The Budgetary Implications of Rising Employee Retirements System Costs

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THE BUDGETARY IMPLICATIONS OF RISING EMPLOYEE RETIREMENTS SYSTEM COSTS*
ROY W. BAHL AND BERNARD JUMP

WHILE the rising level of expenditures for the provision of services by state and local governments has been the subject of considerable study by economists, the rising cost of providing these services has seldom been studied. There are two main reasons why the expenditure requirements rather than the cost side of the issue has been given primary attention: the first is that reasonable cross-section and time series data for expenditures by function of government are readily available. The second is that the general concern over rising state and local government expenditures has typically been with the relationship between expenditures and the characteristics of the local population, i.e., the analysis has been oriented toward how governments acting for voters reveal preferences for public goods through budget decisions. For example, common hypotheses tested are that the level of per capita expenditures by state and local governments is a positive function of urbanization, or that per capita city government expenditures for police services are higher where there are greater concentrations of the poor. Whether or not these underlying explanatory factors cause the different components of expenditures — wages and salaries, numbers of employees, pensions and fringe benefits, non-labor costs — to rise at differential rates has not been rigorously studied.

The events of recent years in the public employment field give cause for criticizing this demand oriented expenditure approach as inadequate. There would seem little reason to believe that expenditures grow primarily because of the changing structure of city populations. For example, the salary gains won at the bargaining table on behalf of public employees seem less related to the structure of the city population than to the relative wages of public vs. private sector employees and to increases in the cost of living. There has been little study of the factors underlying increases in retirement system and other fringe benefit costs, but it seems unlikely that these are especially related to changing population characteristics. Finally, the increases in new-labor costs — materials, equipment, supplies — are apt to be best explained by inflation and by changes in the public sector production process. If this critique of conventional State-Local expenditure studies is correct, then the results of these analyses do not give much help in understanding why per capita expenditures vary across states or in forecasting and planning the increase in government expenditures. Hence there is good reason to turn attention to the cost side.

The intent in this paper is to deal with the budget implications to state and local governments of one component of rising government costs — public employee retirement systems.

Our specific objectives here are to present the available empirical evidence on increased retirement system costs and to attempt identification, if not measurement, of the factors which underlie such increases. In this context, we hope to take a first step toward assessing the future budgetary implications of employee retirement system costs.

The paucity of research in this area is such that there is no generally accepted model for the analysis of public employee retirement systems costs. Moreover, data

*This paper is an outgrowth of a larger research project on public employment supported in the Metropolitan Studies Program of the Maxwell School of Syracuse University by the Ford Foundation.


2For examples of some efforts to project the future costs of specific retirement programs see Claudia Devita Scott, Forecasting Local Government Spending (Washington, D.C.: The Urban Institute, 1972), pp. 61-64; and Office of Budget and Financial Management, Issue Analysis: An Aid to Program Decision-Making in Urban Government (Washington, D.C.: District of Columbia Government, 1972), pp. 7-20. The latter of these is an excellent example of what can be done in the way of forecasting costs when the full actuarial records are available.
are severely limited. Accordingly, our method will be to tailor our approach to the kinds of empirical evidence which is easily marshalled in the context of a cross-section analysis of state and local government employee retirement system costs.

In the following section, a brief review of existing studies is presented. We then consider the problems with measuring employee retirement system costs and explore the serious data inadequacies which constrain research in this area. Section IV is limited to analysis of state and local government retirement system costs and includes a rough presentation of trends and a crude model designed to explain inter-state variations in such costs. We conclude with a brief note on the important policy implications of continued increases in retirement system costs.

