To take another example, suppose we wanted to conduct a total compensation study exclusively for engineering positions in the public and private sectors. It would be possible to construct the Standard Population solely from engineers in the Civil Service. Private sector employers could then be sampled to collect data on the pay and benefits given to engineering positions. Assuming such data were available, the Standard Population Method would then be applied with the following special considerations (refer to Table III-3):

-- the TOTAL EMPLOYEES IN COMPANY column would be replaced by TOTAL ENGINEERS IN COMPANY

-- the TOTAL EMPLOYEES IN INDUSTRY column would be replaced by TOTAL ENGINEERS IN INDUSTRY

The exact details of how the aggregation, as illustrated in Table III-3, takes place will depend on exactly how the pay level survey is designed.

Other Comments

1. The method has strong credibility for total compensation assessment. It's basic concept -- giving civil service employees private sector benefits to see what the value is compared to benefits they already have -- is easy to grasp.

2. The method is most effectively applied if it is computerized. There is some effort in this. However if it is well done, the subsequent effort in total compensation analysis will be limited to survey design, data collection and validation. The computer model can be used to test for materiality and sensitivity.

3. Note that the method is simplified in the case of benefits which are related to none of age, service or pay. In this case, they do not need to be run through the Standard Population. They can be added in directly at the point where total compensation is calculated.

4. Actuarial assumptions are necessary to determine the benefit value for some benefits (e.g. retirement plans). In the application of the Standard Population Method, it is usually the case that the same actuarial assumptions are applied to each retirement plan in determining the benefit value per employee. On theoretical grounds, it could be argued that this should not necessarily be the case. For instance, consider two retirement plans which are identical except that one provides greater benefits on early retirement. It could be argued that the presence of the generous early retirement benefits will encourage employees to retire early and therefore a different set of retirement assumptions should be used in determining the benefit value.

    However, to do so would give an accuracy that is more apparent than real. In practice rates of retirement are also affected by such things as the personnel policies of the employer, the business plans of the employer, general economic conditions, etc. Therefore, to determine the relative value of various benefit plans to employees in the Standard Population, a standard set of assumptions is applied.

5. It could be argued that, applied in certain ways, the Standard Population Method is biased for or against certain employee groups. To take a simple example, suppose that one Standard Population is constructed to represent the entire civil service. The results of a total compensation analysis are then used to adjust base salary. However, suppose engineers in the private sector are actually entitled to signifi-

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cantly higher benefits than anyone else in the private sector. Public sector engineers may then regard the benefit valuation process as being biased against them. This should be recognized for what it is. It is not a flaw in the method. It is the result of policy decisions on how to construct the Standard Population and, more fundamentally, how to structure civil service pay and benefits from the viewpoint of internal equity within the service.

6. In practice, the method would utilize several Standard Populations. The number of populations and how they are developed is governed by how the pay level survey is designed. Since we are not privy to the design details of the pay level survey, we can only provide general guidance at this point. In a study of this nature, the Standard Population should be derived by:

-- identifying those public sector employees whose jobs are to be included in the pay level survey

-- grouping these employees by such items as age length of service, salary, etc.

The result would be a more refined version of the Standard Population shown in Table III-2. Each age/service grouping represents a "profile" employee and the totality of the groups is a profile of the employees included in the pay level survey.

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IV. NON-PAY-RELATED BENEFITS

We have been specifically asked to advise whether non-pay-related benefits should be excluded from pay trend surveys. This section will demonstrate that they should, in theory, be included in pay trend surveys.

A. BASIC CONCEPT

Suppose that pay level surveys are conducted less frequently than annually and that the results are used to establish total compensation equality with the private sector. In the years between pay level surveys, pay trend surveys are used to adjust public sector cash compensation.

In the ideal world, the application of pay trend percentages to public sector cash compensation would exactly preserve total compensation equality in the years between pay level surveys. In calculating pay trend indicators, this is equivalent to answering the question:

> "What cash compensation adjustment, resulting from a pay trend survey, would produce the same total compensation that would result from a pay level survey adjustment?"

B. ILLUSTRATION OF THE CONCEPT

In Section III, we illustrated how to achieve total compensation equality using the results of a pay level survey. We provided a numerical example whereby total compensation equality was achieved at $159,536 (under the assumption of identical working hours in the two sectors).

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These same results are displayed in the top portion of Table IV-1. This table illustrates the following:

1. In Year 1, there is total compensation equality between the private and public sectors -- the total package is worth $159,536.

2. In the private sector, cash compensation increases from $143,000 to $156,000 between Years 1 and 2. This gives a pay trend indicator of 9.0909%.

