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## PAY DIFFERENTIALS AMONG MATURE WORKERS IN THE PUBLIC AND PRIVATE SECTORS

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ABSTRACT

Wages in the public sector are often set on the basis of the comparability doctrine, which states that pay should be comparable with private sector compensation for the same type of work. Other researchers have suggested that this approach, and specific problems in its application, will probably result in government pay schedules which exceed those in the private sector. Simply comparing the wage rates for similar jobs may be an inadequate test of this hypothesis, since it ignores differences in the quality of the individuals being employed. In this paper, using a human capital model of wage determination and a sample of mature male workers, we attempt to compare wages in federal, state, and local public administration with those in the private sector, after adjusting for differences in personal and geographic characteristics. We find that the wage gaps which do exist cannot be completely explained by human capital and locational variables, and that there are positive rents associated with both federal and state government employment. In contrast, at the local level, employees appear to be paid slightly less than they would be in the private sector.

These results are confirmed when the other components of compensation are investigated. Existing evidence suggests that fringe benefits and job stability are higher in government employment than in the private sector. We present some estimates which suggest that job characteristics are also superior in the federal and state government sectors, but that this is not the case when local government--private sector comparisons are made.

# Pay Differentials Among Mature Workers in the Public and Private Sectors

## 1. INTRODUCTION

There is considerable current interest in issues of wage determination in the public sector. This is due in part to the dramatic increase in total public sector employment over recent years, and to the fiscal difficulties in which many governmental units have found themselves since the recessionary years of the early 1970s. Much of the recent research has attempted to compare the wages earned on similar jobs or by similar people in the public and private sectors. This approach is prompted by the fact that many governmental bodies, which are shielded from the normal pressures of the profit-making world and which find employee productivity especially difficult to measure, have turned explicitly to a doctrine of comparability as the basis for wage determination.

The Federal government expressly acknowledged this principle with the passage of the Federal Salary Reform Act of 1962, which required that "federal pay rates be comparable with private enterprise pay rates for the same levels of work."[1] This policy was confirmed, and remaining gaps supposedly eliminated, by the Federal Salary Act of 1967 and the Federal Comparability Act of 1970. The pay comparisons for white collar civil service and postal workers are based on an annual wage survey (The National Survey of Professional, Administrative, Technical, and Clerical Pay (PATC)), which is conducted by the Bureau of Labor Statistics (BLS). The Federal wage scales derived are a compromise between salaries which would compare most closely with the private sector averages, and salaries which provide uniform percentage increments between adjacent grades.[2]

Fogel and Lewin have pointed out a number of problems with the comparability doctrine, and have argued persuasively that the use of wage comparisons with the private sector, the PATC surveys, and the political realities of public sector wage determination have resulted in governmental pay scales which exceed those for equivalent private sector jobs. Although the doctrine appears to be an equitable and fair procedure, they argue, closer inspection reveals a number of operational difficulties which make its application difficult. The primary problem is that private labor markets are frequently buffeted by noncompetitive forces. The result is a range of wage rates for a particular job description. Which of these should the government use for comparison? Should wages determined in monopolistic or monopsonistic markets be excluded? And how should those wages deemed appropriate for comparison be averaged? Secondly, the wage rate is only one component of the compensation package. Should fringe benefits, such as paid vacations, medical and life insurance premiums, and pension contributions, be considered? What about the nonpecuniary aspects of the job, such as employment stability or physical working conditions, which are much more difficult to translate into dollar terms, but which are nonetheless important factors in attracting an adequate labor supply? The federal government's procedure has been to ignore both fringes and nonpecuniary components, and to concentrate solely on wage and salary comparisons. Since there is evidence that the nonwage components of the government compensation package are relatively attractive, especially in the area of employment stability, this omission will bias the overall government pay scale upward.[3] A third problem is that private analogues do not exist for many government employees, such as policemen, firemen, and judges. On what basis should wages be set in this case?

