

LOS ANGELES CITY EMPLOYEES'
RETIREMENT SYSTEM

ACTUARIAL REVIEW

June 1977

Martin E. Segal Company, Inc.
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MARTIN E. SEGAL COMPANY

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June 8, 1978

Board of Administration
City Employees' Retirement System
City of Los Angeles
City Hall South, Room 505
111 East First Street
Los Angeles, California 90012

Gentlemen:

It is a pleasure to submit this report which presents our review of the Actuarial Investigation and Valuation of the Los Angeles City Employees' Retirement System as of June 30, 1977, and discusses certain other aspects of the pension program.

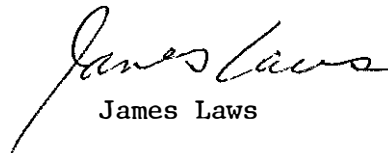
The information provided to us by Mr. Gordon Turnbaugh as the basis for our review is listed in the appendix at the end of this report.

The material included in this study is arranged under the following headings:

- I. REVIEW OF JUNE 30, 1977 ACTUARIAL INVESTIGATION AND VALUATION (TPF&C REPORT)
- II. EXPLICIT VS. IMPLICIT RECOGNITION OF INFLATION IN FUNDING PENSION PROGRAMS
- III. POSSIBILITY OF A PHASE-IN OF INCREASES IN CONTRIBUTION RATES

We look forward to reviewing this report with you at your meeting on June 16. At that time we will discuss any questions which the Board may have concerning this review.

Sincerely,


James Laws

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I. REVIEW OF JUNE 30, 1977 ACTUARIAL INVESTIGATION AND VALUATION (TPF&C REPORT)

It was not within the scope of our review to conduct a second complete study and valuation. For this reason, we were not able to ascertain the accuracy of the valuation results nor the decrement rates regarding death, disability, employee termination, and retirement.

Page 6 of the TPF&C report briefly discusses implicit vs. explicit recognition of inflation in determining pension costs. Our comments regarding this question are given in Section II of this report. It should be noted at this point, however, that we agree with the explicit approach for recognizing inflation.

If we explicitly assume a 2.50% inflationary element for both the investment return and salary increase assumptions, then the assumptions applied in the June 30, 1977 valuation would be viewed as shown below.

1. "Real" rate of investment return (i.e., after discounting for inflation)	3.25%
2. Inflationary element in investment return	2.50
3. Total investment return (1 plus 2)	5.75
4. "Real" increase in salaries (i.e., due to service, merit and promotion)	1.00
5. Increase in salaries due to inflation	2.50
6. Total salary increase (4 plus 5)	3.50
7. Inflationary increase for purposes of pricing future cost of living benefits	3.00

We believe that a 3.25% assumption for the "real" rate of investment return is not unrealistic, and we have no basis for determining the

accuracy of the 1% "real" salary increase. The other items enumerated above are discussed in the following paragraphs.

Inflation affects three different assumptions in the valuation: (i) the investment return, (ii) the salary increase assumption, and (iii) future cost of living benefits. There is no reason to expect that inflation will have the same effect on all of these assumptions although it is common practice to make such an assumption for purposes of determining pension costs. We do believe, however, that it is unreasonable to assume that price inflation (item 7, above - 3%) will be greater than wage inflation (item 5, above - 2.5%). The inflationary factors being applied assume, in effect, that there will be decreases in the standard of living for members of the Retirement System (i.e., prices are assumed to increase at a more rapid rate than average wages).

In order to rectify this anomalous situation, we suggest that the investment return assumption (item 3, above) be set at 6.25% and the salary increase assumption (item 6, above) be increased to 4.00%. If the "real" rate of investment return and the "real" increase in salaries are assumed to remain at 3.25% and 1.00%, respectively, then adoption of the above proposed changes would result in revised assumptions as follows:

1. "Real" rate of investment return (i.e., after discounting for inflation)	3.25%
2. Inflationary element in investment return	3.00
3. Total investment return (1 plus 2)	6.25
4. "Real" increase in salaries (i.e., due to service, merit and promotion)	1.00
5. Increase in salaries due to inflation	3.00
6. Total salary increases (4 plus 5)	4.00

7. Inflationary increase for purposes of pricing
future cost of living benefits 3.00

We estimate that the effect of adopting the above changes would be to reduce member contribution rates by approximately 4% based on the formula dictated by the Administrative Code; i.e., member rates would approximately equal the proposed rates presented in the TPF&C report multiplied by .96. Based on the information provided, it is not possible for us to estimate what effect the changes we recommend would have on the city contribution rates. However, we anticipate that the city rates would also decrease, although probably by less than the estimated 4% for members' rates.