3. Following the methodology described in Standing Commission Report No.9 would result in increasing civil service cash compensation from $138,292 to $150,864.

4. Applying 15% to annual base salary to value the retirement benefit and adding $500 for the medical benefit, results in total compensation of $173,994 for the public sector.

5. This is different from the private sector total compensation of $174,540. What has happened? In Report No.9, the mathematical development assumed that "non-pay-related benefits are as valued at the end of the survey period." But the fact is that total compensation includes pay-related and non-pay-related benefits. A change in either results in a change in total compensation. If total compensation equality is to be maintained, the pay trend indicator must reflect changes in both pay-related and non-pay-related benefits.

6. The example in Table IV-1 assumed that private sector employers doubled their medical benefits, thus increasing their value from $551 to $1102 between Years 1 and 2. Would the Report 9 method have produced the correct answer if there had been no change? The answer is no. If the arithmetic is followed through, Year 2 total compensation will still not be

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TABLE IV-1

TREATMENT OF NON-PAY-RELATED BENEFITS IN PAY TREND SURVEYS

PAY TREND ADJUSTMENT - STANDING COMMISSION REPORT 9 METHOD

| | Private Sector | | | Public Sector | |
	Year 1	Year 2		Year 1	Year 2
Annual base salary	$132,000	$144,000	⟹ 9.0909% ⟹	$138,292	$150,864
Fixed bonus	11,000	12,000		0	0
Total cash compensation	143,000	156,000		138,292	150,864
Value of retirement benefits	15,985	17,348		20,744	22,630
Value of medical benefits	551	1,102		500	500
Total benefit value	16,536	18,540		21,244	23,130
Total compensation	$159,536	$174,540		$159,536	$173,994

CIVIL SERVICE PAY ADJUSTMENT USING PAY LEVEL SURVEYS

FORMULA: $ABSc = [TCp \times \frac{Sc - Lc}{Sp - Lp} - Dc] \div [1 + PCTc]$

YEAR 1: $ABSc = [159,536 - 500] \div [1 + 0.15] = 138,292$

YEAR 2: $ABSc = [174,540 - 500] \div [1 + 0.15] = 151,339$

PAY TREND ADJUSTMENT - PAY LEVEL EQUIVALENT METHOD

GENERAL FORMULA

$$\text{PAY TREND INDICATOR (ADJUSTED)} = \frac{ABSc_2}{ABSc_1} = \frac{[TCp_2 \times \frac{Sc_2 - Lc_2}{Sp_2 - Lp_2} - Dc_2] \div [1 + PCTc_2]}{[TCp_1 \times \frac{Sc_1 - Lc_1}{Sp_1 - Lp_1} - Dc_1] \div [1 + PCTc_1]}$$

SPECIAL CASE - NO CHANGE IN CIVIL SERVICE PAY-RELATED BENEFITS

$$\text{PAY TREND INDICATOR (ADJUSTED)} = \frac{TCp_2 \times \frac{Sc_2 - Lc_2}{Sp_2 - Lp_2} - Dc_2}{TCp_1 \times \frac{Sc_1 - Lc_1}{Sp_1 - Lc_1} - Dc_1} \Rightarrow \frac{174,540 - 500}{159,536 - 500} \Rightarrow 9.4343\%$$

NOTE: p_1, p_2, c_1, c_2 denote private sector and civil service in Years 1 and 2

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equal. Unfortunately, because the value of medical benefits is a small proportion of the total, the difference looks as if it might be a rounding error. In fact, if the value of private sector medical benefits is taken as $100,000 in Years 1 and 2, and the arithmetic followed through, the difference in Year 2 total compensation will be about $10,000.

7. This last item illustrates two important points:

   (a) In total compensation analysis, the mix of pay-related and non-pay-related benefits is important. Different employers will have different mixes. The same employer will often have different mixes at different organizational levels. In assessing total compensation comparability, it is critical to capture these features.

   (b) The impact of non-pay-related benefits on maintaining total compensation equality increases as their value increases as a proportion of total compensation. In other words, if non-pay-related benefits are large, they must be considered in making pay adjustments based on pay trend surveys.

8. The middle portion of Table IV-1 shows how annual base salaries would be calculated in Years 1 and 2 based purely on pay level surveys. The formula is the one developed in Section III.

9. The bottom portion of Table IV-1 shows how the pay trend indicator should be calculated to produce a base salary adjustment which is equivalent to that of a pay level survey. This formula can be simplified if there has been no change in pay-related benefits in the public sector. In our example, the pay trend indicator would be 9.4343%, rather than 9.0909%.