II. Previous Studies

The research that has been conducted on this subject — mostly in the form of limited cross-section investigation or case studies for particular cities — definitely suggests that retirement costs are a large and rapidly growing component of state and municipal expenditures. Among the most noteworthy in the cross-section category is a National League of Cities report issued in 1972. Purporting to be the first national survey of municipal employee benefits, the report classifies its estimates in a variety of ways including the share of costs attributable to each of several major benefits; comparisons of benefit costs per employee according to job classification, population size group and geographic location of city; and a comparison with benefit costs of private industry employees. Although the survey report does not identify costs for specific cities and despite serious flaws such as a low sample response particularly for large cities and cities in the Northeast where benefits are thought to be most costly, some of the results are important enough to summarize here. Among the conclusions reached were: (1) fringe benefits paid to municipal employees are more costly than those furnished to private industry employees; (2) municipal employee benefit costs are equivalent to between 28 per cent and nearly 34 per cent of pay for time actually worked, depending on the job classification, and (3) pensions and social security costs account for 40 per cent of total benefit costs, making them the most costly benefit by a margin of more than two to one.

Aggregate benefit cost estimates have also been developed in case studies of Philadelphia and New York. Among the conclusions reached in the Philadelphia study was that the expenditures for benefits in 1971 were equivalent to more than 33 per cent of total salary expenditures, up from about 25 per cent in 1966. Also, pension and social security outlays alone accounted for about 35 per cent of all benefit outlays including pay for time not worked such as vacations and leaves. The New York City study revealed a pattern of benefit costs much like that found for Philadelphia, i.e., 1971 benefit expenditures as a percentage

3The problems of devising an appropriate model would be formidable even if appropriate data were available. For a comprehensive discussion of the complexities of accounting for the cost of a retirement system, see Thomas P. Bleakney, Retirement Systems for Public Employees (Homewood, Ill.: Richard D. Irwin, Inc., 1972), Chapter 5.


5Beyond pointing out the flaws in the study, we are unable to say whether this conclusion could be generalized for all municipal employees. But it is important to note as we do below that, according to the Commerce Department’s comprehensive series on employer expenditures for supplements to wages and salaries, the average cost of supplements for private industry employees had consistently exceeded the cost of supplements furnished to state and local government employees.


of salary expenditures for time worked amounted to about 43 per cent. And even more than in Philadelphia, New York's benefit outlays were dominated by the costs of employee pension programs and social security, the share being greater than 50 per cent of the total cost of benefits in every year from 1966 to 1971.

Although the thin literature provides little more than a hint of the nature of pension and fringe benefit cost trends,\(^8\) it does suggest that the budgetary implication of furnishing fringe benefits to state and local government employees are substantial.

III. Measurement Problems

The constraint to more, and better, analysis of the budgetary implications of rising employee retirement system costs is the absence of appropriate data. For purposes of such analysis, the basic measurement problem is one of defining the most appropriate measure of such costs. Ideally, we would like to measure the level of employer contributions that would be required to maintain actuarially sound and fully-funded pension systems.\(^9\) Although an employee does not begin drawing benefits until he completes many years of employment, he is in fact accumulating future claims on benefits each year he works. Hence, the employer is accruing pension obligations to the employee although the employee may not be eligible to receive benefits until he retires. If the employer is paying fully for benefits earned simultaneous with their accrual, this means that money is being accumulated at a rate sufficient, when invested at interest over the employee's working career, to build a fund large enough to pay the full pension liability. In essence, the true annual cost to the employer is the present value of the future retirement benefits that an employee earned during the year and for which, ultimately, the employer will have to pay.

Understatement of true annual costs for retirement programs reflects either underfunding or no funding at all. With respect to the latter, some state and local governments explicitly provide retirement benefits on a pay-as-you-go basis. This means that no employer-financed fund is accumulated as liabilities accrue, and the employer simply pays benefits as employees become eligible to draw them by charging them against current expenditures. Although explicit pay-as-you-go arrangements are rare,\(^10\) it is sometimes alleged that the practice of underfunding is not uncommon.\(^11\) Unfortunately, the allegation cannot easily be tested because, as noted above, appropriate data are not readily available for a broad selection of pension systems. Without access to the detailed records of a pension system it is nearly impossible to determine whether

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\(^8\) As noted in a 1970 Bureau of Labor Statistics study of employee compensation in private industry: "Data on the compensation of public employees, other than those working for the Federal Government, are scarce. Information for this increasingly important sector of the economy will be in growing demand." Alvin Bauman, "Measuring Employee Compensation in U.S. Industry," Monthly Labor Review, October 1970, p. 23. Although the demand has not lessened in the ensuing years, the scarcity of such data appears to be just about as severe now as in 1970.