The biases suggested above are probably aggravated by the mechanics of the PATC survey. For obvious reasons of economy, the BLS samples only firms above a minimum establishment size. For the PATC survey, the guidelines exclude all manufacturing and retail trade firms with fewer than 250 employees, and firms in most other industrial divisions with fewer than 100. If wages vary positively with firm size, and the evidence suggests that they do, then this survey characteristic biases the private salary averages upward.[4] In addition, the PATC sample excludes all employees in agriculture, forestry, fishing, mining, contract construction, certain sectors of transportation services, state and local governments, and nonprofit organizations. In all, according to a Government Accounting Office estimate, these restrictions, along with the establishment size rules, exclude from comparison nearly 3/4 of all nonfederal white collar wage and salary employees.[5]

Fogel and Lewin appeal to the politics of wage setting for their final argument. Elected officials involved in wage determination are sensitive to pressures exerted by two constituent groups of voters--taxpayers and public employees. The taxpayers are the larger group, but are much less directly affected by the outcome than are the employees. For the former, the wage bill becomes one component of the tax rate, while for the latter, this same wage is the primary source of income. Voter pressure will be stronger from those most seriously affected and best informed; namely the employees. If the legislators respond to such voter pressure, they will tend to support the government employees' wage demands.

The legal acceptance of the comparability doctrine and the operational difficulties in implementing it make an empirical comparison of private and public pay scales very interesting. The methodology applied by Fogel

and Lewin is to compare the wages for particular job classifications, such as clerk typist, maintenance carpenter, or general stenographer. They do so, for the federal government and for selected municipalities, and conclude that "public employers tend to pay more than private employers for low skill and craft jobs."[6] At the same time, however, they find that the public sector pays less at the top end of the occupational scale. The net result, then, is a public pay schedule that is more compact, or concentrated, than that offered in the private sector.

One might argue, however, that public employers are neither overpaying nor underpaying, but rather are hiring a different quality of employee. It is impossible to refute this argument with the evidence offered by Fogel and Lewin because they do not consider the characteristics of the employees. At the lower levels, for example, the federal government may be paying more than the private sector, but may be hiring employees with more education, vocational training, or experience.

In a series of recent articles and in a forthcoming book, Sharon Smith has addressed precisely this issue by examining pay differentials between government and private sector workers, using a human capital model of wage determination.[7] Her methodology is to decompose the discrepancies in average pay between the sectors into components which are attributable to differences in employee human capital characteristics, and components which are not. Using both annual and hourly earnings as the appropriate dependent variable, and data from 1960 and 1970 Censuses, and the 1973 and 1975 Current Population Surveys, Smith finds that the higher wages paid by the federal government cannot be entirely explained by human capital and demographic differences, and that federal workers enjoy a substantial economic rent.[8] For both males and females, human capital

differences explain less than half of the actual federal-private sector differential, leaving over half to rent.[9]

At the state level, Smith's conclusions differ by sex. According to her 1973 results, both males and females in state government have higher average wage rates than their private sector counterparts, but only the females enjoy a rent component. When the private sector weights are used, all of the male differential can be explained by the state workers' superior human capital characteristics, whereas less than half of the female gap can. Finally, at the local level, Smith reports a small negative rent for men, and a small positive rent for women.[10]

This paper is an attempt to build and expand on the research of Smith, and Fogel and Lewin, in a number of ways. First, we concentrate on a narrower demographic group--mature white male workers near the end of their working careers. There are several reasons for this selection. Mature, older workers constitute a very interesting group, with some distinct advantages. For example, they are nearly all in the primary job of their careers. Nearly 40% have been with their current (or last) employer for over 20 years, and nearly 60% have over 10 years of service. Since there is a relatively narrow age span (6 years), these workers all received their education at approximately the same time. Therefore, in the wage equations, we can conveniently and justifiably ignore issues of educational vintage. But most important, older workers are a group whose labor market status is particularly sensitive to changes in federal legislation--specifically, to changes in the age of compulsary retirement. Since one option upon leaving one's primary job is to seek other full-time or part-time employment, we suspect that, ceteris paribus, those workers enjoying the largest rents will be the least likely to make such a change,

and the most likely to remain beyond age 65, if current compulsory retirement laws are changed. We present evidence below that older federal and state government workers do enjoy substantial economic rents.

We have also disaggregated by race and sex. Smith disaggregates by sex in her later work, but includes both whites and nonwhites in her wage equations, along with three dummy variables designating race. The implication of this dummy variable format is that the effect of race on the wage rate is merely to shift the intercept, without affecting any of the slope (or first derivative) relationships. For example, the specification implies that the effect of an incremental year of schooling on earnings is the same for whites and blacks. Since there is considerable discrimination literature which suggests that this may not be the case, we have decided to disaggregate by race and sex.[11] Only the white male subgroup contained a sample size sufficient for analysis, and these are the results presented below.