It is our understanding that the Board of Administration has set the assumed investment return at the relatively low level of 5.75% in order to provide a safety margin in the event that other assumptions prove to be overly optimistic. For example, if actual deaths are fewer than assumed, thereby resulting in greater aggregate benefit payments than anticipated, then investment earnings in excess of the 5.75% assumed could be applied to offset such experience losses. While this is a worthwhile objective, it has the effect of setting the member contribution rates above their "true" level as well as creating the anomaly discussed above. It might well be argued that employees should not have to pay the price for overly conservative actuarial assumptions.

The changes we propose allow for a 3% inflationary factor in the salary increase assumption, in the investment return assumption and in the cost of living benefit assumption. The proper level of inflation for purposes of pricing pension costs continues to be heatedly debated within the actuarial community. The national Consumer Price Index (CPI), which is the most commonly used measure of inflation, has increased at an annual rate of 6.91% over the five year period 1971-75. However, over the 55 year period 1921-75, this index has only increased at the annual rate of 1.93%. Although it might be suggested that the long term inflation assumption should be only 2% based on the 55 year

rate, there are a number of arguments which support the contention that future inflation will be at a higher level than long term historical experience indicates. These arguments include shortages of raw materials and fossil fuels, increased government spending, and inflexible wage demands of large unions.

Although we agree that a future long term inflation assumption of 2% is not realistic, we do not believe that recent experience, where inflation has averaged nearly 7%, will prove to be indicative over the long term future. In our opinion, a 3% inflation assumption is not unreasonable.

Section II of the TPF&C report recommends certain changes in the expected decrement rates with regards to mortality, withdrawal, disability, and retirement. In only one area does the recommendation differ materially from the actual experience; this is with regard to pre-retirement deaths where the actual number of deaths are less than 50% of the expected. There are a number of reasons for continuing to use the mortality rates applied in the previous valuation, as recommended in the TPF&C report.

1. Because of the very small probability of death prior to retirement, any change in this assumption would not materially affect the results of the valuation.
2. Also because of the very small probabilities involved, significant deviations in actual death rates can be expected from one period to another. Thus, it is quite possible the next investigation will reveal that actual deaths are twice those expected whereas, as noted above, actual deaths were less than half of those expected during the most recent investigation.
3. It is quite possible that many persons who are near death elect to withdraw their contributions (with interest). Thus, such persons would be reflected as a withdrawal

rather than a death.

4. The mortality table applied in the valuation (the 1971 Group Annuity Mortality Table) is based on a significant amount of data and has been widely accepted for pricing retirement systems.

Except for our suggested changes concerning the investment return and salary increase assumptions, we agree with the assumptions and funding methods applied in the valuation and with the recommendations contained in the TPF&C report.

II. EXPLICIT VS. IMPLICIT RECOGNITION OF INFLATION IN FUNDING PENSION PROGRAMS

In the past, most actuaries have not made explicit assumptions with respect to rates of inflation, though inflationary conditions have been prevalent for more than a decade. They have attempted to counteract the resulting under-conservatism in the salary increase assumption by over-conservatism in the investment earnings assumption. This approach has been called the "implicit" recognition of inflation. The major problem has been that the conservatism allowed for in the interest assumption has often proved to be less than sufficient to allow for the non-recognition of inflation in the salary increase assumption.

The question of whether inflation should be recognized implicitly or explicitly is essentially an academic one so long as the underlying inflation assumptions are identical. Under the Entry Age Normal Cost method, the Normal Cost is equal to a level percentage of salary or a level dollar amount which, if paid from date of participation in the plan to date of retirement or termination, would (in the aggregate) be exactly sufficient to provide the plan benefits if all actuarial assumptions were exactly realized. If we consider only one individual, it should be fairly obvious that if all actuarial assumptions are realized (including future salary increase assumptions), there is only one salary percentage which, when applied to each annual salary and accumulated with interest, will be exactly sufficient to provide the benefits under the plan.

However, there is more than one set of assumptions which, taken in the aggregate, may produce the same result. Specifically, a set of assumptions which consistently recognize inflation on an explicit basis will result in the same cost requirements as another set of assumptions which are indential except that inflation is accounted for implicitly.

In order to illustrate the difference between implicit and explicit recognition of inflation, keeping in mind the concepts expressed in the preceding paragraphs, let's take a look at a hypothetical pension plan. This plan has exactly the same features of the Los Angeles City

Plan except that the employee contributions are a fixed percentage of the total normal cost rather than being set by formula in the Retirement Code. Following are two sets of assumptions which, if all other assumptions are identical, will produce the same required contribution rates*:

<u>Assumption</u>	<u>Explicit Rate</u>	<u>Implicit Rate</u>
Investment return	6.25%	3.25%
Future salary increases	4.00	1.00
Inflationary increase for purposes of pricing future cost of living benefits	3.00	0

Please note that the explicit rates shown above are the same as our recommendations discussed in Section I and the above implicit rates are equal to the "real" investment return and salary increase rates included in our recommendations.

