

THE RISKS IN EQUITY INVESTMENT FOR
PENSION FUNDS

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IN 1942 the United States Congress enacted legislation encouraging the establishment of private pension plans providing benefits supplemental to those provided by the Social Security Law. Since that time, over 50,000 qualified retirement plans have come into being. All but a very few of these plans provide benefits in fixed dollar amounts to those entitled and involve the accumulation over the years of very substantial contributions made to the plans by employers and employees. While there are no exact figures available, the total accumulated funds in qualified retirement plans as of the end of 1958 are estimated to amount to approximately \$37 billion, as against \$3 billion in 1941. About \$15 billion of this total is in the hands of life insurance companies covering benefits promised under insured plans and about \$22 billion represents the assets of self-insured pension plans administered by trusts.

In 1941 and for some years thereafter, pension funds in this country were almost entirely invested in fixed income securities. This type of investment was considered best fitted to the fixed dollar liability of the pension fund. Since the war, the rapid growth of the large number of new pension plans, the long continued increase in the market prices of common stocks, and the desire to hedge against a further depreciation of the dollar have changed the picture. Many investment managers point out that there seems to be no need for liquidity as pension funds seem to grow indefinitely. They urge that a substantial part of each pension fund be invested in common stocks. Unfortunately, some of the hidden risks involved seem to be overlooked. The investment of pension funds differs from the investment of other funds in a rather specialized way.

THE CASH FLOW PROBLEM

In the life of many pension funds there will be times when, instead of expected cash income being available for investment, securities must be sold to meet pension payments.

It is understandable that this vital problem has received practically no attention in print, because what we might call optimum conditions have existed for most plans since the war and the great majority are less than 20 years old. Under optimum conditions there is *usually* no cash

flow problem during the first two decades or so. However, neither inflation nor continued growth will entirely eliminate it.

The cash problem arises at a much earlier date in the event of a serious recession, if employment declines instead of growing (e.g., because of introduction of automation), if the business fails to prosper, in the event of merger or termination, etc.

The impact of cash flow in the operation of a pension fund is best illustrated by studying a hypothetical fund under some of the many situations which may arise.

Basic Assumptions

To start with, we need a hypothetical employer and a distribution of his employees by age. This is shown in Table 1, which is taken from

TABLE 1
ACTIVE EMPLOYEES

| Age | Number | Age | Number | Age | Number | Age | Number |
|---------|--------|---------|--------|---------|--------|---------|--------|
| 30..... | 100 | 40..... | 30 | 50..... | 19 | 60..... | 11 |
| 31..... | 84 | 41..... | 28 | 51..... | 18 | 61..... | 11 |
| 32..... | 71 | 42..... | 27 | 52..... | 17 | 62..... | 11 |
| 33..... | 60 | 43..... | 26 | 53..... | 16 | 63..... | 10 |
| 34..... | 51 | 44..... | 25 | 54..... | 15 | 64..... | 10 |
| 35..... | 44 | 45..... | 24 | 55..... | 14 | | |
| 36..... | 40 | 46..... | 23 | 56..... | 13 | | |
| 37..... | 36 | 47..... | 22 | 57..... | 13 | | |
| 38..... | 34 | 48..... | 21 | 58..... | 12 | | |
| 39..... | 32 | 49..... | 20 | 59..... | 12 | | |

TSA IV, 30. There are 1,000 employees in total. Each year 10 reach age 65 and retire, 90 others quit or die. These are replaced by 100 new employees each year, so that the total work force remains constant at 1,000. For simplicity in making the calculations, it is assumed that all new employees are hired at age 30.

In the beginning, there are no pensioners. The first block of 10 retire one year after the plan is started and 10 retire each year thereafter. Some pensioners die each year, so that after the plan has been in effect for 10 years we can expect that there will be 85 pensioners alive. After it has been in effect for 20 years we can expect 135 pensioners to be alive; after 30 years, 149 alive. Thereafter, there will always be 150 pensioners, although the composition of this group naturally changes as additional people retire and as existing pensioners die. All this is shown in Table 2, which also comes from *TSA IV, 30.*

For simplicity we will assume that each employee gets the same salary and that each pensioner gets an annual pension of \$3,000, all paid at the beginning of the year, including the year in which he retires. We will also assume that the fund itself earns 4% each and every year, that business prospers each year, that the employer makes each contribution on time, that there are no mergers or plan termination, and that the past service liability is paid off over a 20 year period. Thus, we are assuming near optimum conditions for our fund for a long period of time.

TABLE 2
RETIRED EMPLOYEES

| Age | Number | Age | Number | Age | Number |
|---------|--------|---------|--------|---------|--------|
| 65..... | 10 | 75..... | 7 | 85..... | 3 |
| 66..... | 10 | 76..... | 6 | 86..... | 2 |
| 67..... | 9 | 77..... | 6 | 87..... | 2 |
| 68..... | 9 | 78..... | 6 | 88..... | 1 |
| 69..... | 9 | 79..... | 5 | 89..... | 1 |
| 70..... | 8 | 80..... | 5 | 90..... | 1 |
| 71..... | 8 | 81..... | 4 | 91..... | 1 |
| 72..... | 8 | 82..... | 4 | 92..... | 1 |
| 73..... | 7 | 83..... | 4 | 93..... | 1 |
| 74..... | 7 | 84..... | 3 | 94..... | 1 |
| | | | | 95..... | 1 |
| | 85 | | 50 | | 15 |
| | | | 85 | | 135 |
| | | | 135 | | 150 |

NOTE: The first two columns illustrate the situation after the plan has been in effect for 10 years.
 The first four columns illustrate it after the plan has been in effect for 20 years.
 All six columns illustrate the situation after the plan has been in effect for 31 years, and thereafter.

Stationary Active Staff

Now we are in a position to compute the progress of the fund, contributions to it, earnings on it, pension payments from it, and its net income after pension payments under these near optimum conditions. All this is shown in Table 3a for representative years.

During the early years of this particular plan, contributions and investment earnings far exceed pension payments so that there is a substantial amount of money to invest each year. For example, in the 11th year the net income available for investment is \$391,000. This early record under these conditions is what gives rise to the mistaken notion

that pension funds always grow and that there is never any need for liquidation. But even here, by the 21st year the net income is only \$38,000. By the 41st and 61st years the net income is zero, all of the contributions and all of the earnings being required to meet the pension payroll.

Now let us look more closely at, say, the 21st year and vary some assumptions for that year. Table 3*b* is illustrative. Line 1 presents the near optimum picture. Line 2 illustrates the effect of skipping an employer contribution, of necessity or otherwise. The net income is minus \$79,000 so that it is necessary to liquidate enough securities to produce \$79,000 in order to meet the pension load. Line 3 illustrates normal employer contributions, but half-rate earnings (because of reduced or passed dividends on stocks, defaulted bond interest, capital losses, low yield securi-

TABLE 3*a*
STATIONARY ACTIVE STAFF
(in thousands)

| Year | Fund | Contributions | Earnings | Gross In- come | Benefit Payments | Net In- come* |
|--------------|-------|----------------|---------------|-------------------|------------------|------------------|
| 1 | \$ 0 | Normal † \$474 | Normal † \$ 0 | \$474 | Normal \$ 0 | \$474 |
| 11 | 4,311 | Normal 474 | Normal 172 | 646 | Normal 255 | 391 |
| 21 | 8,142 | Normal 117 | Normal 326 | 443 | Normal 405 | 38 |
| 41 | 8,329 | Normal 117 | Normal 333 | 450 | Normal 450 | 0 |
| 61 | 8,329 | Normal 117 | Normal 333 | 450 | Normal 450 | 0 |

* "Net Income" means net *investable* income. It is contributions plus earnings less benefit payments.

† "Normal" contributions mean those actuarially calculated in accordance with the Basic Assumptions set forth in the article, and on the "entry age normal" funding method widely used for pension plans.

‡ "Normal" earnings mean 4%.

These definitions also apply to Tables 3*b* through 9.

TABLE 3*b*
STATIONARY ACTIVE STAFF
(in thousands)

| Year | Fund | Contributions | Earnings | Gross In- come | Benefit Payments | Net Income |
|--------------|---------|---------------|--------------|-------------------|------------------|------------|
| 21 | \$8,142 | Normal \$117 | Normal \$326 | \$443 | Normal \$405 | \$ 38 |
| 21 | 8,142 | 0 Nor.* 0 | Normal 326 | 326 | Normal 405 | - 79 |
| 21 | 8,142 | Normal 117 | ½ Nor. 163 | 280 | Normal 405 | -125 |
| 21 | 8,142 | 0 Nor. | ½ Nor. 163 | 163 | Normal 405 | -242 |

* "0 Nor." contributions means zero contributions, as opposed to one-half normal contributions or full normal contributions.

This definition also applies to Tables 4 through 9.

ties, etc.). The net income is minus \$125,000. Line 4 illustrates both zero contributions and half-rate earnings, and shows that \$242,000 would have to be raised by liquidation of securities. Unfortunately, the time when earnings on the fund are depressed is likely to coincide with the time that the employer's own profits are depressed and he needs to cut his contributions. This in turn can well coincide with the time when security prices are depressed and liquidation must be made at a loss. Some of the liquidation may occur automatically, to the extent that bonds or other debt obligations are then maturing and do not default. Stocks, of course, never mature.

Postponing Past Service Contributions

Now, let's assume optimum conditions except that the employer skips making past service contributions for years 11 through 20 or the fund suffers an equivalent amount of loss during those years from adverse mortality, earnings, turnover, rate of retirement, capital loss, etc. Suppose also that this shortage is made up by additional contributions in years 22 through 51. What is the picture then? Tables 4a and 4b show us, illustrating a highly irregular net income.

TABLE 4a
EFFECT OF POSTPONING PAST SERVICE CONTRIBUTIONS
(in thousands)

| Year | Fund | Contributions | Earnings | Gross In- come | Benefit Payments | Net Income |
|------------|-------|---------------|-------------|-------------------|------------------|---------------|
| 1 | \$ 0 | Normal \$474 | Normal \$ 0 | \$474 | Normal \$ 0 | \$ 474 |
| 11 | 4,311 | Normal 117 | Normal 172 | 289 | Normal 255 | 34 |
| 21 | 3,854 | Normal 117 | Normal 154 | 271 | Normal 405 | -134 |
| 41 | 6,070 | Normal 375 | Normal 243 | 618 | Normal 450 | 168 |
| 61 | 8,329 | Normal 117 | Normal 333 | 450 | Normal 450 | 0 |

TABLE 4b
EFFECT OF POSTPONING PAST SERVICE CONTRIBUTIONS
(in thousands)

| Year | Fund | Contributions | Earnings | Gross In- come | Benefit Payments | Net Income |
|------------|---------|---------------|--------------|-------------------|------------------|---------------|
| 21 | \$3,854 | Normal \$117 | Normal \$154 | \$271 | Normal \$405 | \$-134 |
| 21 | 3,854 | 0 Nor. 0 | Normal 154 | 154 | Normal 405 | -251 |
| 21 | 3,854 | Normal 117 | ½ Nor. 77 | 194 | Normal 405 | -211 |
| 21 | 3,854 | 0 Nor. 0 | ½ Nor. 77 | 77 | Normal 405 | -328 |

Table 4b spotlights the situation in the 21st year. Assets must be liquidated to the extent of \$134,000 even if contributions and earnings are normal for that year. If contributions are skipped in the 21st year the liquidation must produce \$251,000, and if earnings are also down to half-rate the substantial sum of \$328,000 must be raised through liquidation.

Continual Inflation

Would not all these cash flow problems disappear if we had perpetual creeping inflation with a regular increase in the amount of pension to each individual? The answer is no. Table 5 illustrates the effect of \$3,000

TABLE 5
EFFECT OF INCREASING BENEFITS
(in thousands)

| Year | Fund | Contributions | Earnings | Gross Income | Benefit Payments | Net Income |
|--------|----------|---------------|--------------|--------------|------------------|------------|
| 21.... | \$ 8,910 | Normal \$389 | Normal \$356 | \$ 745 | Normal \$567 | \$ 178 |
| 21.... | 8,910 | 0 Nor. 0 | Normal 356 | 356 | Normal 567 | -211 |
| 21.... | 8,910 | Normal 389 | ½ Nor. 178 | 567 | Normal 567 | 0 |
| 21.... | 8,910 | 0 Nor. 0 | ½ Nor. 178 | 178 | Normal 567 | -389 |
| 41.... | 12,335 | Normal 455 | Normal 493 | 948 | Normal 810 | 138 |
| 41.... | 12,335 | 0 Nor. 0 | Normal 493 | 493 | Normal 810 | -317 |
| 41.... | 12,335 | Normal 455 | ½ Nor. 247 | 702 | Normal 810 | -108 |
| 41.... | 12,335 | 0 Nor. 0 | ½ Nor. 247 | 247 | Normal 810 | -563 |
| 61.... | 15,664 | Normal 502 | Normal 626 | 1,128 | Normal 990 | 138 |
| 61.... | 15,664 | 0 Nor. 0 | Normal 626 | 626 | Normal 990 | -364 |
| 61.... | 15,664 | Normal 502 | ½ Nor. 313 | 815 | Normal 990 | -175 |
| 61.... | 15,664 | 0 Nor. 0 | ½ Nor. 313 | 313 | Normal 990 | -677 |

annual pension benefits for the first 10 years of the plan, \$3,600 for the next 10 years, \$4,200 for the next 10 years, \$4,800 for the next 10 years, and so on ad infinitum, increasing \$600 each decade. Accrued liability created by each benefit increase is spread over the succeeding 20 years. This table spotlights the 21st, 41st, and 61st years. In any of these years, employer contributions can be postponed only at substantial liquidation of assets and the situation gets progressively worse the longer the plan is in effect. In the 61st year, skipping contributions and half-rate earnings require liquidation of sufficient assets to produce \$677,000.

Continual Growth

Would not an employer who perpetually grows and perpetually expands his work force avoid the cash flow problem? Again the answer is no.