\(^9\) Even this notion is not without its ambiguities. Consider, for example, what happens to a retirement program with no unfunded liabilities when benefit improvements are granted to present members with the improvement being made retroactive or applicable to all prior as well as future service. Immediately there is created a liability for which the employer has made no payments. Sound actuarial practice permits such liabilities to be funded or amortized in a matter somewhat analogous to charging off a capital item, but there is a considerable range of opinion regarding what constitutes the appropriate period over which the cost should be spread. Generally speaking, the shorter the period selected the more conservatively funded the system. See Bleakney, Retirement Systems for Public Employees, pp. 89-92, 121.

\(^10\) Massachusetts is the only state that uses this approach for virtually all state employees. Local governments in Massachusetts also use pay-as-you-go financing. Among the major cities that use pay-as-you-go to some degree are Indianapolis, Pittsburgh, Seattle, and Washington, D.C.

a program is being fully funded. But the matter is of extreme importance in terms of future expenditures because, if substantial underfunding has been the practice, this will mean that the government involved will eventually be faced with sharply increased employer pension costs—even if there are no increases in employment, salaries, or pension benefit packages.

As already noted, data covering costs of state and local government employee retirement programs and other benefits are very scarce. Interestingly, the principal sources of comprehensive information about the finances of states and local governments, the Census Bureau's annual Government Finance series and its quinquennial Census of Governments, include information about only one employee benefit—retirement programs. Unfortunately, even these data are seriously deficient for purposes of assessing future budgetary effects because they are not in a form appropriate for determining the true current or future costs associated with providing retirement benefits to employees presently on the payroll.

12Advisory Commission on Intergovernmental Relations, City Financial Emergencies: The Intergovernmental Dimension, p. 54.

The Advisory Commission on Intergovernmental Relations is sufficiently alarmed "that underfunded, locally administered retirement systems pose an emerging threat to the financial health of local governments" to recommend that the states require both regular actuarial valuations of all local systems and "realistic funding based on such valuation." Advisory Commission on Intergovernmental Relations, City Financial Emergencies: The Intergovernmental Dimension, pp. 6-7.


14A complete identification of the nature of the data that would be required to assess the budgetary effects of retirement programs would go beyond the scope of this paper. But in general what is needed are records of a given retirement system with respect to such factors as employment terminations, disabilities, retirements, deaths, investment yields, and salary and employment increases. From these, an actuary could develop the actuarial assumptions that serve as the fundamen-

This discussion is not to say that the onus for providing data to evaluate the budgetary implications of pension costs should fall exclusively on the federal government. In fact, appropriate information provision responsibilities of the federal government would seem to be more in the area of making comparative statistics available. Clearly, most of the detailed analysis of the real pension costs to state and local governments will necessarily have to come from state and local government offices.

There potentially are many advantages to making available the data needed to subject retirement costs to more scrutiny and publicity than they customarily receive. Governments may be less willing to commit themselves to providing a too-expensive benefit package without recognizing the budgetary implications of doing so, if taxpayers will be aware of such a situation. In jurisdictions where the retirement benefits furnished to public employees are clearly inadequate relative to those furnished to other public employees and to private industry employees, the availability of more complete and comprehensive information regarding costs could be useful to representatives of public employees in bargaining for improvements in retirement benefits.

More generally, employee representatives could use such data to inform taxpayers of exactly the long-term tax cost of various benefit packages and to argue more pointedly about the relative cost of increased benefit packages vs. the alternative use of local government resources. Hence, to the extent that the government officials responsible for such decisions, taxpayers, and union representatives are all aware in advance of the budgetary significance of benefit proposals, the less likely they are of locking themselves into a package that exceeds what
is reasonable in the context of the overall fiscal situation.\textsuperscript{17}

IV. State and Local Government Retirement System Costs

One general approach to exploring the trend and structure of pension costs is to examine time series and cross-section data on state and local government aggregates. While such aggregation hides the wide variations that exist both between and within states, it does give some rough basis for assessing future budgetary implications.