V. RELATIONSHIP TO PAY TREND SURVEYS

The purpose of this section is to specify how the results of the
fringe benefit valuation could be used in pay trend surveys. We
will begin with a simple illustration and provide some comments.
For purposes of the illustration, we will initially assume:

--   a full pay level survey has not yet been conducted

--   a pay trend survey has been conducted

--   private and public sector benefits have been valued
      using the Standard Population Method.

A. ILLUSTRATION

A numerical example showing the calculation of an adjusted pay
trend indicator is shown in Table V-1.

1. The top portion of the Table shows the information available
    under the assumptions stated above. The information shown
    corresponds to that shown in the top portion of Table IV-1.

2. The middle portion of the Table shows how Year 2 total com-
    pensation is calculated using the available information. The
    two columns on the left show total compensation provided to
    public sector employees on two bases:

    --   the left column incorporates the value of actual
          public sector benefits

    --   the next column shows the total compensation of a
          public sector employee if he were provided private
          sector benefits.

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TABLE V-1

RELATIONSHIP TO PAY TREND SURVEYS

INFORMATION AVAILABLE FOR MAKING PAY TREND ADJUSTMENT

	PRIVATE SECTOR			PUBLIC SECTOR	
	YEAR 1	YEAR 2	PAY TREND INDICATOR	YEAR 1	YEAR 2
Annual base salary	Unknown	Unknown	9.0909%	$138,292	Unknown
Fixed bonus	Unknown	Unknown		0	Unknown
Total cash compensation	Unknown	Unknown		138,292	Unknown
Value of retirement benefits	12.11%	12.11%		20,744	15%
Value of medical benefits	551	1102		500	500
Total benefit value				21,244	
Total compensation	Unknown	Unknown		159,536	Unknown

CALCULATION OF YEAR 2 TOTAL COMPENSATION

	PUBLIC SECTOR EMPLOYEES			EQUIVALENT PRIVATE SECTOR TOTAL COM-PENSATION	PAY TREND INDICATOR	YEAR 2 TOTAL COMPEN-SATION
	PUBLIC SECTOR BENEFITS	PRIVATE SECTOR BENEFITS	DIFF.			
Annual base salary	$138,292	$127,654		→$132,000 ⟹	9.0909% ⟹	$144,000
Fixed bonus	0	10,638		→ 11,000		12,000
Total cash compensation	138,292	138,292	nil	143,000		156,000
Value of retirement benefits	20,744	15,459	5,285	15,985		17,438
Value of medical benefits	500	551	- 51	551		1,102
Total benefit value	21,244	16,010	5,234	16,536		18,540
Total compensation	$159,536	$154,302	$5,234 —	$159,536		$174,540

CALCULATION OF ADJUSTED PAY TREND INDICATOR

$$\text{PAY TREND INDICATOR (ADJUSTED)} = \frac{TC_2 \times \frac{Sc_2 - Lc_2}{Sp_2 - Lp_2} - D_2}{TC_1 \times \frac{Sc_1 - Lc_1}{Sp_1 - Lp_1} - D_1} \implies \frac{174,540 - 500}{159,536 - 500} \implies 9.4343\%$$

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3. The third column shows the difference between public and private sector total compensation arising from fringe benefits. This amounts to $5,234.

4. In the fourth column, the equivalent private sector total compensation is determined. This is done by allocating the difference, $5,234, between pay and pay-related benefits and adding the medical benefit value to calculate total compensation.

5. In the final column, Year 2 private sector total compensation has been calculated. The pay trend indicator from the pay trend survey has been applied to the cash component and the value of benefits has been determined using the private sector benefit value factors.

6. We are now in a position to calculate the adjusted pay trend indicator. This is shown in the bottom portion of the Table. The calculation is identical to that shown in the bottom of Table IV-1.

COMMENTS

1. Since, under our assumption, pay level surveys have not been carried out, this method imputes the cash component of private sector total compensation. This may appear questionable. In fact, it is no different from the existing situation whereby civil service salaries are adjusted taking into account pay trend indicators. No attempt is made to assess the comparability of cash compensation to which the indicators apply. The method in Table V-1 refines the current approach by taking into account other known information -- the value of public and private sector benefits.

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2. Once a full pay level survey is conducted, the relationship between public and private sector compensation will be established. It will then be unnecessary to impute the initial private sector cash compensation. The pay trend indicator can be applied directly to private sector cash and the adjustment procedure illustrated in the bottom portion of the Table followed.