This would delay the evil day somewhat, but would not eliminate it. Table 6 shows us. In this table it is assumed that 150 new employees are hired each year during the first decade rather than 100, 200 each year during the second decade, 250 annually during the third decade, 300 annually during the fourth decade, etc., ad infinitum. Looking at this table we see that the employer could skip his contribution for the 41st year without liquidating assets, provided earnings were normal. This is not a stand-off, however, because the time when an employer needs to skip a contribution because his earnings are low may well be the time

TABLE 6
EFFECT OF INCREASING THE WORKING FORCE
(in thousands)

| Year | Fund | Contributions | Earnings | Gross Income | Benefit Payments | Net Income |
|--------|----------|---------------|------------------------|--------------|------------------|------------|
| 21.... | \$ 9,230 | Normal \$204 | Normal \$369 | \$ 573 | Normal \$405 | \$ 168 |
| 21.... | 9,230 | 0 Nor. 0 | Normal 369 | 369 | Normal 405 | - 36 |
| 21.... | 9,230 | Normal 204 | $\frac{1}{2}$ Nor. 185 | 389 | Normal 405 | - 16 |
| 21.... | 9,230 | 0 Nor. 0 | $\frac{1}{2}$ Nor. 185 | 185 | Normal 405 | -220 |
| 41.... | 14,515 | Normal 319 | Normal 581 | 900 | Normal 533 | 367 |
| 41.... | 14,515 | 0 Nor. 0 | Normal 581 | 581 | Normal 533 | 48 |
| 41.... | 14,515 | Normal 319 | $\frac{1}{2}$ Nor. 291 | 610 | Normal 533 | 77 |
| 41.... | 14,515 | 0 Nor. 0 | $\frac{1}{2}$ Nor. 291 | 291 | Normal 533 | -242 |
| 61.... | 22,612 | Normal 436 | Normal 904 | 1,340 | Normal 930 | 410 |
| 61.... | 22,612 | 0 Nor. 0 | Normal 904 | 904 | Normal 930 | - 26 |
| 61.... | 22,612 | Normal 436 | $\frac{1}{2}$ Nor. 452 | 888 | Normal 930 | - 42 |
| 61.... | 22,612 | 0 Nor. 0 | $\frac{1}{2}$ Nor. 452 | 452 | Normal 930 | -478 |

when security prices are low and favorable investments could be made. If earnings of the fund in the 41st year are also depressed, to half-rate, liquidation to produce \$242,000 must be made.

Declining Work Force

But no business can be assumed to have perpetual life, let alone perpetual growth. Let us take an employer (in Table 7) who grows for the first 20 years in exactly the same way as the employer in Table 6 but who reverts to hiring the normal 100 new employees in the 21st year and in each year thereafter (e.g., because of introduction of automation). The situation shortly becomes quite critical as shown in Table 7. After a few years any significant decrease in contributions or in earnings calls for liquidation and the liquidation can be substantial. For example, it can be as much as \$483,000 in the 61st year.

This is an optimistic illustration, however, because it assumes growth for 20 years followed by moderate reduction in hiring. At least as realistic would be to change our basic assumptions as follows: (a) amortize past service liability over 30 years, (b) have 47 employees initially, age 65 to 69, who retire after one year, (c) make contributions in proportion to hours worked, as in negotiated "cents per hour" plans.

Then let us cut the working force in half at the beginning of the fourth year, because of automation or otherwise, and maintain it at that level. Trouble is close at hand as Tables 8a and 8b demonstrate. In the 6th year net income is only \$19,000, and it has gone negative in the 11th year by \$75,000. Skipped contributions or decreased earnings, of course, further increase the negative.

TABLE 7
EFFECT OF DECREASING THE WORKING FORCE
(in thousands)

| Year | Fund | Contributions | Earnings | Gross In- come | Benefit Payments | Net Income |
|---------|----------|---------------|--------------|-------------------|---------------------|---------------|
| 21..... | \$ 9,230 | Normal \$187 | Normal \$369 | \$556 | Normal \$405 | \$ 151 |
| 21..... | 9,230 | 0 Nor. 0 | Normal 369 | 369 | Normal 405 | - 36 |
| 21..... | 9,230 | Normal 187 | ½ Nor. 185 | 372 | Normal 405 | - 33 |
| 21..... | 9,230 | 0 Nor. 0 | ½ Nor. 185 | 185 | Normal 405 | -220 |
| 41..... | 11,739 | Normal 136 | Normal 470 | 606 | Normal 533 | 73 |
| 41..... | 11,739 | 0 Nor. 0 | Normal 470 | 470 | Normal 533 | - 63 |
| 41..... | 11,739 | Normal 136 | ½ Nor. 235 | 371 | Normal 533 | -162 |
| 41..... | 11,739 | 0 Nor. 0 | ½ Nor. 235 | 235 | Normal 533 | -298 |
| 61..... | 9,966 | Normal 117 | Normal 399 | 516 | Normal 683 | -167 |
| 61..... | 9,966 | 0 Nor. 0 | Normal 399 | 399 | Normal 683 | -284 |
| 61..... | 9,966 | Normal 117 | ½ Nor. 200 | 317 | Normal 683 | -366 |
| 61..... | 9,966 | 0 Nor. 0 | ½ Nor. 200 | 200 | Normal 683 | -483 |

TABLE 8a
EFFECT OF DECREASING THE WORKING FORCE
(in thousands)

| Year | Fund | Contributions | Earnings | Gross In- come | Benefit Payments | Net Income |
|---------|-------|---------------|-------------|-------------------|---------------------|---------------|
| 1..... | \$ 0 | Normal \$475 | Normal \$ 0 | \$475 | Normal \$ 0 | \$ 475 |
| 6..... | 1,173 | Normal 227 | Normal 47 | 274 | Normal 255 | 19 |
| 11..... | 1,074 | Normal 227 | Normal 43 | 270 | Normal 345 | - 75 |
| 16..... | 528 | Normal 227 | Normal 21 | 248 | Normal 405 | -157 |

Terminated Plan

Another possibility is that our employer, after growing for 20 years exactly as in Tables 6 and 7, terminates his plan at the beginning of the 21st year because of going out of business, or merger, or union negotiation, etc. Here liquidation is called for continuously. This is happening today far more than most people realize and will probably happen more frequently in the future. The company with which we are connected—a middle-sized company—has been requested to quote on about one terminated self-insured plan per month over the last several years for the purchase of single premium annuities. Usually pensions are provided for existing pensioners and (commencing at retirement age) for active employees nearest that age, to the extent existing funds and assumed earnings thereon are sufficient. Table 9 illustrates this.

Under these conditions it is necessary to maintain substantial cash balances, earning little or no interest, and capital losses can occur with unhappy regularity. Consequently, it is very difficult to maintain earnings at the normal rate. Half-rate earnings may well be the more likely.

TABLE 8b
EFFECT OF DECREASING THE WORKING FORCE
(in thousands)

| Year | Fund | Contributions | Earnings | Gross In- come | Benefit Payments | Net Income |
|---------|---------|---------------|-------------|-------------------|---------------------|---------------|
| 11..... | \$1,074 | Normal \$227 | Normal \$43 | \$270 | Normal \$345 | \$- 75 |
| 11..... | 1,074 | 0 Nor. 0 | Normal 43 | 43 | Normal 345 | -302 |
| 11..... | 1,074 | Normal 227 | ½ Nor. 22 | 249 | Normal 345 | - 96 |
| 11..... | 1,074 | 0 Nor. 0 | ½ Nor. 22 | 22 | Normal 345 | -323 |

TABLE 9
EFFECT OF TERMINATION OF PLAN
(in thousands)

| Year | Fund | Contributions | Earnings | Gross Income | Benefit Payments | Net Income |
|---------|----------|---------------|---------------|-----------------|---------------------|---------------|
| 21..... | \$ 9,230 | Normal \$0 | Normal \$ 369 | \$ 369 | Normal \$405 | \$- 36 |
| 41..... | 7,007 | Normal 0 | Normal 280 | 280 | Normal 533 | -253 |
| 61..... | 992 | Normal 0 | Normal 40 | 40 | Normal 190 | -150 |
| 21..... | 9,230 | Normal 0 | ½ Nor. 185 | 185 | Normal 405 | -220 |
| 41..... | 3,129 | Normal 0 | ½ Nor. 63 | 63 | Normal 533 | -470 |
| 61..... | -6,779 | Normal 0 | ½ Nor. -136 | -136 | Normal 190 | -326 |

It is seen that in the 61st year the fund, with half-rate earnings after plan termination, has gone negative to the extent of \$6,779,000. What this figure really means in practice is that the pensioners *would not have gotten \$6,779,000 worth of benefits they were expecting.*

Fluctuations in Benefit Payments

In actual practice results will fluctuate widely from side to side of the averages shown in our tables. These fluctuations cannot be forecast and can very seriously affect any investment program. There are many causes. Amounts of pension are not the same for everybody and the life or death of a pensioner with a large pension may greatly affect results. Adverse mortality fluctuations and trends may occur (pensioners, with or without a cure for cancer, living longer than expected, particularly those with the higher amounts of pension). Unrealized turnover assumptions, more employees retiring than expected during a recession, any lump sum death or termination benefits provided, any option to take lump sum cash at retirement in lieu of pension, etc., all cause fluctuations from the average in the year or years in which they occur, in addition to the situations we have illustrated. Net investable cash will go up and down and disappear with these fluctuations.

Because the pension payments are an inflexible payroll, we must conclude that the pension fund is a "living fund." Like all living things, it has day-to-day needs which cannot be postponed without disastrous results. It also faces emergency needs for cash when assumptions are not realized or conditions change. From the point of view of the pensioner, both of these are dramatically true. They are also true from the point of view of the employer who might be called upon to meet deficits when least able to raise the funds. This living quality of a pension fund needs serious consideration in taking long-term risks of any substantial nature. Neither the pensioner nor the employer may be able to pass through the interim and thus reap the profit.

DETERMINATION OF INVESTMENT POLICY

In determining investment policy, the management will wish to take into consideration the impact of the cash flow in the particular fund, the nature and objectives of the fund, and the advantages and disadvantages of each possible investment medium.

We have already seen that the cash income and the cash requirements of a pension fund need to be determined in the light of the stability of the employer's business, the possible growth pattern, and its position in times of recession. At one extreme we have a fund in a stable, rapidly

growing company, where past service benefits are being consistently funded in addition to funding the pension benefits currently earned and where there are as yet only a few approaching pension age. A different situation exists in a fund in a cyclical industry with a wide swing, a fund in a company which may face termination or merger, a fund based on a negotiated "cents per hour" contribution, a fund where there are already a large number of pensioners, or a fund where employment is declining.

Objectives vary widely between funds. Some employers may wish to provide minimum benefits, taking increased risks in order to keep costs low. Some may wish to reward their employees by offering a liberal plan with every possible assurance that the benefits will be paid as promised, avoiding any risk which might raise doubt in the minds of some. Others may be guided by the relationship they have or are seeking with a union, etc., in investing the fund.

COMMON STOCKS DO NOT FIT WELL

Anticipating Cash Needs

Common stocks do not fit into the obligations of a pension fund as well as fixed income securities. The share of common stock does not promise any fixed amount of future income and there is no maturity value. It is difficult to forecast returns which may be available to meet cash requirements at some specific future time. Stock investments must be used with an eye toward fluctuations in dividends and market values and disposal problems. The lack of fixed redemption for a stated amount at a stated time makes it necessary to anticipate either capital gains or losses of an unknown magnitude.

A fixed income security such as a bond fits into the cash requirement of a pension fund promising benefits in fixed dollar amounts more easily than a common stock. The bond guarantees the payment of interest and principal on specified dates and the guaranteed amounts can be programmed to cash needs.

Conflict of Interests

The trust nature of the obligations of a pension fund and the fact that there are nearly always two parties involved, the employer and the pensioner—in some situations with opposing interests—complicate the investment problem, particularly when common stocks are involved. This can be illustrated by comparison with a so-called mutual fund.

In the case of the mutual fund the individual investor buys into the

fund of his own free will, accepting the fact that his withdrawal values will fluctuate with the market value of the fund at the time he withdraws. In the case of the pension fund, neither the employer nor the employees are acting with the same freedom. The employer is fulfilling what many consider to be an obligation to his employees in the long-term future. The pensioners and prospective pensioners want a week-to-week living wage in their old age and are obliged to depend on the particular pension fund to which their employer contributes.

The difference between a mutual fund and a pension fund places possible capital gains and losses in a different light. Where promised benefits are in predetermined fixed dollar amounts the employer will receive the benefit of any gain and be expected to make up any loss in the pension fund. Here, the prospective pensioner has no risk incentive and would probably prefer a very conservative investment policy. We also have a difference of interest between today's pensioner and tomorrow's pensioner, particularly should there be a benefit varying with the market value of the fund. Today's pensioner will not be as much interested in the possibility of a long-term gain as will the young man who is still far from his retirement date. All these factors may lead to differences between management and employees in regard to investment policy, particularly where common stocks are involved. These differences may be wider where there are current or possible future questions regarding the control of the fund and the possibility that it may be terminated or changed materially in a way requiring liquidity at the time of transfer.

Dollar Averaging Difficult

The variations in the cash flow of a pension fund make it difficult to successfully operate a common stock investment program under an averaging or other investment formula. Past statistical results most commonly quoted are based on consistent investment throughout the ups and downs of the market. As we have seen, the net investable cash income of a pension fund will vary with the nature of the fund and with actual experience over the years. Inasmuch as there will be deducted from gross income the rather inflexible pension payments, the variation, percentagewise, in net investable income will be greater than the percentage variation in gross cash income. Contributions from employees will vary with the degree of employment in the business in contrast to the relatively constant pension payments. Contributions from the employer are subject to the circumstances affecting his company at the particular time the contribution is to be made; e.g., the United States Steel Company

did not make its usual contribution to the company pension fund in the first three quarters of 1958. The employer may find it necessary or wish to forgo a contribution at a time when investment in stocks is particularly advantageous. Again, he may wish to fund heavily in prosperous years when stock prices may be inordinately high. Thus, even on a growing fund we may expect fluctuations in our net investable income which may work against our chance of obtaining as good a result as that shown by applying hindsight to statistics based on the past.