Trends in Public Employee Costs: 1962-1972

The growth in state and local government employee compensation has been considerable in recent years, in the absolute and in comparison with the private sector, i.e., in 1972 the average compensation of public sector employees was larger than the average received by private sector employees (see Table 1).\textsuperscript{18} Moreover, the growth in total compensation has been greater in the public sector throughout the 1962-1972 period. It is interesting to note, however, that supplements to wages and salaries, which include most fringe benefits, remained higher in the private sector, in the absolute and as a percentage of wages earned. One interpretation of this trend is that bargaining in the private sector placed more emphasis on supplements than did bargaining in the public sector. At any rate, for every one dollar increase in total compensation granted in 1972, the amount for supplements was 13.0 cents in the public sector and 15.5 cents in the private sector.

Public Employee Pension Costs: Trends and Causes

While the trends indicated in Table 1 suggest the growth in total employee supplemental benefits, the data presented do not separate expenditures on retirement programs for expenditures for other fringe benefits. The data in Table 2 describe, separately, expenditures for employee retirement programs over the 1962-1972 period.\textsuperscript{19} It becomes immediately clear from these data that while payroll expenditures as a share of general expenditures were declining very slightly during the decade, retirement expenditures were increasing relative to total payroll outlays.

This implies that governments apparently have been more willing to grant increases in retirement benefits than they have been to grant wage and salary increments. Alternatively, but not inconsistently, it could be...

\textsuperscript{17} According to the ACIR, "in the late 1950's and early 1960's . . . many cities [in Ohio] fell several years behind in their payments to police and fire pensioners." Advisory Commission on Intergovernmental Relations, \textit{City Financial Emergencies: The Intergovernmental Dimension}, p. 66.

\textsuperscript{18} It is difficult to know how much to make of this, though some analysts think that such comparisons "provide significant indications of the movements in the two sectors." B. U. Ratchford, "Recent Changes in Public Pay Policies," \textit{National Tax Journal}, Vol. XXV, December 1972, p. 531.

\textsuperscript{19} Unlike the data in Table 1 which are for calendar years, data in Table 2 are for fiscal years ending June 30.
<table>
<thead>
<tr>
<th></th>
<th>Wages and Salaries</th>
<th>Supplements2</th>
<th>Total Compensation</th>
<th>Supplements as a Percentage of Wages and Salaries</th>
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<tr>
<td>1962</td>
<td>5017</td>
<td>5081</td>
<td>432</td>
<td>482</td>
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<tr>
<td>1967</td>
<td>6324</td>
<td>6231</td>
<td>617</td>
<td>667</td>
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<tr>
<td>1972</td>
<td>8725</td>
<td>8440</td>
<td>987</td>
<td>1098</td>
</tr>
<tr>
<td></td>
<td><strong>Average Annual Growth Rates</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1962-1967</td>
<td>4.7</td>
<td>4.2</td>
<td>7.4</td>
<td>6.7</td>
</tr>
<tr>
<td>1967-1972</td>
<td>6.6</td>
<td>6.2</td>
<td>9.9</td>
<td>10.5</td>
</tr>
<tr>
<td>1962-1972</td>
<td>5.7</td>
<td>5.2</td>
<td>8.6</td>
<td>8.6</td>
</tr>
<tr>
<td></td>
<td><strong>Average Growth per One Per Cent Increase in CPI</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1962-1967</td>
<td>2.4</td>
<td>2.1</td>
<td>3.7</td>
<td>3.4</td>
</tr>
<tr>
<td>1967-1972</td>
<td>1.4</td>
<td>1.3</td>
<td>2.2</td>
<td>2.3</td>
</tr>
<tr>
<td>1962-1972</td>
<td>1.7</td>
<td>1.6</td>
<td>2.6</td>
<td>2.6</td>
</tr>
</tbody>
</table>