We have also attempted to improve the specification of the wage equation. Because of data limitations, Smith was forced to proxy experience by potential years in the labor force; operationally, age minus years of schooling minus six. This specification implicitly assumes that all years since school were spent in the labor force, and that all of the years employed provided experience or training relevant to the current job. Neither assumption is necessarily true. Smith acknowledges the first problem, which is especially serious for women, and adjusts by interacting experience with a three-way classification of marital status, which is used as a proxy for degree of labor force attachment. But the second problem remains. As is discussed below, we have attempted to isolate two components of experience--specific vocational training and years of tenure on the current job. We have entered these two dimensions and education as a series of dummy variables, thereby allowing for discontinuities and diploma effects. In addition, since we

have a national sample, we have expanded the geographic dimensions of the model by including in our wage equations an inter-city cost of living index and measures of local labor market conditions.[12]

Finally, we include in this paper some estimates of specific job characteristics in the private, federal, state and local sectors. Previous researchers have concentrated on the wage and salary component of compensation, commented on fringe benefits and job stability, and been forced to ignore the final component of the compensation package--working conditions. We address this dimension explicitly below.

In summary, we are concentrating on pay differentials among a specific subset of the population--those men most likely to be affected by currently proposed changes in retirement related legislation. We include improved measures of experience, a less restrictive function form for the education and experience terms, and additional important geographic variables. Finally, we offer a preliminary look at the one dimension of compensation which has been ignored. Despite these differences, we conclude by confirming and strengthening the earlier results presented by Smith and others.

## 2. MODEL AND METHODOLOGY

The empirical work discussed below is based on a human capital view of wage determination. We hypothesize that one's wage depends on one's productivity, which, though not directly measurable, is assumed to be a function of certain measurable characteristics, such as education, vocational training, experience, and health status.

There are at least two reasons to expect wages to vary with education. It is hypothesized by some that education increases cognitive skills that

directly improve worker productivity on the job. It has also been argued, however, that schools do not primarily improve cognitive abilities, but rather socialize individuals to accept the authority, discipline, and hierarchy found in most places of employment. According to this second theory, an educational diploma provides a signal that its bearer has been able to adjust to hierarchical educational modes, and presumably will continue to do so in the production setting. For very different reasons, both views predict that more highly educated workers will have higher productivity, and therefore earn higher wages.

Jacob Mincer has made clear that post-schooling investment, such as vocational training or on the job experience, is also important, and that its exclusion will bias the education coefficients downward.[13] There are at least two reasons to include these factors. First, training or experience, up to a point, should directly improve productivity and therefore the worker's wage. Second, many institutions are characterized by internal labor markets, and structured job ladders along which workers progress over time. In this case, for institutional reasons, wages will increase with experience, even if personal productivity does not. As noted above, many authors including Mincer have been forced to use the number of years since the end of formal schooling (or maximum years in the labor force), as a measure of post-schooling investment. This measure confuses the two effects mentioned above, and can seriously overestimate the amount of experience relevant to the worker's current job. For example, an individual who has spent time out of the labor force will certainly have years of experience exaggerated. The same may occur, however, for someone with continuous labor force participation, but with one or more significant job changes. Training or experience on previous jobs may not be directly related to

current productivity, and internal labor market status (as seniority) is often lost when one changes employers.

In this research, we have attempted to capture both the personal (productivity) and institutional (seniority) aspects by including two measures of experience--specific vocational training (SVP) and years of service with the current employer (TENURE). The first, SVP, is a characteristic of the job, not the employee. It is defined as "the amount of time required to learn the techniques, acquire information, and develop the ability needed for average performance in a specific job-worker situation."[14] We assume that the individual has acquired the specific training necessary for his job, and is being rewarded for this investment. It is also assumed, however, that the years beyond those required do not further improve productivity, so that no further credit is given. The second variable, TENURE, reflects the institutional aspects of wage determination, and measures years with the current employer. Years of experience in other firms are not included in TENURE, but, if relevant, may be picked up in SVP.