THE HISTORICAL RECORD OF COMMON STOCKS

The case for investing pension funds in stocks is largely based on expectation of growth in the economy in which current as well as future capital would share and in particular on expectation that long-term inflation is likely to continue. The surface historical record of recent years seems to give considerable support to this view, but a deeper analysis raises serious questions and doubts as to the advantage and effectiveness of such an investment policy.

We must also point out that applying an investment formula to a past history of common stocks is not the same as the day-to-day management of a portfolio through the same period of time. We like to assume intelligent management will better the averages. Particularly where management is forced to consider public opinion, this does not always follow. At unfavorable times, it is not easy to consistently invest money in common stocks and avoid liquidation.

Stock Yields

Objectivity is exceedingly difficult in a statistical analysis of common stocks, primarily because choice of term, particularly the terminal date, has a pronounced effect on the results unless the term exceeds 20 or 30 years. For example, it is obvious that the results on a fund using a 12-year interval from 1946 to 1957, inclusive, will be very different from the results with a 12-year period from 1922 to 1933. Who knows what they may be in 1959-1970?

Perhaps the most objective and comprehensive study of income from common stocks was made by the Cowles Commission covering the 66-year period from 1871 to 1937. All stocks quoted on the New York Stock Exchange were utilized. Results show an average dividend yield of 5% and an average annual price increase of 1.8%, or a total return of 6.8% annually. This study has been extended through 1949 by the Life Insurance Association of America and the American Life Convention in a report in support of proposed amendments to Article 5, Section 81,

of the New York Insurance Law. The 6.8% figure was unchanged by this extension, but it would probably be increased if carried to the present date because of the rise in market levels to an all-time peak. The most comparable study of bond experience is that made by the National Bureau of Economic Research covering the years 1900 to 1943. This includes all bond issues of more than five million dollars and a representative 10% of all smaller issues. Average realized yield, inclusive of all capital gains and losses, was 5.6%. The difference between the 6.8% yield for stocks and the 5.6% for bonds is perhaps not as great as many would have expected. There are other studies indicating a greater advantage

TABLE 10

| Year | Index of Industrials | % Decrease from Previous Year | Cum. % Decrease from Peak Year | Index of Rails | % Decrease from Previous Year | Cum. % Decrease from Peak Year | Index of Utilities | % Decrease from Previous Year | Cum. % Decrease from Peak Year |
|-----------|----------------------|-------------------------------|--------------------------------|----------------|-------------------------------|--------------------------------|--------------------|-------------------------------|--------------------------------|
| 1930..... | .82 | | | 2.14 | | | 1.77 | | |
| 1931..... | .66 | -20% | -20% | 1.76 | -18% | -18% | 1.74 | - 2% | - 2% |
| 1932..... | .39 | -41 | -52 | .58 | -67 | -73 | 1.49 | -14 | -16 |
| 1933..... | .34 | -13 | -59 | .58 | | -73 | 1.30 | -13 | -27 |
| 1934..... | .37 | + 9 | -55 | .64 | +10 | -70 | 1.15 | -12 | -35 |
| 1937..... | .77 | | | .87 | | | 1.14 | | |
| 1938..... | .45 | -42 | -42 | .50 | -43 | -43 | 1.05 | - 8 | - 8 |
| 1939..... | .57 | +27 | -26 | .65 | +30 | -25 | 1.03 | - 2 | -10 |
| 1940..... | .63 | +11 | -18 | .68 | + 5 | -22 | .99 | - 4 | -13 |
| 1941..... | .68 | + 8 | -12 | .80 | +18 | - 8 | .88 | -11 | -23 |
| 1942..... | .55 | -19 | -29 | .83 | + 4 | - 5 | .69 | -22 | -39 |

for equities but they do not seem to have the statistical validity of the above mentioned. The most usual shortcoming is the use of a relatively short time interval, particularly the past 10 or 20 years—a period of unparalleled growth in our economic history and of a marked inflation of our currency.

Stock Fluctuations

Would a fund invested entirely in common stocks have been able to meet the cash requirements of the pension fund each year? Would it fit the "living fund" concept? The answer is, "Not in all periods." Here we are interested in our ability to meet essential cash needs in bad times. Table 10 shows the experience on dividend payments in the years immediately preceding the last war based on stocks in the Standard

and Poor's Daily Stock Price Indexes. We have purposely chosen a bad period, as our fund must meet its obligations each year in such periods as in others. It is evident that there would be a serious decline in the earnings available on the fund. The least harmful effect would be a reduction in the amount of money available for new investments at presumably favorable prices. It might mean increases in the employer's contributions, probably at a time when he could least afford such increases. It might mean liquidation of assets at a time when stock prices would doubtless be quite low. It might mean a scaling down of pensions.

When we consider liquidation of assets as an answer, Table 11 shows

TABLE 11
DECLINE IN DOW-JONES AVERAGE OF
30 INDUSTRIAL STOCKS

| | | | |
|-----------|-------------------|-----------|-----|
| June | 1901 to November | 1903..... | 46% |
| January | 1906 to November | 1907..... | 49% |
| November | 1916 to December | 1917..... | 40% |
| November | 1919 to August | 1921..... | 47% |
| September | 1929 to November | 1929..... | 48% |
| April | 1930 to July | 1932..... | 86% |
| March | 1937 to March | 1938..... | 49% |
| October | 1939 to April | 1942..... | 40% |
| May | 1946 to October | 1946..... | 23% |
| June | 1948 to June | 1949..... | 16% |
| January | 1953 to September | 1953..... | 13% |
| July | 1957 to October | 1957..... | 19% |

that sharp declines in market prices have occurred several times in the average life expectancy of a pensioner and many times in the expected life of a pension fund.

A CRITICAL ANALYSIS OF THE RECORD OF COMMON STOCKS

Are there possible explanations other than in the growth of the economy and inflation to account for the dollar increase in both the earnings and the market value of common stocks since the war?

Deferred Demand and Credit

Insofar as returns are ultimately based on consumer demand and ability to purchase, it is interesting to look at the funds other than current earnings available to consumers for purchases since World War II. There has been wide recognition of the "deferred demand" at the end of the war. It arose both from the low consumption occasioned by the depression of the 1930's and the forced underconsumption of consumer goods during the war following. To help meet this "deferred demand"

the consumer public had large liquid holdings in 1946. To this extent consumers were in effect borrowing from the past. They also borrowed from the future as indicated in Table 12.

Total consumer credit outstanding as a percentage of disposable income has increased from 3.8% in 1945 to a high of over 14% in 1958. Mortgage debt on one to four family nonfarm dwellings increased from 12.4% of consumer disposable income in 1945 to over 37% in 1958. Some may point out that these borrowings do not represent increased demand insofar as they are loans from the savings of others. However, the great increase

TABLE 12

| Year | Disposable Personal Income (in billions) | Total Consumer Credit Outstanding (in billions) | % of Disposable Income | Mtg. Debt Outstanding 1-4 Family Non-Farm Dwellings (in billions) | % of Disposable Income |
|------------|--|---|------------------------|---|------------------------|
| 1945 | \$150.4 | \$ 5.7 | 3.8% | \$ 18.6 | 12.4% |
| 1946 | 159.2 | 8.4 | 5.3 | 23.0 | 14.4 |
| 1947 | 169.0 | 11.6 | 6.9 | 28.2 | 16.7 |
| 1948 | 187.6 | 14.4 | 7.7 | 33.3 | 17.8 |
| 1949 | 188.2 | 17.3 | 9.2 | 37.6 | 20.0 |
| 1950 | 206.1 | 21.4 | 10.4 | 45.2 | 21.9 |
| 1951 | 226.1 | 22.6 | 10.0 | 51.7 | 22.9 |
| 1952 | 237.4 | 27.4 | 11.5 | 58.5 | 24.6 |
| 1953 | 250.2 | 31.2 | 12.5 | 66.1 | 26.4 |
| 1954 | 254.5 | 32.3 | 12.7 | 75.7 | 29.7 |
| 1955 | 270.2 | 38.6 | 14.3 | 88.2 | 32.6 |
| 1956 | 287.2 | 41.9 | 14.6 | 99.0 | 34.5 |
| 1957 | 305.1 | 44.7 | 14.7 | 107.6 | 35.3 |
| 1958 | 311.6 | 45.1 | 14.5 | 118.0 | 37.9 |

in the money supply during the same period nullifies this argument. Evidently total savings were insufficient to meet all the demands on them.

Borrowings, both from the past and from the future, may have increased consumer purchases to what may be an artificially high and perhaps unsupportable level in the future. It is obvious that the increase in borrowing cannot continue indefinitely, since eventually charges on debt would exceed available income. It is almost inconceivable that total consumer credit can increase at the rate indicated in this table for the next 13 years as this would bring such debt to about 55% of consumer disposable income. Thus, we have to question whether business activity can duplicate the rate of increase of recent years with a commensurate effect on the common stock market.

Earnings Overstated

The continuing rise in the price levels since the war has made it difficult to determine the actual growth of a company by comparisons of dollar figures. When we say that sales in dollars have doubled since 1945, this does not necessarily mean that the actual units produced are double those in 1945. It is easy to gain exaggerated ideas of growth. This is well illustrated by Dr. Raymond W. Goldsmith in his testimony in April 1959 before the Joint Economic Committee of Congress. He there estimated that the increase in gross national product per year for the period 1919-1959, based on aggregate current prices, was 4.40%, on aggregate constant prices 2.97%, and he further reduced the increase to 1.64% when he measured it per member of the population.

To the extent that depreciation is understated, corporation earnings are overstated. Because depreciation is normally charged in an amount based on the original cost, with an increasing price level replacement

TABLE 13
PRICE-EARNINGS RATIOS

| | | | |
|-----------|------|-----------|------|
| 1925..... | 8.9 | 1953..... | 9.4 |
| 1926..... | 10.0 | 1954..... | 11.6 |
| 1927..... | 13.2 | 1955..... | 12.8 |
| 1928..... | 13.7 | 1956..... | 13.5 |
| 1929..... | 16.1 | 1957..... | 13.0 |
| 1930..... | 21.1 | 1958..... | 16.6 |
| 1931..... | 33.7 | 1959..... | ? |

costs exceed the depreciation allowance included as an operating expense. Robert M. Blough, Chairman of the Board of United States Steel, in his report to stockholders on May 5, 1958 stated that fully 2¼¢ of each 9½¢ earned had to be used to make up for the deficiency in depreciation allowance. He stated that nearly one-fourth of their profit was actually a "phantom profit" because it had to be used as a cost of doing business. Mr. Blough pointed out that since 1940 the depreciation deficiency of the United States Steel has amounted to over one billion dollars. A similar situation was pointed out by the president of General Electric in his 1958 Annual Report and this experience is representative of much of American industry.

Price-Earnings Ratio Declining

In recent years the growth in earnings has not kept up with the increase in market price. There is also a very interesting parallel between the past few years and the late 1920's. Both these points are illustrated

in Table 13 showing the price-earnings ratio of common stocks based upon the Cowles Commission Study through 1937 and Standard and Poor's composite index subsequently. We have now reached a point where the dividend yield on many good common stocks is much less than the interest yield on good bonds. As of July 29, 1959, Standard and Poor's A 1+ composite bond yield was 4.45% compared with a yield of 3.07% on their composite stock index as of the same date. This is not the usual relationship. It is the first time since 1929 that such a relationship has occurred during a period of general economic prosperity.

The relationship to the 1920's may be entirely accidental, but in both periods there was a rather steady tendency to place a high premium on future earnings and to ignore to a great extent present and demonstrated earning power. We can only hope that mass exuberance does not bring about the same kind of correction again.

The Cold War

What will be the impact on dollar earnings of common stocks and on market prices when the cold war ends? In Table 14 is shown the behavior

TABLE 14

MAJOR WARS AND INDEX OF WHOLESALE PRICES

| | | | | | |
|-----------|------|-----------|-------|-----------|-------|
| 1861..... | 39.4 | 1914..... | 44.2 | 1940..... | 51.1 |
| 1864..... | 85.8 | 1918..... | 85.2 | 1948..... | 104.4 |
| 1879..... | 39.9 | 1920..... | 100.3 | 1958..... | 119.2 |
| 1894..... | 31.3 | 1932..... | 42.1 | | |

of wholesale prices after the wars of the past century. Can we expect a similar result at the end of the cold war and will this mean a reduction in the dollar earnings of common stocks?

Foreign Competition

To what extent will the increasing competition of foreign products, both in our country and in world markets, affect the earnings of our common stocks and their market prices? American producers in such diverse lines as machine tools, chemicals and oil have been complaining about the foreign competition and we have an impressive penetration of the automobile market by the European small car. A weakening of the American basic competitive position has been reflected in world financial centers. All of this has at least been partially responsible for the recent heavy outflow of gold.

Foreign competition will probably tend to limit our price increasing

activities because price increases in this country, if they run substantially ahead of world prices, will put further pressure on the dollar.

In an article in *Harvard Business Review* for May-June, 1959, Peter F. Drucker points out that the foreign (*i.e.*, export and import) market is fast becoming the truly critical market for the American economy. He further suggests the possibility that within a few short years—less than a decade—the central problem of United States economic policy may well become earning enough foreign exchange to pay for imports.

CHANGING CONDITIONS MEAN CHANGING RESULTS

It is true that the best evidence for projecting the future arises from a critical and actual appraisal of past experience. However, too often this approach has been prostituted to accommodate unadorned statistical data with no regard to the role of cause and effect and changing conditions. We are somewhat reminded of the heavy losses suffered by the life insurance industry in the 1920's and 1930's in connection with the income disability benefit. In calculating the premiums for that benefit sufficient allowance was not made for changes in claim rates which would be brought about by the impact of the benefit when it was widely accepted and understood. Action taken in the light of past results of itself creates conditions under which past results may not be repeated. In selecting investments it is wise to engage in some speculation about the ways in which future experience may differ from the past.