1 Calendar years.  
Supplements equal total compensation less wages and salaries.  
inferred that employees have pressed more vigorously for improvements in retirement benefits than for wage and salary gains. Either way, the data lend some support to a thesis that state and local governments are more willing to grant compensation increases which are more easily "hidden" from the taxpayer and/or which may not have to be fully paid for immediately, than they are to grant wage and salary increases which are both visible and immediately payable in full. As Wellington and Winter have observed:

Where pensions are concerned, moreover, major concessions may be politically tempting since there is no immediate impact on the taxpayer or the city budget. Whereas actuarial soundness would be insisted on by a profit-seeking entity like a firm, it may be a secondary concern to politicians whose conduct is determined by relatively short-run considerations. The impact of failing to adhere to actuarial principles will frequently fall upon a different mayor and a different city council. In those circumstances, concessions that condemn a city to future impoverishment may not seem intolerable.20

In truth, the notion of political temptation or opportunism referred to by Wellington and Winter is so subjective and slippery that it is probably impossible to devise a generally acceptable test for determining the degree to which it has been responsible for the rapid rise in retirement costs.21 We certainly are sufficiently convinced of the social value of providing retired employees with enough income to maintain their pre-


21Moreover, we wonder about the assumption that actuarial soundness is so axiomatic for business firms. The recent congressional revelations about private industry pension problems would suggest otherwise.
### TABLE 2
STATE AND LOCAL GOVERNMENT EMPLOYMENT AND EXPENDITURES FOR GENERAL PURPOSES,
PERSONAL SERVICE, AND RETIREMENT PROGRAM, FISCAL YEAR 1962-1972

<table>
<thead>
<tr>
<th>Year</th>
<th>General Expenditures (millions of dollars)</th>
<th>Payroll Expenditures1</th>
<th>Retirement Expenditures2</th>
<th>Payroll Expenditures as a Percentage of General Expenditures</th>
<th>Retirement Expenditures as a Percentage of Payroll Expenditures</th>
<th>Employment FTE3</th>
<th>Payroll Expenditures per Employee FTE</th>
<th>Retirement Expenditures per Employee FTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>$60206</td>
<td>$28729</td>
<td>$1883</td>
<td>47.7</td>
<td>6.6</td>
<td>5901</td>
<td>$4868</td>
<td>$319</td>
</tr>
<tr>
<td>1967</td>
<td>93330</td>
<td>44451</td>
<td>3055</td>
<td>47.6</td>
<td>6.9</td>
<td>7359</td>
<td>6040</td>
<td>415</td>
</tr>
<tr>
<td>1972</td>
<td>166873</td>
<td>78679</td>
<td>5750</td>
<td>47.1</td>
<td>7.3</td>
<td>8992</td>
<td>8750</td>
<td>639</td>
</tr>
</tbody>
</table>

Average Annual Growth Rates

- 1962-67: 9.2, 9.1, 10.2, 4.5, 4.4, 5.4
- 1967-72: 12.3, 12.1, 13.5, 4.1, 7.7, 9.0
- 1962-72: 10.7, 10.6, 11.8, 4.3, 6.0, 7.2

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1Personal service expenditures.
2Contribution by governments to employee retirement programs administered by state and local governments.
3Equal to mean of employment (FTE) during October of each of the two calendar years encompassing the fiscal year.

than 4 per cent annually and payroll expenditures per employee (FTE) grew at 6 per cent annually during the decade ending in 1972, retirement expenditures per employee (FTE) grew at an average annual rate of 7.2 per cent and by 1972 the addition of one employee required, on the average, an employer contribution of $639. This rapid growth in government retirement expenditures per employee (FTE) is consistent with the suggestion that substantial benefit improvements were granted — both directly as increments to benefit payments made to retirees and indirectly as increases in the employer's share of total contributions required from employer and employees to fund retirement programs.