That these two sets of assumptions produce the same actuarial costs can at least partially be concluded from general reasoning. On the benefit side, since the normal benefit is directly proportional to salary, the implicit set of rates assume a substantially lower normal benefit than do the explicit rates, i.e., a 1% increase in salary versus a 4% increase. Also, the implicit rates assume no future cost of living benefits.

*This statement is not quite true; the actuarial costs will be exactly equal if the implicit investment rate of 3.25% was decreased to 3.19% and the explicit cost of living rate of 3.00% was decreased to 2.91%. However, the assumptions shown will produce costs which do not differ materially. Chapter 13 of The Theory and Practice of Pension Funding by Trowbridge and Farr supports this equality of costs for such explicit and implicit assumptions.

Since assumed benefits are significantly lower under the implicit set of rates, one might expect that the resulting cost would be significantly lower. However, the low benefits are offset by two factors. The investment return assumption is three percentage points lower than under the corresponding explicit assumption, thereby increasing the cost. In addition, since lower salaries are assumed under the implicit set of rates, costs expressed as a percentage of salary will be higher.

Prior to the June 30, 1977 valuation of the City Employees' Retirement System, no recognition of inflation was allowed for in the salary increase assumptions and yet no discount was applied to the assumed investment return to allow for this. The significant increase in contributions recommended in the 1977 valuation report is not attributable to a change in actuarial philosophy. Rather, it is attributable to a change to more realistic actuarial assumptions. If an analysis of the aggregate experience losses over the past five years were available, it would be apparent that there have been significant losses attributable to salary increases. The fact that such losses are amortized over a long period of years tends to hide their true magnitude.

If the assumed investment return had been lower (in order to implicitly recognize inflation), the experience losses due to salary increases would have been offset by experience gains due to investment return.

A growing number of actuaries have recently begun revising assumptions in order to take inflation into account in both the interest return and salary increase assumptions on a consistent basis. As a result, their client pension funds are experiencing dramatic increases in the resulting contribution requirements. While it is unfortunate that the modifications in assumptions have such a great impact on cost, it is our opinion that the revised approach is more appropriate than that which had been used in the past.

III. POSSIBILITY OF A PHASE-IN OF INCREASES IN CONTRIBUTION RATES

We have been asked to comment on the permissibility of a phasing in of the recommended increases in contribution rates for members of the Retirement System. We are not in a position to provide a legal opinion on this subject. Therefore, the comments contained in this Section are simply our lay interpretations of the applicable sections of the City Charter and Administrative Code and should not form the basis for the ultimate action taken in this regard.

Section 4.1031(a) of the Administrative Code states that the rate of contribution of members "...shall be such as will accumulate... a sum sufficient for the payment of an annuity of 1.08 percent of final compensation multiplied by the number of years ...of city service..." Section 4.1031(b) contains a similar requirement for determining the survivor annuity contribution rates.

These sections would appear to preclude a phase-in of the increased contribution rates, since the lower rates during the phase-in period would, if accumulated from year of entry to year of retirement, result in an amount less than sufficient to provide the annuities described in Sections 4.1031(a) and (b).

Although a phase-in schedule can be actuarially determined, the ultimate rates under such a schedule would be higher than the rates required in absence of a phase-in. This would appear to be prohibited by Section 4.1031(c) of the Administrative Code.

The only permissible reduction in the actuarially determined members' contribution rates is that authorized by Section 4.1031.1 of the Code. This section allows the members' contributions to be reduced by an amount not to exceed one-half of such required contributions. Any reduction in members' contributions must be accompanied by increased City contributions. Since the City is currently subsidizing the maximum 50%

of members' contributions, the increase in City subsidy is limited to 50% of any increase in members' contribution requirements.

In conclusion, our understanding of the current provisions of the Administrative Code is that a phase-in of the increased members' contribution rates is not possible.

APPENDIX

The following information was provided to us by Mr. Gordon Turnbaugh and formed the basis for our review:

Reports on Actuarial Investigation and Valuation of the Los Angeles City Employees' Retirement System as of June 30, 1977 and as of June 30, 1974.

Reports on Annual Actuarial Valuation of the City of Los Angeles Employees' Retirement System as of June 30, 1976 and as of June 30, 1975.

Letter dated January 31, 1975 from Mr. Harry Church to Mr. Turnbaugh concerning effect of change in interest rate and funding method on city contributions for fiscal 1975-76.

Reprint of Article XXXIV of the Charter of the City of Los Angeles Establishing the City Employees' Retirement System as amended through 1969.

Copies of those sections of the Administrative Code which are applicable to the Retirement System.

July 1976 booklet furnished to the members of the Retirement System.