technical background is invaluable; their specialty in actuality is risk measurement, and investment risk falls well within their purview.

H. Markowitz, in his seminal work "Portfolio Selection: Efficient Diversification of Investments," has developed a model using the variance to measure investment risk and the expected return to measure the return on investment. With the aid of a computer and other investment specialists the actuary can develop maximum efficient portfolios for various risk-return patterns utilizing the Markowitz model. To be sure, some work in this area has been done by other institutions, notably mutual funds, but the selection process has been limited to common stocks. The work of determining efficient portfolios for life companies with their many investment outlets remains to be done.

The actuary is also a generalist, as Farmer and Houghton have pointed out. He has knowledge of the various aspects affecting investments, such as accounting and taxation, as well as knowledge of the entire industry and its aims and goals. This generalist aspect permits him not only to pinch-hit until a company can afford an investment man but also to fill the role of an investment officer on a permanent basis.

The actuary is the most qualified person to co-ordinate and direct the work of the investment analyst, the economist, the statistician, the tax expert, the government-business-relations expert, and any other experts available to the company. In summary, the actuary can, with his technical background, apply modern statistical analysis to the problem of portfolio selection and, with his generalist background, formulate and administer policy.

(AUTHORS' REVIEW OF DISCUSSION)

THURSTON P. FARMER, JR., AND ANTHONY J. HOUGHTON:

The authors thank Messrs. Vanderhoof and Epstein for their discussions of our paper. Their interesting remarks on the subject speak for themselves and require no comment from the authors.

There is one area, however, in which we believe that Mr. Vanderhoof has misunderstood our comment. In the section titled "Asset Growth in New Companies," we point out that, when assets must be sold before maturity, "there can be capital losses on even the most conservative investments, such as United States government bonds, if the current market

price is less than the amortized value." Mr. Vanderhoof suggests a method for avoiding capital losses when the asset reduction can be anticipated. We naturally favor actuarial studies which will anticipate cash flow and changes in assets, but, even if the company has not prepared for this necessary liquidation by purchasing short-term notes or bills which mature regularly, it can still choose the security that it sells. The analysis of alternate securities for liquidation should consider all the items which would be considered if this were the purchase of a new investment, and in addition consideration should be given to the capital loss and the extent the capital loss can be offset against the MSVR and the tax effect of the sale.

Again we thank Mr. Vanderhoof and Mr. Epstein for adding to our paper by their discussions.