Interstate Variations

The pattern of interstate variations in state-local government retirement system expenditures may give some additional evidence as to the reasons for higher or lower costs. That is, if we identify the factors underlying cost differences between states,

we may be able to understand why costs for particular states would rise. The approach taken here is strictly empirical, and the goal is only to describe the structure of interstate variations in retirement costs. To do this, we first examine the means and variations of those measureable characteristics of state retirement systems and then turn to a simple correlation analysis among these characteristics and a set of factors thought to influence their levels.

On a national, a priori basis, we might consider the following as factors affecting interstate variations in government retirement system costs. Per Capita Income should have a positive effect because of the expected higher level of benefits in high income states and because the expected greater union strength in high income states would probably call forth higher government contribution rates. Urbanization and Population Size should exert a positive cost influence for the same reasons, and perhaps also because the larger and more highly urbanized states may have been the most hard pressed fiscally and therefore, have granted large retirement benefits in lieu of increased wage benefits. Finally, the Union Strength is expected to strongly affect the government retirement cost level by contributing to a government's willingness to provide a better (more costly) benefit package as well as a higher government contribution percentage.

The characteristics of retirement systems studied here are the percentage distribution of contributions from the government, employees, and investment earnings, and the dollar level per member of each of these components. In addition, we examine government retirement costs as a per cent of payroll expenditures and system enrollment as a per cent of total state-local government employment.

22Though even without benefit improvements it is possible that a given percentage increase in salary will require a greater percentage increase in employee contribution. See Bernard Jump, New York City Pensions, A Report of the Maxwell Research Project on the Public Finance of New York City (New York, N.Y.: The Temporary Commission to Make a Study of the Governmental Operation of the City of New York, 1972), p. 37.

23For all state and local governments combined, the government, i.e., employer, share of total government plus employee contributions grew from 59.4 per cent in 1962 to 62.8 per cent in 1972. (U.S. Bureau of the Census, Census of Governments, 1972, Vol. 6, . . . Employee Retirement Systems of State and Local Governments, p. 10.) But these figures may underestimate the extent of the shift in required shares because many retirement systems permit their members to make voluntary contributions so as to receive even higher benefits upon retirement and, if the employer's plan is appropriately structured, to shelter income from immediate taxation. To the extent that these voluntary employee contributions have been growing in the past decade, then the true obligatory share of required contributions falling on government employees has grown even more than the above figures suggest. (For an explanation of how one of the New York City's retirement programs actually make voluntary contributions a "bargain," see Jump, New York City Pensions, p. 44.

24The underlying theoretical model and rationale for the choice of these variables is spelled out in our unpublished paper "A Theory of State and Local Government Retirement Cost Increases" (1974).

25Measured here as the per cent of the non-agricultural labor force which is unionized. We assume that where private sector unionism is strong, so too will be the public employee unions.
From the means and coefficients of variation\(^26\) (shown in the far right column of Table 3), it may be seen that retirement contributions average $1180 per member\(^27\) with the government, employee, and earnings contributions averaging 44, 31, and 25 per cent respectively. It is especially interesting to note from these data that the relative variation in total contributions per member is about four times greater than the variation in per capita income and two times greater than the variation in per capita general expenditures.\(^28\) This suggests that other factors tend to reinforce the tendency for higher income and higher spending states to have greater total retirement contributions per member.

The pattern of relationship between retirement system and state characteristics is evidenced in the simple correlations among these variables (see Table 3). The relatively high correlations observed here suggest that one might be able to explain a great deal of the interstate variation in the level of per member retirement system contributions, and in the level of government costs per member. These data show that total contributions per member tend to be significantly lower where the employee share is higher, and significantly higher where per capita incomes, urbanization, and the level of union strength are higher. Following the notion that the employee share is the crucial variable in analyzing the level of government costs, these data show that where the employee share of total contributions is lower, the state will tend to be more highly urbanized, unionized, and have a higher income level. While this isn’t conclusive evidence by any means, it suggests the hypothesis that in the more affluent and industrialized states, e.g., the Northeast, the public employee receives a greater retirement contribution on his behalf, in total, and pays less for it. From the point of view of the government, these data suggest a higher level of expenditures in more highly urbanized and unionized states where the level of income is higher.