Decreased Leverage

Either a change in interest to be paid on indebtedness or a shift in the capitalization ratio will generally affect earnings on common stock even though operating income remains unchanged. Should the trend toward placing a higher and higher value upon net earnings of United States corporations continue, thus expressing the general unwillingness to loan funds at fixed rates of interest, interest rates would tend to rise. In this process business organizations at some point will find it advantageous to raise funds through stock offerings rather than through borrowing short or long term funds. Traditionally, the interest rate paid by a successful company on its indebtedness has been less than its earning rate on common stock. If interest on indebtedness is to be increased or if the proportion of debt to capitalization is to decrease, the effect is to reduce the rate of return on stocks with consequent effects on market price. Table 15 is a simple example of the effect of leverage on equity earnings.

Short Supply

The effect of the increasing demand on the available supply of stocks may make past experience entirely unreliable for the future. Are market prices already too high? Today we have an increasing investment in common stocks by those charged with fiduciary responsibilities and by institutions of all kinds. In addition, common stocks are being sought by many individuals as a possible hedge against continuing inflation. This increased demand, of itself, has reduced the dividend yield on stocks below the interest on fixed income securities. The strength of this movement is well illustrated by the difficulty the government is having in marketing government obligations.

Effect of Public Opinion

It is almost impossible for an institution to pursue, for any length of time, an investment policy which is clearly not in accordance with the

TABLE 15
HYPOTHETICAL ILLUSTRATION OF LEVERAGE

| | |
|--|--------------|
| <i>Capitalization:</i> | |
| Long Term Debt..... | \$ 5,000,000 |
| Common Stock..... | 5,000,000 |
| | <hr/> |
| Total..... | \$10,000,000 |
| Operating Income..... | \$ 1,500,000 |
| Less: Interest on Long Term Debt @ 5%... | 250,000 |
| | <hr/> |
| Taxable Net Income..... | \$ 1,250,000 |
| Income Taxes @ 52%..... | 650,000 |
| | <hr/> |
| Balance for Common Stock..... | \$ 600,000 |
| As % of Common Stock Investment..... | 12.0% |

Same Company With No Long Term Debt

| | |
|---------------------------------------|--------------|
| <i>Capitalization:</i> | |
| Common Stock..... | \$10,000,000 |
| | <hr/> |
| Total..... | \$10,000,000 |
| Operating Income..... | \$ 1,500,000 |
| Less: Interest on Long Term Debt..... | None |
| | <hr/> |
| Taxable Net Income..... | \$ 1,500,000 |
| Income Taxes @ 52%..... | 780,000 |
| | <hr/> |
| Balance for Common Stock..... | \$ 720,000 |
| As % of Common Stock Investment..... | 7.2% |

wishes of its clients. This will be particularly true in situations where a union may be representing some of the interests involved and we are dealing with a "living fund" such as a pension fund. The impact of mass psychology is evident throughout modern financial history. Opinions of the investing public swing with day-to-day events. Optimism and pessimism have a strong tendency to run past the point of realism. Forecasts and consequent actions are heavily weighted by trends in the present and immediate past. We can all remember the "new era" of the 1920's, the "mature economy" of the 1930's, and the widely held expectation of a postwar depression in the middle and late 1940's.

Additions or deductions to corporate wealth do not generally occur rapidly or dramatically. Nonetheless, fluctuations in the market value of common stocks have been and continue to be sudden and of large magnitude. The violent fluctuations shown in Table 11 can be explained primarily by mass psychology, the sharply varying appraisals of future earnings or future market prices. This uninformed opinion is more often governed by the emotional approach than by any objective appraisal. Is it possible that we may be overly optimistic today?

We recall no pressure upon institutions to invest in stocks in the 1930's at which time such investments were most attractive. In fact, public bodies, particularly in Canada, in the 1930's were requiring institutions to liquidate equities already owned and certainly would not countenance additional such investments.

Impact of Inflation

Before we determine investment policy on the assumption that creeping inflation will continue over the years, it would seem prudent to inject a note of caution—a reminder that there are many who believe otherwise. We do not intend to extensively discuss this question here. If those who believe that inflation can, must, and will be stopped—and we so believe—are correct, we can plan our program in expectation of a dollar of stable purchasing power over the years to come. If those who believe that runaway inflation is the end result of our present course are correct, the experience in other countries indicates that it is almost impossible, except by pure chance, to protect existing funds against the ravages of runaway inflation, no matter how they are invested.

Perhaps the most publicized theory is that we shall have an indefinitely continuing creeping inflation. If this is true, many hope that the rising price levels will be offset by continuously increasing dividends and market values of common stocks. To the extent that these ideas are already ac-

cepted, the increase in market values which has already occurred may have discounted this factor for the future and thus be denying us future market price increases when the price level rises. If the mass of the public accept these ideas, we can expect an increasing reluctance to invest money in fixed obligations unless the interest rate offered is high enough both to compensate for the loss in purchasing power when the principal is repaid and to provide a reasonable return on the funds. Perhaps we are already witnessing this effect in the present situation where the yield on good bonds is greater than that on good common stocks.

However, there are many who believe that creeping inflation will not continue. These include those who by a simple mathematical calculation point out that if the value of the dollar decreases a certain percentage each year, ad infinitum, the value eventually approaches zero. These include those who believe that the general acceptance of the inevitability of creeping inflation, of itself, brings about runaway inflation as all seek to protect themselves against the results of the creeping inflation.

These include a substantial body of informed and expert opinion. A thoughtful, well documented recent study is that published in *The Bulletin* of the C. J. Devine Institute of Finance, Graduate School of Business Administration, New York University. The Bulletin is entitled "The Problem of Inflation." Mr. G. Rolland Collins is director of the institute and Dr. Marcus Nadler is research director. Following are direct quotations from this study:

It is doubtful, however, that a process of even a slow rise in prices could continue for any considerable time without a severe set back . . . the constant increase in prices and costs and the larger volume of business would result in accumulation of inventories and increased expenditures for new plant and equipment and would create a demand for expanded bank credit and long term capital. Because of the higher costs of constructing urgently needed public works, the demand for capital by state and local governments would also increase. On the other hand, the supply of funds seeking an outlet in bonds would tend to decline. Because of persistent inflation, the flow of funds into savings institutions would slow down, individuals would shift from bonds to equities, and pension funds would do likewise. These factors and the curtailed ability of the banks to expand credit resulting from a Federal Reserve policy of active credit restraint would cause long term bond yields to increase materially, with an adverse effect on home building, public works, and capital expenditures by business. After a time, these forces would bring the creeping inflation to an end and again lead to a business recession and large scale unemployment. . . .

Widespread fear of inflation could become a serious economic problem, since it emanates primarily from the continued rise in wages and prices even during

the recession, the persistently large Federal deficit, the steadily growing volume of government expenditures—federal, state, and local—and the strong inflation bias in Congress. A growing belief that such conditions are bound to continue could set off strong waves of consumer and business spending that would cause the fears to materialize. The view that continued moderate inflation is not only feasible but desirable because it creates prosperity and full employment is not based on reality. An artificially stimulated boom lays the foundation for a major collapse later on.

We should like to quote from one other study based on exhaustive hearings in England. It is one of the most extensive and intensive made in recent years. It was made by the Council on Prices, Productivity and Incomes appointed by the British government and consisting of Lord Cohen, a judge and former Chairman of the Royal Commission of Taxation of Profits; Sir Harold Hewitt, a past president of the Institute of Chartered Accountants; and Sir Dennis Robertson, a retired professor of Political Economy at Cambridge. We quote:

Once, however, a steady upward trend of prices came to be generally accepted and anticipated, something would have to be done to mitigate the renters' losses—otherwise the Government would cease to be able to borrow any money on fixed interest terms. In the summer of 1957 there were, indeed, signs that such a development was far from being merely an academic possibility. . . .

In our opinion, it is impossible that a free and flexible economic system can work efficiently without a perceptible (though emphatically not a catastrophic) margin of unemployment. . . .

Our terms of reference mention "reasonable stability of prices," but this is an ambiguous term. Some people might hold that it does not preclude a slow rise of prices by 2 or 3 per cent a year. But even such a slow rise does great injustice between different sections of the population, and if it were generally expected to continue indefinitely would hamper many kinds of business dealings, including long term borrowing by Government. If attempts were made to avert these results by sliding-scale arrangements, etc., the most probable result would be to speed up the rate of price rise, which might reach disastrous dimensions. . . . Accordingly, in our opinion the objective should be to stop, not merely to moderate, the inflation.

Jules Backman, Professor of Economics, New York University, in an article appearing in the *New York Times Magazine*, May 3, 1959, well said:

The arguments against creeping inflation may be summarized as follows: (1) it slows long-term economic growth; (2) it makes recessions worse; (3) it hurts fixed-income groups and savers; (4) not everyone can be protected against it by "escalator clauses"; (5) it leads to galloping inflation; (6) it is not inevitable in an expanding economy.

CONCLUSIONS

In establishing a funded pension plan and choosing the method and agency for funding, careful consideration must be given to the nature and the objectives of the pension plan and to the degree of risk to be taken.

Our tables show that cash flow over the years in a pension fund can vary greatly in actual practice. Even under so-called optimum conditions, it can involve liquidation of assets. Actual experience will fluctuate widely on both sides of any assumed averages.

It is vitally important to study the plan as a "living fund" under all the different conditions which may occur in each future year. Long-term gains are of no avail if in the meantime heavy loss is incurred in meeting cash obligations in some particular three month period. Gains assumed on the basis of consistent investment will not be realized if net investable income is not available when market prices are low.

The employer and the employees have conflicting interests particularly in regard to common stock investment. It is important that the conflicts be as far as possible resolved so that they do not become festering sores over future years. Prospective pensioners want to feel sure of their benefits. The employer wants to know his liabilities now and over the years to come. A pension plan should provide security to employees and build good will toward management.

A deeper analysis of the surface record of common stocks shows they do not meet the day-to-day living requirements of the pension fund without possible liquidation at unfavorable times.

There is great question that the past dollar earnings and price record of common stocks will be repeated. We face the future without the built-up consumer demand and liquid assets existing at the end of World War II and with a heavy instalment and mortgage debt already created. Past dollar earnings were inflated by inadequate depreciation charges, by continually rising price levels, and by the low interest rates charged on borrowed money. Today, there is no assurance that creeping inflation with its rising price levels will continue. Foreign products are already stealing our markets. Stock prices have already been bid up to the point where dividend yields are much less than interest rates. It seems unlikely that past price-earnings ratios will be repeated. It must also be remembered that even if funds are available, it is almost impossible for an institution to pursue a consistent investment policy, such as an averaging formula, during those periods when it is not clearly in accordance with the wishes of its clients.

In arriving at a final decision, the hazards of each course of action must be assessed in the light of present political, economic, and monetary conditions. Both the amount and the stability of the return from each investment under varying conditions must be equated against the employer's ability and willingness to make up any deficiency in bad times or face the results that may follow from a forced liquidation of part of the fund under unfavorable conditions. The final decision will measure the anticipated advantages against the possibilities of loss.

DISCUSSION OF PRECEDING PAPER

CONRAD M. SIEGEL:

I should like to congratulate Messrs. Warters and Rae on the presentation of a very fine and scholarly analysis of the risks, in common stock investments, for pension funds. My discussion will not cover the rewards of equity investment, but will rather concern itself with the presentation of certain mitigating factors which I feel should complement the paper.

The first part of the paper describes the cash flow of a hypothetical fund under certain conditions. In order to illustrate situations where the cash flow fluctuates or is negative, certain combinations of circumstances were developed. These circumstances may be categorized as follows:

- (1) Variations in the size or composition of the work force
- (2) Variations in employer contributions
- (3) Variations in investment earnings of the fund.

Of the sets of circumstances outlined above, the first two are not directly affected by the investment policy of the pension fund. The third factor is directly affected. Thus, to the extent that the cash flow is reversed because of these first two factors, the fund invested in bonds and other debt securities will have similar negative cash flow problems.

We must, therefore, narrow our comparison to earnings and liquidation problems. The authors have ably stated the difficulties involved in common stock investment. There are, however, certain difficulties likewise involved in fixed dollar investments. Under adverse economic circumstances in the past, bond interest as well as principal has been defaulted and sinking fund requirements have not been met. Defaults have also occurred with great frequency on mortgages, both as to principal and as to interest.

There is also the question as to whether, in actual practice, accurate maturity scheduling is an important factor in bond selection for pension funds. Where it is, long range scheduling of maturities is of little help when there is a sudden and substantial reversal of cash flow. Again, the problem of periods of wholesale exercise of call provisions can have serious effect on a maturity scheduling plan. As to liquidation problems, many fixed dollar investments in times of financial stress are very difficult to liquidate, except at a very considerable loss. These would include conventional mortgages, leasebacks, direct placement bonds, etc., for which no active trading market is maintained.

I think that the authors have ably demonstrated that it would be un-

wise to invest a pension fund to the extent of 100% in common stocks. However, I do not think these arguments maintain the same weight in the case where a pension fund is invested partially in common stocks and partially in fixed dollar obligations. The following factors mitigate the dangers pointed out by the authors to a considerable degree:

- (1) Some liquidation protection is attained through maturity scheduling of the fixed dollar part of the portfolio.
- (2) Relief may be obtained from whatever portion of the portfolio is maintained in cash.
- (3) If the actuarial assumptions have been conservatively chosen, as is prudent because of Internal Revenue Service objections to book surplus, there will be some contingency margin in both the fund and the employer contribution level.
- (4) Since in computing future employer contributions, common stocks are usually valued at cost rather than market, additional margins may be available by reason of unrealized capital appreciation.
- (5) In times of stress, the fund might borrow money against its securities rather than sell them, in order to weather a temporary market depression.
- (6) A fund can hedge against business depressions in certain sectors of the economy by diversifying its common stock investment over several industries. In this way, reverses in the employer's own business may be offset by dividend increases, etc., in the fund's investments.