Some interesting features about the internal workings of the various state-local systems are also evident from the data in Table 3. It would appear that government contributions are substitutes for both employee and earnings contributions, i.e., where government contributions are relatively high (low), both employee and earnings shares are relatively low (high). At the same time, however, employee and earnings shares tend to be complimentary, i.e., where one is high (low), both tend to be high (low). Together, these two patterns may constitute indirect support for the notion that under-funding is not uncommon. For example, in the extreme case of a true pay-as-you-go system in which so-called government contributions go indirectly to pay benefits due retirees, the government contributions would add nothing to the assets of the systems and, hence, nothing to the earnings to be obtained from invested assets. As such a system matured in terms of the number of retirees relative to the number of working members, it should follow that government contributions would increase relative to employee contributions and, because earnings were being derived only from accumulating employee contributions that were being invested, it should likewise follow that government contributions would increase relative to earnings. A priori, it is not obvious why such a pattern would emerge where a system was fully-funded and the employing government contributed its full share of retirement costs as they accrued. In fact, what should occur as a fully-funded system matures is that earnings on invested assets should account for a growing share of the sum of employee plus government plus earnings contributions.

There would not seem to be any logical reason for the substantial positive correlation between the employee and earnings shares of total contributions if most systems were fully-funded and employers were contributing full costs as they accrued. At any moment in time there are some systems where the government employer and the employees tend to share retirement costs more or less equally and there are other systems where the employer absorbs a rela-

\(^{26}\)The standard deviation as a per cent of the mean.  
\(^{27}\)Unweighted average statewide contribution per member.  
\(^{28}\)The coefficient of variation in general expenditures per capita is .27.
<table>
<thead>
<tr>
<th>Retirement Cost Indicators:</th>
<th>GC/M</th>
<th>EC/M</th>
<th>RC/M</th>
<th>GC/TC</th>
<th>EC/TC</th>
<th>RC/TC</th>
<th>GC/L</th>
<th>Y/P</th>
<th>U</th>
<th>N</th>
<th>W</th>
<th>P</th>
<th>Mean</th>
<th>Coefficient of Variation</th>
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<tr>
<td>Total contributions per member (TC/M)</td>
<td>.89</td>
<td>.79</td>
<td>.73</td>
<td>.55</td>
<td>-.46</td>
<td>.07</td>
<td>.45</td>
<td>.73</td>
<td>.71</td>
<td>.57</td>
<td>.79</td>
<td>.53</td>
<td>$1180</td>
<td>.43</td>
</tr>
<tr>
<td>Government contributions per member (GC/M)</td>
<td>-.73</td>
<td>.26</td>
<td>.66</td>
<td>-.73</td>
<td>-.40</td>
<td>.41</td>
<td>.66</td>
<td>.65</td>
<td>.54</td>
<td>.61</td>
<td>.37</td>
<td>$530</td>
<td>.62</td>
<td></td>
</tr>
<tr>
<td>Employee contributions per member (EC/M)</td>
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<td>.23</td>
<td>.43</td>
<td>-.16</td>
<td>-.31</td>
<td>-.32</td>
<td>-.26</td>
<td>-.26</td>
<td>-.21</td>
<td>$350</td>
<td>.41</td>
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<tr>
<td>Earnings contributions per member (RC/M)</td>
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<td>.01</td>
<td>.76</td>
<td>.65</td>
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<td>.52</td>
<td>.37</td>
<td>.53</td>
<td>.62</td>
<td>$300</td>
<td>.48</td>
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<td>Government percentage of total contribution (GC/TC)</td>
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<td>-.73</td>
<td>.11</td>
<td>.20</td>
<td>.15</td>
<td>.22</td>
<td>.08</td>
<td>.01</td>
<td>45.5</td>
<td>43.5</td>
<td>20.8</td>
<td>21.0</td>
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</tr>
<tr>
<td>Employee percentage of total contribution (EC/TC)</td>
<td>.43</td>
<td>-.16</td>
<td>-.33</td>
<td>-.26</td>
<td>-.26</td>
<td>-.22</td>
<td>30.8</td>
<td>43.5</td>
<td>.21</td>
<td>.21</td>
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<tr>
<td>Earnings percentage of total contribution (RC/TC)</td>
<td>.11</td>
<td>.16</td>
<td>.04</td>
<td>-.01</td>
<td>.06</td>
<td>.37</td>
<td>25.6</td>
<td>.24</td>
<td>.24</td>
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<tr>
<td>Government contributions per dollar of payroll expenditures (GC/L)</td>
<td>.16</td>
<td>.41</td>
<td>.42</td>
<td>.37</td>
<td>.60</td>
<td>$0.051</td>
<td>.21</td>
<td>.21</td>
<td>.21</td>
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<td>State Characteristics:</td>
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<tr>
<td>Per capita income (Y/P)</td>
<td>.67</td>
<td>.52</td>
<td>.87</td>
<td>.42</td>
<td>$889</td>
<td>.14</td>
<td></td>
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<tr>
<td>Per cent of population living in SMSA (U)</td>
<td>.44</td>
<td>.65</td>
<td>.63</td>
<td>51.9</td>
<td>.26</td>
<td></td>
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<tr>
<td>Per cent of non-agricultural labor force which is unionized (N)</td>
<td>.57</td>
<td>.32</td>
<td>.32</td>
<td>23.4</td>
<td>.58</td>
<td></td>
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<tr>
<td>Average yearly salary of public employees (W)</td>
<td>.47</td>
<td>$8520</td>
<td></td>
<td>4.193,062</td>
<td>.18</td>
<td></td>
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1 In logarithms.
2 The standard deviation as a per cent of the mean.
3 1972 data.
4 1970 data.

tively large share of the burden of providing benefits. In any given system, however, where full funding is the practice, the total annual addition to accumulated assets and, consequently, the incremental earnings obtained when employer and employee contributions are invested, should not vary depending on how the cost is divided between employer and employee. It should be equally true that there would be no significant positive correlation between employee and earnings shares, unless the usual and predominant arrangement required that employees pay the overwhelming majority of the cost of their pensions with the result that employee contributions account for the bulk of income-yielding assets. Since the weight of available evidence suggests that few, if any, systems require employees to bear so large a proportion of the cost, it seems plausible that the observed relation between employee and earnings shares is yet another indication of widespread employer underfunding. That is to say, if governments generally were contributing true costs as they accrue, the employee share of contributions would be less relative to both the government and the earnings shares of total contributions than is shown by the data examined here.

For now these observations must be labeled as speculative for, as stated earlier, the data used in this study do not lend themselves to a definitive analysis of the degree to which underfunding characterizes state-local retirement systems. But the evidence is sufficient to demonstrate clearly the need for better data and analysis of state and local government employee retirement costs.

V. Conclusions

From an enumeration of the important issues to be resolved in the analysis of retirement system costs, it becomes clear that fiscal economists and other scholars of state and local finance have devoted too little attention to the budgetary implications of public employee retirement programs. Moreover, the available aggregate data covering state and local retirement system costs may not permit a full evaluation of the budgetary implications.

Still, data that are available indicate that most state and local governments are spending steadily increasing amounts on employee retirement programs — in terms of both dollar amounts and as a proportion of total wage and salary payments. The considerable budgetary implications of this trend suggest that careful study of the factors underlying such increase is called for.

A cross-section analysis of state-local government retirement costs presented here suggests that the level of government retirement costs per member tends to be higher in states where income is higher, urbanization is greater, and union strength is greater. These greater government costs are apparently a result of both a greater level of per member benefits and a larger government contribution percentage.

There is need for further analysis of the budgetary implications of retirement costs, and for identification and measurement of the underlying determinants of increases in these costs. Such study would seem an essential ingredient to government officials and union leaders developing an understanding of the effects of public employee benefit demands on the taxpayer.