FRANK L. GRIFFIN, JR.:

This paper makes a fine exposition of an investment point of view which was also held generally by trustees in regard to pension funds prior to World War II. From one point of view, there can certainly be no quarrel with the conclusions reached. It is possible to run a perfectly sound investment program for a pension fund using only bonds and other fixed-income securities, if the maturities are spaced properly to provide sufficient cash flow from income, contributions, and maturities so that it will not be necessary to sell bonds to meet pension payments. Not only can this be a sound program, it is also much easier to administer than an investment program involving equities. It has only one fault. Over a long period of years, if history has any meaning whatsoever, such an investment program will mean higher costs for the pension program. And this is not due solely to the effects of inflation.

The paper looks to me like an attempt to counter incomplete statements on one side of an issue with incomplete statements on the other. This hardly seems desirable in the absence of a statement that it is de-

liberately done in order to accomplish a specific purpose. At the very outset the authors have stated one premise which is entirely false, namely, that those who advocate equity investment for a pension fund necessarily take the position that the fund will grow indefinitely. Consultants and informed trustees certainly know that this is not so.

The case for equity investment does not depend on such a premise at all. It depends, rather, upon the capital growth possibilities and yield on stocks (the latter currently being lower than on bonds), and on the long-term nature of the investment which, for a permanent organization, precludes the necessity of liquidating any substantial portion of the fund at one time. I believe that the authors of this paper have inadvertently proved this latter point when even their "pessimism" figures showed, at worst, a need to liquidate 4% to 5% of the existing fund at one time. Any worthy trustee surely would minimize this problem by appropriate spacing of bond maturities.

Now, let us mention something else the authors have sidestepped. They certainly realize that they are ignoring inflation in their illustrations; in fact, they have tried to dismiss inflation with a wave of the hand. It would be a pleasant illusion to believe that social and political intelligence will prevail to the degree necessary to guarantee an end to inflation. Note, however, that even without inflation, there would still be capital appreciation over the years among a group of diversified stocks representing leading American companies.

To the extent that our economy is inflationary, it becomes imprudent to invest exclusively in bonds unless the coupon rate is high enough to provide *both* (1) a satisfactory yield and (2) a substitute for capital appreciation to offset the decline in the purchasing power of money. To wager all of a fund on the proposition that we will now see a long-term static or deflationary economy, by investing exclusively in bonds, would seem the height of folly. Investment of a part, at least, of a pension fund on the proposition that the historical inflationary trend will continue seems only common sense.

The paper uses illustrations which presume to project the status of a fund, its income and disbursements, over many years. It is assumed to be invested either entirely or largely in equities. This being the case, it seems to me rather inconsistent to make projections for periods of 20, 40 or 60 years, without assuming any improvement whatsoever by reason of capital growth. True, one cannot count on the fund's containing a substantial excess of market over book value at any particular moment, but any long-term historical study will show that the trend line is steadily upward. Assuming, for the purpose of argument, that the authors had used even a

modest annual appreciation, the amount of the fund at the end of 20, 40 or 60 years would have been well in excess of the figures shown by the authors. If such amounts of appreciation were considered as a contingency reserve, at almost all times it would have taken care of the loss figures—that is, the negative net income—in the special circumstances which the authors postulated.

The paper goes to some length to prove that common stocks fluctuate. I think we all know that. The authors also intimate that common stocks have provided outstanding results only in the last twenty years. Perhaps they would be interested in knowing the record of the 425 stocks in the Standard & Poor's industrial average over the last 81 years. If we begin a twenty year period in 1877, another twenty year period in 1878, another twenty year period in 1879, etc., we find that there have been 61 twenty year periods through 1957. In all but two of those periods the 425 stocks increased in market value. In every period their dividends rose.

Perhaps the greatest mistake made by the authors is to have assumed that proponents of equity investments for pension funds wish to invest 100% in common stocks. This is a real straw man. Actually, one of the primary factors in the development of a sound, long-range investment policy for a pension fund is the determination of the proper percentage to be placed in common stocks. All professional equity investors realize that equities can be the worst possible short-term investments, if they are subject to forced sale to meet cash requirements. At the same time, as the authors recognize in their comparison of the Cowles Commission and the National Bureau of Economic Research studies, common stocks over long periods of years can be expected to provide important advantages over bonds. The problem here is to determine, from actuarial factors, the liquidity requirements of the individual fund so that the remainder of the assets can provide the benefits of long-range equity investment.

The section "A Critical Analysis of the Record of Common Stocks" suffers from too much emphasis on the second word, not enough on the third. No responsible economist or professional investor, to my knowledge, has predicted that the next twenty years will duplicate the last twenty years. We are all agreed on this. The problems of inadequate depreciation, rising prices, and foreign competition are well recognized. Long range, they may well have a serious effect on many fixed-income investments, as well as on common stocks, if they are not met resolutely.

Under the heading "Decreased Leverage" the authors indicate that common stocks may be undesirable because corporations may sell additional stock. In the next section, "Short Supply," common stocks are

undesirable because they may be in short supply. Both worries cannot be legitimate at the same time.

The section "Effect of Public Opinion" points up a real danger to a truly successful long-range common stock investment program. Unless such a program is pursued through the downward fluctuations which will undoubtedly take place in the future, it will not do its job. This will provide a real challenge to the investment manager, but one which can be met in most cases if the management of the company is kept fully informed and understands the investment policy. The whole tenor of the section indicates the authors have no real doubts as to the long-range merits of common stocks, only as to whether others will understand the situation when the going gets a little rough. This problem should not be underestimated. One of the most horrible examples of lack of courage is furnished by the Board of Directors of a major company which in the early 1930's sold out the common stocks in its pension fund at the very time it should have been buying more.

The proposition that there is a basic "Conflict of Interest" between employer and employee is unconvincing. We might recall here again the idea that the most important single factor in the success of a pension program is a strong company. Where this exists, there can be no conflict of interest between company and employee or pensioner on investment policy. Superior investment results, in the ordinary situation, do accrue to the benefit of the company first. However, anything which strengthens the company benefits the employees, at least indirectly. In the case of pension programs, there is a strong possibility that superior investment results over a period of years will result in higher benefits. Investment results may fade into insignificance by comparison with the need for a profitable company able to make its required contributions over a period of years.

As actuaries, we should be the first to admit that the future cannot be foreseen with pinpoint accuracy in this or any other field. It stands to reason that equities have a place, an important place, in a balanced investment policy for pension funds. The use of equities provides a hedge against inflation, just as the use of bonds provides a hedge against a need for partial liquidation. The use of both is no more than the application of the insurance principle itself, a principle with which I am sure the authors must agree.

It is far more important to protect the *buying power* of a pension fund over a long period than it is to avoid fluctuations in market values over short periods. The long history of inflation and higher taxes, in this and almost every other western country, should be a cause of concern to all of

us. There is plenty of evidence, however, that there are forces at work which make unlikely a complete elimination of its demoralizing influence. If this is so, insurance company representatives, as well as others concerned with the financial future, should seek every possible means of protecting their business and their policyholders' interests against inflation, including investment in equities and the issuance of new forms of policy which are consistent with such objectives.

WILMER A. JENKINS:

In this paper Messrs. Warters and Rae present very well, I think, the factual arguments against investing in common stocks the assets of a pension fund of the usual type, with fixed dollar obligations. They have rightly avoided the appeals to emotion which have permeated many public pronouncements on the subject of common stock investments.

The authors' arguments are, fundamentally, two. The first is that there are a number of what might be called "operational" problems that common stock investments could create. These center about what the authors refer to as "the cash flow problem." This means that, as the liabilities and disbursements of a fixed dollar pension plan rise and fall, they might not be met, respectively, by the assets and income from stocks. Phases of this problem relate to selling assets at the times cash is needed, maintaining cash balances of adequate amounts, sticking to a dollar-cost-averaging investment policy, and a slightly different difficulty—a possible conflict of interest between employer and employees.

The authors' second broad line of argument questions the thesis that in the long run the national consumer price averages tend to rise, that the same can be said of the market price averages of common stocks, and hence that stock investments should be helpful in meeting the increasing dollar needs of employees and pensioners.

In relation to the typical pension plan promising fixed dollar benefits, I agree with the authors' first line of argument, the operational problems that can arise, with two provisos. First, their arguments are qualitative; that is, they relate to funds invested solely or largely in common stocks, and if a fund is invested to the extent of only 10% or 20% in stocks the authors' conclusions would apply to only 10% or 20% of the operations of the fund, which, it seems to me, normally would not give rise to serious problems. My second proviso is that sources of revenue of pension funds sometimes differ considerably, and if—as is sometimes the case—there are substantial outside sources of revenue, the operational problems developed by the authors might be relatively unimportant. This may be an unusual type of situation, but I know of one such case.

This paper has little or no reference, I understand, to variable annuities. Even so, I think it important that this be stressed, and that it be stated that with minor exceptions a well-designed variable annuity fund does not lead to the operational problems mentioned by the authors. By its very nature the variable annuity is geared to meet situations in which a pension plan is terminated or much reduced in scope, dividend income is drastically reduced, sales of assets become necessary in a depressed market, and things of that kind. And if the plan is properly designed, the results of these situations would have a minimal effect on the interests of participants.

In particular, the College Retirement Equities Fund contracts make no provision for cash surrender values and limit the size of large single contributions. These most important provisions minimize the cash flow problem developed by the authors. The relative stability of college employment does likewise. There are no union negotiations among college faculties. The demand for common stocks created by CREF cannot cause more than a ripple in the stock market; to CREF the "short supply" argument does not apply. Moreover, in the TIAA-CREF plan employers rarely finance past-service benefits by large contributions which vary from year to year. The conflict-of-interest difficulty described by the authors does not arise in the TIAA-CREF plan because the employee normally participates in CREF on his own election and, if he does participate, he reaps the rewards himself, whether they are good or bad. All of these facts lead to the conclusion that CREF really isn't subject to the cash flow and related problems developed by the authors.

As to the authors' broad argument that, even in the long run, common stock investments won't do what variable annuity proponents say they will, I agree with the authors that theoretical studies are one thing and actual results might be different. Also, that the world does change and entirely new situations do arise; and that in some situations it may become impossible to adhere to a dollar-cost-averaging plan of investment. Nevertheless, I think we must agree that over a long period of past decades there have been substantial increases in both the level of consumer prices and the level of stock market values, and that we have no proof that these increases will not continue in the future, with intermissions, and perhaps accelerate. True, we have no proof that they will, but we in CREF do not contend that future price inflation is inevitable—we say, instead, that there is a probability that in the long run it will persist in the future, that there is a probability that common stock market prices will also tend to rise in the long run, and consequently that it is unwise and risky to disregard these probabilities. We say that stock investments to the extent of

perhaps 50% of contributions give the participant a better chance of receiving adequate retirement benefits in the end. In other words, the argument is like saying that we insure our houses against fire even though fire is not inevitable, because we know there is a probability of loss. In fact, the probability of gain from variable annuities, to me at least, seems larger than the probability of gain from fire insurance.

The words "in the long run" cannot be emphasized too much. Messrs. Warters and Rae discuss at length the situation since the second World War, and there is a great deal of truth in what they say about this period. But in developing CREF we thought that was not enough; we went as far back as we could in statistical history—to 1880 for U.S. figures. Such orientation permits opinions that postwar developments have been unusual, that the current level of the stock market is relatively high, and similar opinions, without conflict with CREF's long-run philosophy. I am not saying that we subscribe to these opinions; we may or may not, but one of the good points in the CREF philosophy is that you don't have to make such difficult or impossible judgments. Incidentally, there has been no departure whatsoever from CREF's policy of dollar-cost-averaging in its regular day-to-day purchases of stocks.

In this paper Messrs. Warters and Rae have made a distinct contribution to this important question of common stock investments. The Society is indebted to them both.

CYRIL J. WOODS:

I must compliment the authors on their industry.

The quantity of mathematics that requires 12 pages of summary is impressive. They have demonstrated conclusively a fact that, hitherto, was merely obvious—that in certain circumstances the outgo of a pension fund may exceed its income.

Their survey of the pitfalls of common stock investment is truly comprehensive; it is quite unrelieved of any hope at all. One must conclude from this that because outgo may exceed income, one should invest at all times only in bonds. A similar mental approach would suggest that as we are all bound to die, we might as well have a convertible cradle, in which we would remain and which would become our coffin. For aspiring undertakers I could suggest the slogan: "Instant Coffin"! My concept would be seriously disturbed by natural growth, but both I and the authors have successfully ignored this.

Their summary of the historical record of common stocks was also convincing, but surely not as they construed it. If, by unselective investment

of common stocks, by investing equally in all stocks quoted on the New York Stock Exchange, one could have obtained a margin of 1.2% per annum over bonds, surely selective investment could have achieved so much more. If not, surely those who pretend to manage investments—and this includes many senior employees of insurance companies—are mere charlatans.

If the pension *need* were fixed, there might be a case for pension fund assets to be themselves of a fixed nature. After all, this is the natural policy of insurance companies, or at least has been and will be until as and when they begin to modify the fixed dollar nature of their contracts.

If the moral liability of a good employer is to provide an income upon which he can, with clear conscience, retire a good long-service employee, the probability is rather more than less that this liability over the long term will rise with inflation. Assets should, with normal financial caution, be of a corresponding type. Common stock or real estate investment, or the like, may not be the answer. If not, I do not know what other answer there is.

Obviously each case must be reviewed on its own merits, as they may be and as they may vary from time to time.

I consider it is equally as naive to suggest that pension funds should generally be 0% in common stocks as it is to suggest they generally be 100% in common stocks. It would be the height of foolishness, however, to ignore this important medium. I am fully conscious of the risks inherent in investing in equities; I am also conscious of the risks inherent in *not* investing in equities. If I am impressed by the authorities quoted by the authors on the future of the world, I am even more impressed by the leading article of the *Economist* of October 13th, 1959:

In London as in other capital markets, it has long been clear that equities were no longer so vulnerable to the old cyclical risks, now that any government (whatever its political complexion) is bound to concentrate on maintaining full employment and on preventing the advent of a prolonged trade depression, even at the risk of inflation. Equity stocks were seen as providing not only a hedge against inflation (which no fixed interest money stock can do) but also a participation in the fruits of industrial growth and an advanced standard of living. Of course, there is the risk of loss on particular shares and a continued need for sensitive selection. But that risk is now much smaller, perhaps smaller than the risk of monetary depreciation on an investment in gilt-edged stocks. These are principles on which the pensions funds and other institutional investors and private investors have been acting for some time.

GEOFFREY N. CALVERT:

The authors of this paper have produced many figures and arguments, but have completely failed to establish a case against the use of common stocks in a pension fund.

For example, when it comes to producing actual figures and projections, their examples are based on a fund investment *entirely* in common stocks. Who ever heard of a pension fund being invested *entirely* in common stocks? This suggestion itself borders on the preposterous. To work out arguments against establishing pension funds *entirely* on common stock investments serves merely to confuse the issue, but should not result in confusing the actuarial profession.

In any pension fund in which equities are used, a careful measurement of cash needs should always be made for 10 or 15 years ahead, and equities used only to the extent that the risk of liquidation does not arise over what is felt to be a safe period of years into the future.

The authors also set out in their paper to show that the long-term outlook of common stocks is clouded and even dismal. In doing so, they make many points in favor of this particular point of view, but say nothing about the other side of the picture. For example, they are worried about what may happen when the cold war ends, but do not seem to realize that we stand on the brink of the space age. They are worried about foreign competition, but do not take note of the establishment overseas of increasing numbers of American manufacturing operations in order to meet foreign competition on its own ground and expand foreign markets for essentially American products. They are rightly concerned about the expansion of credit, but do not refer to the tidal wave of new population which is sweeping up through the age groups and will in due time reach the age brackets where marriage and the establishment of homes will create a new surge of demand. They point out that the postwar pent-up demand has been met now, but do not touch on the vast step-up in research throughout industry since the war, with consequent emergence of vast numbers of new products.

They rightly question overoptimism, but do not refer to the steady plowing in of earnings, resulting in a continuous built-in growth of real value in equities which will presumably continue in the future. Their view is decidedly bearish and one-sided, and we cannot help wondering whether this may be strongly influenced by the investment restrictions within which they are necessarily operating. What they refer to as a "deeper analysis" appears to be somewhat superficial and heavily biased.

For our own part, we are not impressed, and are hopeful that the ac-

tuarial profession will not regard this paper as providing a valid argument against the use of equities, within proper limits, in pension funds.

FERGUS J. MCDIARMID:

I have, I believe, a certain vested interest in the discussion of this paper. It is a very interesting paper and I agree with a great many of the opinions expressed, though not necessarily with all of the conclusions.

The first part of this paper illustrates very adequately that under certain circumstances pension plans will require a net liquidation of assets rather than a continuous buildup. Except in quite unusual circumstances, the annual liquidation will tend to be relatively small in relation to the existing fund. In the illustration in Table 4*b*, for example, the maximum annual liquidation is about 8% of the total fund. In the illustration in Table 5 the maximum annual liquidation is about 4½% of the fund. In Table 6 it is about 2% and in Table 7 it is under 5%.

The principal point that these interesting illustrations brought home to me is that it is quite impossible to estimate what the characteristics of a pension fund will be far into the future. Subsequent events, such as basic changes in the plan brought about by inflationary forces, union pressure, and company policy, may change the original plan beyond recognition. Therefore, it is not possible to devise an investment policy in advance which will meet the requirements of any plan with any degree of exactitude.

The only way to provide for the net liquidation of a pension fund without the risk of book loss on investments is to have bonds maturing in the required amounts. Since the required amounts are quite unknown in advance, this presents a real problem. The mere ownership of bonds or other fixed dollar investments will not do the job, as these might be selling at heavy discounts, as, in fact, is the case with a large proportion of outstanding bonds today. Also, bonds may be a much less liquid form of investment than some people imagine. This point was brought home to me last December when our company tried to sell some United States Treasury bonds at the quoted prices. We tried for two days and didn't move a bond. Probably the most liquid form of investment today, other than maturing bonds, is an actively traded stock on the New York Stock Exchange.

The possible need for liquidation of assets sometime in the future is one reason among many why pension funds should probably be invested in substantial part in fixed dollar investments with a reasonable staggering of maturities. However, I do not see how this in itself rules out the investing of another substantial part of these funds in equities. Neither apparently do the managers of uninsured corporate pension funds in the United

States. These funds at the end of 1958 had 27.3% of their total holdings at book value in common stocks, or 39% if the stocks were taken at market value.

Stock versus Bond Yields

At one point in the paper the authors compare over-all return on common stocks from 1871 to 1937 of 6.8% with a return on bonds from 1900 to 1943 of 5.6%. The latter rate is based upon the Corporate Bond Study of the National Bureau of Economic Research, with which I have some familiarity. The bond yield is improved by the fact that this study ended as of January 1, 1944, when bonds were selling at relatively high prices which tended to improve the bond yields. Railroad bonds in particular had recovered from the depression doldrums and were selling at high prices on account of wartime railroad earnings and prevailing low interest rates. Since the concluding date of this study, bonds have shown up much more poorly. Since 1940 to the present, considered on the basis of interest return alone, large categories of bonds have produced no real economic return at all, looking at the period as a whole.

The loss in principal value through inflation has tended to offset the interest paid. If shrinkage in market value due to rising interest rates were also taken into account, the results would be still less favorable. Of course, it does not follow from this that bonds purchased at the favorable interest rates currently and recently prevailing will show similar dismal results.

In recent years bond prices seem to have become less stable and common stock prices more stable. In very recent years we have witnessed some very wide short-term swings in interest rates, mostly on the upside. For example, between April and September, 1959, interest rates on long term, newly issued corporate bonds and also on outstanding short term United States Treasury bonds increased a full 1%, this in a period of less than six months. This, of course, has caused relatively wide shifts in the market values of these bonds. Some corporate bonds issued during the period of low interest rates which existed in the 1940's are now selling at discounts of as much as 30% below their offering price, if indeed a market exists for them at all at quoted prices.

Table 11 of the paper seems to indicate that movements in common stocks since World War II, on the downside at least, have been much less violent than prior to that time. This may be due to a more stabilized type of economy, achieved partly at the expense of inflation. An interesting companion table to this one would have been one showing the corresponding upward movements in stocks.

Common Stocks May Be High Priced

The authors have done very well to point out that common stocks as a class have very greatly appreciated in relation to earnings in recent years and are now selling at relatively high multiples of earnings. They have also pointed out that bond yields are now very much higher than stock yields as a class. As a result of this relationship, bonds at this time may represent better value than stocks, taken as a whole. Very briefly, from their low 1949 levels, stocks on a broad average basis have more than tripled in market value, stock yields have fallen in half while bond yields have nearly doubled.

However, in an economy suffering from inflation, bond-stock yield relationships probably tend to be different than in one enjoying stable money. In such economy bond yields tend to be fictitious and this has certainly been true of bond yields in the United States and Canada over the last two decades. This is because part of the interest rate must be viewed as an offset to inflation and not as true interest. Since stocks represent an investment in real property, no similar offset is required, provided the depreciation charge plus retained earnings are sufficient to keep the property intact.

The authors of the paper have done well to point out that corporate earnings in an inflationary period may be overstated because the depreciation charged may be insufficient to replace property. This is because the depreciation is based upon the original cost of the property and its ultimate replacement cost may be higher. American corporations now pay out a more modest proportion of earnings in dividends than formerly, in many cases less than 50%, and the earnings retained in the business will usually be more than enough to offset any insufficiency in depreciation and to provide an increase in real equity besides. Under such conditions, the dividend yield and at least part of the retained earnings can probably be viewed as a real economic rate of return.

One must admit that many stocks today appear high priced in relation to bonds. However, it does not follow that this is true of all stocks. The relatively friendless oil stocks, for example, can be bought even in the present market at a relatively low multiple of earnings. And even if the prices of all stocks at this time were so high as to make them generally unattractive, it does not follow that at some future price level they will remain unsuitable investments for pension funds. If, with benefit of hindsight, one could go back to 1949 when cash dividends on good stocks provided over twice the return that could be obtained from interest on

good bonds at that time, it is probable that few of us would be in doubt as to what to recommend.

Pension Funds and Inflation

Pension funds are long-term funds. Their basic purpose is to provide a standard of living for their pensioners, not the payment of a fixed number of currency units. Therefore, the really acid test of any class of pension fund investments is how well they will maintain their real value over quite a long period of time. Over the last twenty years fixed dollar investments have done a notably poor job in this respect and equities a rather good one. Some of the influences which caused this to happen are still with us.

The authors of this paper have dwelt at some length on the subject of inflation and they took what I thought was a moderately optimistic attitude towards it. I completely share their view that creeping inflation can only lead to intolerable results. I also yield to no one in fearing the end results of continuing inflation and its acceptance as being inevitable. I have probably written more letters to congressmen and senators on this subject than most. One basis of optimism, as the authors have pointed out, is greatly increased foreign competition on the part of countries which have made great efforts to stabilize their currencies and whose wage levels are very much lower than ours. Another basis for optimism is the increasing awareness of the dangers of inflation on the part of our people and the fact that the description "big spender" has become somewhat of a political epithet.

However, there are two basic problems yet unsolved. One is the inflationary bias built into the Federal Budget. It is balanced with difficulty in years of high business activity, while in years of mild recession \$12 or \$13 billion deficits are welcomed as a stabilizer of the economy. These deficits apparently have to be progressively larger in order to do the job. For example, in 1948-49, a \$3 billion deficit was sufficient, but by 1953-54 the deficit grew to \$9 billion and in the 1957-58 recession a \$13 billion deficit was incurred. Basically the increase in Federal spending in recent years has not been for defense.

The other disturbing item is the wage-price spiral, which promises to gain full strength again as business improves. About a month ago, I attended a directors' meeting of a moderate-sized public utility. The annual wage increase was up for discussion. The wage increase pattern for a number of years now in that industry, in the Middle West at least, has apparently been about 5% a year compounded. In the recession year 1958 this company had been able to get by with a 4% increase, but this

year they expect to be asked to make up for it with a 6% increase. What struck me most forcefully was the resigned and helpless attitude of that management and the feeling that it was apparently futile to do battle with what had come to be looked upon as almost a natural law. Such an experience as this tends to make a much deeper impression than the printed word. Until we are able to restrain wage increases within the bounds of increased productivity, this basic inflationary force will be with us.

The authors of the paper state that they believe inflation can, must, and will be stopped. I tend to share that view. If also they were able to state when and at what level of dollar value this will be accomplished, it would be a great help in determining proper investment policy.

In the year ending September, 1959, the Consumers Price Index of the United States Department of Labor moved upward from 123.7 to 125.2, indicating according to this index about a $1\frac{1}{4}\%$ loss in the value of the dollar during that year.

JAMES L. CLARE:

The authors have presented an unusually valuable paper. I should like to see it become required reading for the Fellowship examinations immediately.

Their conception of a "living fund" is particularly timely—and should be studied closely not only by actuaries but also by others active in the pension consulting field, who are all too apt to take it for granted that the "optimum conditions" will continue forever and that there can never be a cash flow problem.

Their warnings with regard to "cents-per-hour" funding and with regard to companies facing termination (or merger) are also timely. In fact, I suggest they could have gone even further and warned that far too often pension promises are undertaken which can not be afforded with the monies available. Pensions are being promised that will never be paid, not even in the "predetermined fixed dollar amounts" set forth in the plans, and certainly not in amounts increased to offset rising living costs. I suggest that as actuaries we should be concerned to see that no promises are made that can not be honored, at the very least in terms of dollars and cents, and preferably in terms of real retirement security (as measured in goods and services) as well.

One of the costliest promises that is now being made is normal retirement at age 65, or at an even younger age. I question whether this luxury can be afforded on the basis of what many employers and employees are willing to contribute to pension plans.

While agreeing with the cautious warnings of the authors thus far, I

can not agree with them that these considerations lead to the question, "Should a pension fund be fully invested in equities, or not at all?"

Rather, I suggest, the question should be, "How much of any particular pension fund should be invested in equities?" The answers will be many and various, just as various banking institutions with various liquidity demands have mixed investment portfolios. Just as it would be folly for such banks to be invested either all in equities or all in cash, it is similarly incumbent upon pension funds to seek higher returns on their monies via equity holdings, as far as may be prudent, bearing in mind cash flow and other considerations as so ably set forth in this paper by the authors. In passing, it may be remarked that the cash flow problem can be much reduced by using pooled pension funds or, in Canada at least, by holding an appropriate proportion of mortgages so as to ensure a steady cash income from capital repayments as well as interest and dividend payments.

The arguments the authors quote against creeping inflation are very true, but I question whether they are as yet having any impact on the culprits in the inflation tragedy, namely those who are constantly clamoring for "more." True as they are, these arguments do not strike home—not even the argument that creeping inflation "hurts fixed-income groups and savers."

Surely such arguments would have more effect if they could be translated into immediate terms having a direct impact on those clamoring for more. One way to do this would be by holding the line on pension costs, and then, to the extent that inflation necessitates increases in the amounts of benefits, the normal retirement age could be raised as much as necessary to counterbalance the benefit increases. Telling nonretired employees that inflation will mean they will have to work longer before they can retire could be a most potent anti-inflationary weapon.

On the other hand, to the extent that the pension fund is profitably invested in equities and yields are increased on the pension monies, then with the same benefits and same costs, the normal retirement age could be lowered. Telling nonretired employees that good dividends from equity holdings will mean that they will be able to retire sooner could be a most vivid way of translating the efficiency of our free enterprise system into tangible rewards for them.

Thus, although the authors have performed a great service in presenting this paper, I think there are reasons why pension funds should buy equities—as many equities as may be prudent within the framework of considerations such as they set forth.

JOHN K. DYER, JR.:

When I first saw this paper, I felt embarrassed that a subject so important to consulting actuaries had been neglected by them, to the point where actuaries from the life insurance industry felt impelled to step in and point out to us some of the pitfalls which we seem to have overlooked. Upon due reflection, however, I concluded that it is entirely appropriate that these words of wisdom should have come from life insurance people. After all, the life insurance business has experienced almost every conceivable adverse development, investmentwise and otherwise, in its more than one hundred years of successful operation on the North American continent. On the other hand, the great majority of pension funds have not yet seen their second generation of management; they have not had their 1906; they have not even had their 1932. Therefore how could they realize, as clearly as the managers of the life insurance industry must, that the business of investing reserves to meet dollar obligations falling due many years in the future is a tricky business, having its downs as well as its ups.

The authors have presented a clearly drawn and well documented warning that pension funds must be invested with a view to possible liquidation; that pension funds do not necessarily grow forever. While this does not necessarily preclude the use of equity investments in pension funds, it does clearly indicate that the problem of future liquidity must be one of the guiding factors in determining the long-range investment policy of a pension fund. This would imply, at the very least, that investment of all or nearly all of the reserves of a pension fund in equities is unsound, and that *any* equity investment of such funds involves a potential liquidation problem.

In this connection it is interesting and rather disturbing to compare the actuarial and the investment counselor viewpoints on the subject of pension fund liquidity. Our colleague Bronson has expressed the actuarial viewpoint very well, in stating that "the essence of the pension reserve concept lies in a running presumption that the plan may terminate." In contrast, one of the prominent investment counselors bases his recommendation for substantially 100% investment of pension funds in equities upon the assumption that "there is no prospect that accumulating pension funds will ever be liquidated." In other words, the investment counselor, quite contrary to the actuary, bases his advice upon a running presumption that the plan will never terminate. I prefer the actuary's presumption, and with it the indicated conclusion of the authors of this paper that,

at least beyond some indeterminate point, the investment of pension funds in equities or other investments without guaranteed values is unsound policy. Just where the point of unsoundness is found depends, of course, upon the joint judgment of the actuary and the investment counselor in the specific case, taking into consideration the nature of the obligations, the likelihood of the plan continuing as a going concern without curtailment, and related factors.

The authors have also made it quite clear that equity investments for pension fund purposes (or any other purposes) must be appraised in the light of present and prospective conditions, both economic and political, rather than upon the basis of past performance. There is no doubt about it: conditions which we face today, and will face in the future, in the investment market are unquestionably different from any that have prevailed in the past.

As a consulting actuary it is not my province to advise clients on how to invest their pension reserves. I do not intend to invade this special field which is adequately and ably filled by the trust companies and individuals who specialize in investment advice. I do feel, however, that it is part of the consulting actuary's obligation to his client to make sure that all of those concerned with the operation of a pension fund, including those responsible for investments, have a clear understanding of the nature and incidence of the obligations which the fund is intended to meet. Accordingly I am hopeful that this paper will be given very thoughtful consideration by all those who are directly or indirectly responsible for the investment of pension funds.

HAROLD R. LAWSON:

This is, in my opinion, a wonderful paper. I have read it several times and have learned a lot from it. I just want to emphasize one particular point which may have been mentioned in the previous discussion, but was not stressed as fully as it might be.

I am referring to the trusteeship of the trustees of a pension plan. The authors of the paper say, "The trust nature of the obligations of a pension fund . . . complicates the investment problem." There is no doubt about the grave responsibility that rests on the trustees of pension funds, but just what is this responsibility? Have they not a responsibility for being imaginative in the investment of the fund and for being enterprising, for treating the fund not only as a "living fund," as the authors have suggested, but as something that can be also a growing fund? Or is the responsibility of trustees merely to conserve what they have?

The most famous illustration in literature of this attitude of just conserving what you have is the story in the Bible about the talents. You will remember the man who was entrusted with one talent and hid it in the ground, as some trustees are inclined to do with their pension funds. I checked on the story last night through the courtesy of the local Gideons, and I can tell you that that man was roundly scolded. On the other hand, there were two other men, one of whom was entrusted with five talents. He didn't just invest them at interest, but he traded with them and made another five talents, so he was promoted to a bigger job on a higher level. The same thing happened to the man with the two talents.

Seriously, I know you cannot prove anything with a homely little story out of the Bible, although I must say that this one has quite an impact. It is worth thinking about.

I just want to suggest that the trustees of pension funds have a greater responsibility than to take the fund and put it under a board in the floor. Some of these funds are pretty big; they run up into the millions, maybe hundreds of millions of dollars. The trustees have a great responsibility to use their imagination in investing the funds belonging to so many employees. I suggest, also, that maybe they have a responsibility to society as a whole to use these funds in a way which will best serve the whole economy.

M. ALBERT LINTON:

This is a timely paper. It emphasizes the caution with which pension funds should be invested in common stocks. Probably no one would go so far as to say that no pension fund money should be put into common stocks. Personally, I feel that a substantial amount, say up to 30 percent, might be so invested depending upon circumstances. These circumstances would include the probable necessity, as to both amount and timing, of having to liquidate assets to meet payments. The authors of the paper have done well to present hypothetical examples which illustrate types of liquidation problems that might be encountered.

Much of the wide-spread belief that common stocks are a protection against many of the hazards of the future derives from the experience of the last twenty years. Projecting this experience, many conclude that common stocks will continue to show a better return than bonds, taking into account income and changes in capital values, and that their values will tend to keep pace reasonably well with anticipated rises in living costs.

This brings to mind an interesting incident about the turn of the cen-

ture. Beginning shortly after the Civil War, continuing through the depression of the 1870's and for many years thereafter, the yields on high grade bonds declined steadily. In 1870 the yield was 6.41 percent. In 1880 it was 4.47 percent. In 1899 it had fallen to 3.07 percent. Over the same period the over-all returns on the assets of life insurance companies were, of course, also declining. Such assets, then as now, were invested overwhelmingly in bonds and real estate mortgages. In 1880 the over-all return was 5.28 percent. By 1900 it had fallen to 4.33 percent.

As a result of this long-continued decline life insurance companies naturally became concerned about the basic interest assumptions underlying their policy contracts. Seeking light on what the future might hold, President James W. Alexander, of the Equitable Life Assurance Society, in 1899 queried a large number of financiers and economists. He asked their opinions as to the rate of interest it would be safe for a life insurance company to count upon realizing during the next twenty years on its total assets, invested in such securities and mortgages as a life insurance company should hold.

One hundred and fifteen replied. Sixty-five said 3 percent or lower; 36 said from 3 to 3½ percent. Only four said 4 percent without qualification. The ink was hardly dry upon these replies before the decline was halted and reversed. Increases continued for many years almost without interruption. By 1923 the average yield on life insurance assets had increased to 5.18 percent, or twenty percent above the 1900 figure.

This bit of history suggests the hazards of concluding that the future is likely to continue a trend that has run for as long even as twenty or more years. This is especially true now when the last twenty years have included events such as large scale defense activities, a world war, recovery from the effects both of depression and of war, only to be followed by the Korean War.

Because of the inflationary trend from 1939 to the present time many conclude that continuing inflation in the future is inevitable. They overlook the abnormal conditions which produced the inflation and tend to forget that the rate of price increases has slowed down greatly since 1952. Many economists are doubtful that a modest or "creeping" inflation can continue very long without producing a severe reaction, one of the consequences of which would be a material reduction in prices. It will be interesting to see, now that Dr. Sumner Schlichter is no longer with us, whether anyone else of comparable stature will arise to extol creeping inflation as a necessary, perhaps desirable characteristic of a healthy economy.

Be that as it may, I feel that Messrs. Warters and Rae have given us a new dimension for the consideration of pension fund investment prin-

ciples. Experience may show that some pension funds have gone farther than their managers will later wish they had in depending upon common stocks. In the light of hindsight they may wish that they had placed more dependence upon bonds having maturity dates which could have been selected with reasonable assurance at the times the investments were made.

HARRY M. SARASON:

I have been studying about inflation off and on for 57 years 10 months and 8 days. Some of you have probably figured out from this that I was born on January 1, 1902. I say "some of you," and even this will probably be true only if there are some actuaries in the room. I suppose that there are, but in studying about inflation I have found that you just cannot take anything for granted.

There are two ways to analyze what inflation is, and consequently to have a little more insight into what it does. One of these is to get rid of the dollar sign and think in terms of our consumption, our wealth, and our manpower. The other is to trace inflation historically back into a primitive society.

If we go back into a primitive society, as I understand it, we find that some leader of the tribe or some monarch would cause to be inscribed upon a nugget of gold his honorable mark. This act insured that the gold nugget, or later the gold coin, weighed so much and was of such and such a degree of fineness as well as they could determine in those days, so that gold could pass hands without having to be weighed as dust into the pan and scale. With inflation, of course, when the monarch got powerful enough, he sometimes debased his coin. I call this selective inflation as opposed to general inflation—selfishly selective. His honorable stamp didn't mean as much, but those who were unsuspecting, or weak—which included the vast majority of his subjects—accepted his debased coins at the same value as his old coins. He was essentially stealing from the weak and the unsuspecting and putting it into his own pocket because he paid them less than they thought they were getting. In the same way, as time went on, after the Gutenberg Bible was printed, we had paper currency which was worth so much; later the monarch would print more and we had printing press inflation, slow or quick as the case might be, but essentially the monarch was passing off his money under false pretenses, or the democracy was passing off its money under false pretenses. Some people, the unsuspecting, or unorganized, or weak, were taking money that was worth less than they thought or hoped it was worth. In other words, they were taking money of false value; they were having values taken away

from them without quite realizing what was happening or without power to resist.

We think we understand the way this thing goes, but the following incident illustrates how any of us could have been misled. A friend of mine, a neighbor, back about 35 years ago had lived in Germany just after the inflation following the first World War. At the time of the inflation, if you realize that he was about my age, and have figured out my date of birth, you would know he was a rather young man. He had no regular job; he was, to put it frankly, pretty much of a smuggler, a black market operator in the port of Hamburg. Believe me, he was a nice fellow; it was apparently just what he had to do to live. So his old mother, not senile by any means, perhaps only 57 or so, on seeing how he handled those wonderful looking million mark notes or billion mark notes—it really doesn't make much difference which—reprimanded him. So what did he do in that old city of Hamburg? He rolled up a billion mark note so he could use it as a taper for a light. He put one end in the fire, pulled it out and said, "See, Mother, I'm going to give you a lesson." Then he lit his cigarette with this burning billion mark note. "Now," he said, "I've saved some money. This billion mark note was worth less than a paper match." With his mother's kind of thinking going on, with that kind of difficulty in analyzing the situation, that kind of sticking in the ruts of our old thinking habits, it is pretty apparent that none of us understand inflation quite as fully as we think we do.

Now we analyze inflation from the other angle: consumption, wealth, manpower. We have our manpower, so many hours of such and such training, such and such initiative, and such and such ability, working for so many hours a week. On that basis, looking back, we have of course increased our knowledge—we have made technological improvements. On the other hand we work fewer and fewer hours. Now, the number of hours that a person can work effectively per week, in my estimation, depends largely upon his enthusiasm for his job. We have one of our most influential labor leaders telling us, in just so many words, that no one can get any "joy of work" out of building a Cadillac, so perhaps we simply must work fewer hours with that kind of attitude toward our work. We have had forces at work which have tended to destroy our enthusiasm for work. The Germans in West Germany seem to have more joy of work than we have. Their precision tools are being purchased right now in Detroit. And when it came to comparing the educational system of Russia (I don't know about the work habits) with the educational system of the United States, the big thing that our educators noticed was that the Russian children and

teachers were all very enthusiastic. This enthusiasm, or the lack of it, is a prime factor in general inflation, and those enthusiastic Russian school children are going to become enthusiastic workers when they grow up.

We had, back about the beginning of Franklin Roosevelt's administration, a deliberate encouragement of college education for (among others) those whom we previously had considered not suitable for college education, but ripe to get to work. We had people kept off the labor market, we had restrictions on proper use of child labor, we had a deliberate decrease in our manpower, we had an encouragement to retire and stop work, almost shaming people into stopping work after the older ages. We had a deliberate depreciation of the manpower aspect of our national wealth. As a result of that we have a force moving toward general inflation: that is, it takes more in a percentage of our total hours per week to produce consumer goods, except for these technological improvements. Now all the other nations of the world are having those technological improvements; perhaps they have not caught up with us yet, but they can get them.

Historically, *general inflation* is the kind of thing that was happening in the Jamestown colony before Captain John Smith took over and whipped the gentlemen and taught them how to work. We had these gentlemen, young men from England who didn't know how to work and couldn't produce. And the result was, there just wasn't enough to eat and food was terribly expensive. That is a pure aspect of general inflation. And the more hours we spend in governing ourselves and in being governed, the less productive is our total manpower.

Now it is time to recapitulate our framework; *selective inflation* includes monetary inflation, monopolistic inflation such as cornering the cotton market, and legal racketeering; crooked inflation such as thievery, and Act of God inflation such as fires, earthquakes and floods. *General inflation* includes war effort, boondoggling, excessive pleasure seeking, and all the forces working toward inefficient use of our manpower and of our physical resources. Now, maybe, I can begin to understand inflation. With relation to the rest of the world where they are making the technological advances that we are making, if they have enthusiasm for work that we don't have, we are retrograding. Now it is evident from these considerations, to me at least, that common stocks which I, as an advisor to self-administered pension plans, tell people they should buy to diversify their holdings, which companies with variable annuities tell people to buy, and which companies that are selling term insurance in connection with mutual funds are telling people to buy to diversify their holdings, are not producing complete diversifications, and advice to include buying of real estate is not

producing complete diversification either. It is all concentrated in one country subject to general inflation.

But, as I said at the beginning, I have to be very careful in examining some of the basic major aspects of inflation. I went so far as to use the analogy that I couldn't even take it for granted that there were actuaries in the room who would calculate my date of birth. So, I want to go back to one thing and restate it. When I said the old tribal leader put his mark on the nugget to show that he had weighed it, that was not the first inflation. The first inflation occurred when some smart man who had some beaver skins to give out (when prime pelts were currency) decided that the pelts with moth holes in them could be doctored up in some way by using colored clay, for example, to make them look prime. These pelts were passed off as prime pelts when they really weren't, and that was the first start of inflation. It's somewhat dishonest, isn't it?

Now let me quote Antoine Pinay, the most effective Minister of Finance that France has had in recent years, as taken from the October 1959 *Reader's Digest*. He said, "It is dishonest to ask people to entrust their savings to you, and then pay them back in depreciated currency." Now we get to the crux of the situation. If inflation is dishonest, then what hope have we to completely circumvent dishonesty by the simple step of buying stocks, real estate, etc. Long ago it was said—and it is a truism, but the Supreme Court had to decide it, and it did decide it—"The power to tax is the power to destroy." Of course, we now have government bonds sold to banks and rediscounted (and we have cold war effort) and all those complications going into the inflationary picture. That reminds me, however, of another item, which may be just a straw in the wind, but which I think is more than just a straw in the wind; maybe it is a tree branch or a fence post in a tornado: What are the bankers doing with their own money? Well, I haven't made a survey of the subject, but I know that it is not uncommon for bankers to use their own money to buy metallic gold on the black market. Does this shake your confidence as it shook mine in the belief that common stocks are almost a perfect hedge against inflation?

SIDNEY H. COOPER:

I feel that the paper which has been presented is most timely and effective in drawing attention to the risks involved in common stock investments for pension funds.

Those who advocate the investment of the whole or a large part of a pension fund in common stocks apparently have some confidence that the market value of common stocks can be expected to follow closely the cost

of living. I suggest that this assumption is, in fact, very doubtful. History shows that the market value of common stocks can fall a long way and remain depressed for a considerable period without any substantial fall in the cost of living.

Statistics which I have seen supporting common stocks as an inflation hedge have always been based either on a long period, covering historical developments which can have very little relevance to our present situation, or on experience during the last fifty years, when we have been engaged almost continuously in war or in preparation for war. Even within this period, the years 1920 to 1937, which were relatively peaceful, provided a very different picture. In looking to the future, I think we should ponder upon the possibility of a substantial reduction in the enormous expenditure at present being devoted to armaments.

It seems to me that the risk of depreciation is particularly great at a time like the present, when high stock values reflect the general fear of inflation. In the present condition of public sentiment, I feel that the demand for common stocks may have inflated their value until the possibility of appreciation has been more than discounted by the price required and the risks involved.

I think it is generally recognized that common stock values are likely to depart considerably from the pattern taken by the cost of living index over relatively short periods. This was illustrated very clearly at the time of President Eisenhower's heart attack, when there was a fall in the market of the order of 7% without any corresponding fall in the cost of living. The movement of the two indexes was, of course, out of gear to a greater extent and for a much longer period from the late 20's to the mid-40's.

It is often maintained, with some apparent justification, that a good parallel with the cost of living can be obtained over a long period by investing a regular amount in common stocks, irrespective of market conditions and overriding any tendency to act in accordance with the opinion of the market when making investments. This might be all right if we pursue our theoretical course without regard to public opinion, but a substantial fall in market values is an indication of a general decline in confidence regarding future prospects of common stock. The advantages of common stock investment are likely to secure widest acceptance when stocks are riding high. (That is just when we should *not* be buying them.) On the other hand, the trustees may well encounter opposition to this policy at a time when there is a severe loss of confidence in the future of common stocks. (This is, of course, the time when the stocks should really be bought in order to justify the theory of dollar averaging.)

At the present time, there appears to be considerable public interest in Mutual Funds and Variable Annuities. Mutual Fund salesmen are persuading the public to cash in on their life insurance and to take loans in order to finance the purchase of common stock. How will this sort of stockholder react to a serious setback in the market? Is there not a real danger that a change of financial climate, resulting in a loss of confidence, would be accelerated to a serious depression of the market by the large number of stockholders financed by loans which might be called in at the crucial moment? A nervous market would accentuate fluctuations and might have serious consequences for pension plans heavily committed to investment in common stocks.

I think the theory that common stocks provide a hedge against inflation is probably based largely on the idea that they represent ownership of property, but this is only partly true. Ultimately, they represent the equity in the earning power of the property, but they represent much more the value of good will, and of a working organization. The bricks and mortar and machinery are specialized for production and have very little value apart from their earning power as part of a working organization.

Another idea commonly encountered is that inflation goes hand in hand with an expansion of the economy, but no amount of expansion in the production of goods and services should produce inflation if purchasing power expands only at a corresponding rate. I can see no reason why inflation should necessarily go hand in hand with an expansion in the economy, although this may well be the case if inflationary economic policies are followed.

(AUTHORS' REVIEW OF DISCUSSION)

DENNIS N. WARTERS AND WILLIAM M. RAE:

We wish to thank all of those who contributed to the discussions on this paper. They have both added valuable material and brought out differences of opinion.

The paper we have presented bears the title "The Risks in Equity Investment for Pension Funds" and is very frankly and completely devoted to a study of those risks. In this paper we are purposely concerning ourselves with what to many, particularly at this time, is the unpopular side of the question. Discussions range all the way from a thoughtful analysis of the risks we outline to what seems to be almost an unwillingness to even hear possible risks objectively discussed. Yet we would all agree that it is important that the actuary be in a position to point out both the popular and unpopular sides of the question.

Opposition to the expression of views differing from those popularly held seems to occur with increasing strength at the extremes of swings in market prices. We are again reminded of the late 1920's, when great numbers declared that the New Era had arrived and prices could only go up, and of the middle 1930's, when equities were held in such low esteem that thought was given to ways in which life insurance companies might be required to furnish some of the equity capital so sorely needed and so difficult to obtain.

We are sorry that some have made the assumption that our story is intended to apply only to a fund 100% invested in equities. In the early part of the paper where we speak of "liquidation," we mean liquidation of the assets of the fund whatever they may be. At the end of the paragraph concerning Table 3*b*, we make it clear that liquidation may occur automatically to the extent that bonds or other debt obligations are then maturing and do not default, thus implying that the fund we are discussing is not limited to stock investments. Similar implications occur elsewhere.

Because of the wide differences in pension fund cash flow irrespective of the nature of the investment, the great variety of benefits included in pension plans, and the timing involved in the purchase of stocks, we felt it was not possible to arrive at any universally applicable answer in regard to a percentage of any particular fund which might be invested in common stocks. The answer could be 100%, 75%, 25%, or zero. It would necessarily vary between plans and would require a careful consideration of all the provisions of the plan, the prospects for the employer's business, the possible future cash demands, the current and prospective market level of stock prices, the security desired, and the extent of the risk to be taken.

We appreciate the discussion offered by Mr. Jenkins, particularly that part where he outlines the benefit structure, etc., of the College Retirement Equities Fund. Here, we have a well designed fund, based entirely on common stocks and fitted to the particular needs of a special group. It avoids some of the difficulties outlined in our paper and has the advantage that the extent of his membership is optional with each teacher. In addition, provision is made that at least 50% of the total contributions must be deposited in a fixed dollar pension fund.

Some discussion implies that the potential loss on liquidation of an investment in bonds is as great as that on the liquidation of an investment in stocks. Again, it is difficult to make a general statement as some stocks may be preferable to some bonds and vice versa. However, we all know that bonds have a preferred position in the capital structure of a corporation. A corporation failing to pay interest on bonds and meet maturities

can be forced into bankruptcy. It has free choice in regard to paying dividends on stocks and accepts no legal responsibility for the redemption value of the stock at any time.

Mr. McDiarmid well points out the difficulty in staggering bond maturities to meet cash demands, but we would all recognize that, to the extent these maturities are staggered, liquidity is available at certain dates. In some situations, it may be more difficult to sell bonds than to sell blue chip stocks but, generally speaking, the fluctuations in the market value of a bond will be less than those of a stock and will decrease with the term of the bond. At any particular date, maturing bonds would provide us with cash and other bonds approaching maturity would be very liquid assets. Even with careful staggering of maturities we would not expect perfect protection against the cash flow problem even if a fund were invested 100% in bonds. Some gaps would likely remain at certain times. The more the percentage invested in fixed income securities is decreased below 100%, the wider and more frequent would the gaps be, until the point would be reached where protection would arise, when needed, only by accident.

It is pointed out that in some of our tables the amount of cash to be raised by liquidating investments is only 4% to 5% of the fund, but it will be noticed that other of our tables require a greater percentage, two being in the neighborhood of 30%, showing that we cannot generalize on this statement. It should also be remembered that the difficulty of liquidation would increase with the size of the fund. On a large fund, for example \$100 million, even 5% is \$5 million and it might be difficult to raise such an amount by selling securities on a thin market without serious loss. Again, these liquidations would more often occur at times when market prices were down.

It is suggested that unrealized capital gains on a stock investment would be available to offset losses and perhaps to increase benefits. Here, the assumption seems to be made that any such gains can be accumulated indefinitely without tax. This has recently been questioned. One is also assuming that they will not be used to reduce contributions either from the employer or from the employee. As far as increasing benefits are concerned, one must assume both the accumulation and the willingness on the part of the employer to so increase benefits. In how many funds are these assumptions true?

With his summary of financial opinion in 1899, Mr. Linton well calls to our attention the hazard of concluding that the future is likely to continue a trend that has run for as long even as twenty years.

We wish we could accept Mr. Griffin's statement that consultants and

informed trustees certainly know that a pension fund will not grow indefinitely. We refer him to Mr. Dyer's excellent discussion where he quotes from one prominent investment counselor, "There is no prospect that accumulating pension funds will ever be liquidated." This was a well publicized statement. Most investment counselors and others are not versed in pension mathematics and it is evident that actuaries have a responsibility to post them on the various contingencies that may arise rather than to assume that they are already informed.

We can agree with the suggestion that it is important to protect the "buying power" of a pension fund over a long period, but again the "buying power" with which we are primarily concerned in a fixed dollar benefit fund is that provided by a guarantee that the pensioner will receive his promised pension payments each and every month. In such situations, of which there are great numbers, we still fail to see where the present or prospective pensioner has any great interest in market gain. His pension is fixed and any market gain generally reduces the employer's contribution unless he at some later date volunteers to use it to increase benefits.

The suggestion that the most important single factor in the success of a pension program is a strong company and that there can be no conflict of interest in such case raises some questions. We could well wish that every employee could be fortunate enough to work for a strong company, but those in the weaker companies would also like to have pensions. Even in the strong company the employee would like to have strength in the fund itself in addition to the feeling that his employer will be able to make up any deficits occurring in future years.

It is interesting to see the action of a Board of Directors of a major company which in the early 1930's sold out common stocks in its pension fund referred to as a "horrible example of lack of courage." So does the pendulum of public opinion swing. A study of the history of the 1930's shows that such action was, at the time, more generally looked upon as an example of high courage in facing a situation which many felt had proved to be untenable. Pension funds, insurance companies, and others had been seriously embarrassed by the falling market prices of all securities. It had been necessary for legislatures to enact moratoria and to find ways of continuing companies in business in situations where the market valuation of assets indicated insolvency. Under all of these circumstances, many legislatures and a majority of public opinion felt that a case against any material investment of fixed dollar obligations in common stocks had been made and proved by bitter experience. Those who recognized what was thought to be a mistake were applauded for their courage.

With his apt Biblical illustration of the "Parable of the Talents," Mr.

Lawson well calls to our attention the responsibility of the trustee to earn a return on the fund. However, it is one thing "to trade" with your own surplus funds and quite another to trade with a fund on which someone else is to depend for a livelihood in old age. Here, we are sure, Mr. Lawson would agree that earnings can be sought only within those limits consistent with the safety of the principal objectives of the fund.

Mr. Calvert feels optimistic because of the surging increase in our population. If this were a valid reason, the Chinese and Indians would be enjoying a prosperity so fabulous as to put ours to shame. Enormous savings are needed to provide all the tools needed by all the persons added to the population, to replace obsolete tools, and to supply additional tools and plants needed to take advantage of automation and the possibilities of the space age. Without a stable price level, who is going to save and to what heights will the interest rate rise?

It is nice to feel, as Mr. Wood does, that investment management will surely beat a mathematical average of the market. He offers no proofs. Unfortunately, the record is the other way in many, many cases—a look at the mutual funds will point the situation. It is very difficult for investment management to take action against the current trend of the market and yet this must be done to produce results better than this average. We wish we could share his trust in having a government policy which is to maintain full employment, prevent depression, risk inflation, and at the same time leave equities as a safe hedge for all of us.

It is extremely doubtful that any hedge would work over any lengthy period of time in which inflation was accepted by the general public as inevitable. Mr. Cooper in his discussion presents strong arguments on the other side. Harry Sarason in his discussion, after presenting some interesting history, well closes with this sentence: "Does this shake your confidence, as it shook mine, in the belief that common stocks are almost a perfect hedge against inflation?"

As one more evidence of the impossibility of making inflation work, we should like to refer our readers to the reprint by the Foundation for Economic Education, Inc., of a paper written by Andrew Dickson White, a noted scholar who became Professor of History at the University of Michigan in 1857 and subsequently was first President of Cornell University. This paper is entitled "Fiat Money Inflation in France," and is a fascinating story of the French inflation of the 1790's. There are some striking parallels between this French experience and our situation today. It is well to remember that the greatest minds in France tried in every possible way to make that inflation livable and failed miserably.

Let us take to heart the lessons to be learned from this, from John Law's

experiments with credit in France between 1716 and 1720, from the history of our own Continental currency between 1775 and 1780, from the greenbacks of our Civil War, from the great German inflations which culminated in 1923 and 1948, and from the very recent inflation in France and other European countries. It would seem that the only answer is to have the courage to be guided by past experience and travel the hard road, not believing we have some new magic answer.