Finally, we include health status, HLIM, a dummy denoting the existence of a health condition which limits the type or amount of work the person can do. We hypothesize that poor health lowers productivity, and therefore, the wage.

As an extension of the basic human capital theory, we consider a number of geographic dimensions. Since money wages may depend on both the cost of living and the tightness of the labor market, we include a price index (P) and a measure of local labor market conditions.[15] The direction of the labor market effect is unclear. From a disequilibrium perspective, cities and areas with chronically slack labor markets (high unemployment) should have lower wages, ceteris paribus, than tight markets.

On the other hand, Robert Hall has hypothesized that equilibrium may in fact consist of a number of cities with high wages and high unemployment, and others with relatively low pay and unemployment.[16] In expected value terms, these may be equally attractive to the marginal worker. To measure these effects, we include the local unemployment rate (URATE), in interval dummy format.

Finally, to pick up the effects of variations in unionization or industrialization, and other regional differences which we are not able to measure directly, we include a series of regional dummies (REGION) in the wage equations, as well as a dummy indicating residence in an SMSA.[17]

We have then the following functional specification:

$$W = W(EDUC, SVP, TENURE, HLIM, P, URATE, REGION, SMSA),$$

where all but P are represented by dummy variables.[18] Following Smith, and much of the other wage literature, we adopt the log-linear specification, yielding

$$\ln W = \sum_i \beta_i X_i + \varepsilon,$$

where $\varepsilon$ denotes the disturbance term. With this specification, a regression coefficient ($\hat{\beta}_i$) estimates the percentage effect on W associated with a one-unit change in $X_i$.

The methodology for this analysis is straightforward, and is similar to that employed by Smith and others.[19] Public and private sector employees may have different average wages for two reasons. First, they may have different distributions of productivity related characteristics, and second, they may be rewarded differently for these characteristics. In terms of the wage equation above, the first refers to different X's, and the second to different $\beta$'s. We want to separate out these components, and ask how much of the observed public-private differentials can be attributed to

differences in human capital and location. The remainder--the portion which we cannot explain in this fashion--we shall denote as the economic rent (positive or negative) associated with each category (federal, state, local) of public employment.

In order to disaggregate the wage gaps in this manner, we shall pretend that all workers are paid according to the same formula; that is, have the same wage equation. Average wages would then differ between the groups only because of human capital and locational differences; in other words, because of different X's. The question arises, what would the common wage equation in this hypothetical world be? Although this is impossible to answer, we have four estimates--the equations we can estimate for federal, state, local, and private sector workers. There are excellent reasons, however, for choosing the last of these. First, the population of private sector workers is much larger than any of the three others, and it therefore seems likely that the common equation would most resemble the current private sector equation. Second, since the sample of private sector employees is much larger than any of the others, we have more confidence that our regression estimates resemble the population parameters for the private sector group than for the others. In this analysis, then, we will estimate what federal, state, and local employees would earn if they were to have their own characteristics, but the wage equation (the coefficients) applicable in the private sector.

## 3. DATA

The primary data source for this research is the 1969 wave of the Retirement History Study (RHS), an extensive national survey of men and

nonmarried women nearing early retirement age (58-63).[20] The disaggregation of the sample is based on Census industrial codes, which allow us to isolate those in federal, state, and local public administration, and those in the private sector. We used this categorization, rather than class of worker, since the latter, in this data set, does not allow disaggregation by level of government. This is the same disaggregation that was used by Smith with her 1960 sample. It captures only those in government public administration, and excludes those governmental employees classified under private industrial categories, such as transportation, public utilities and medical and educational services.

As mentioned above, we are concentrating solely on white men, the largest demographic subgroup. We have also eliminated those seriously ill (the bedridden and the housebound), farmers and the self-employed, members of the armed services, and those for whom data gaps made calculation of a wage rate impossible. We are left with a sample of 4357 private sector workers, and 114 federal, 70 state, and 130 local public administration employees.[21]

In most cases (approximately 85%), the hourly wage rate is derived from data on the individual's current job. When this was not possible (for example, when the individual did not have a current job, or had failed to supply some of the necessary information), data on the previous or last job were examined. If the individual left this job within the last 5 years, a wage was derived, and inflated to 1969 wage levels. Otherwise, the respondent was dropped from the sample.

## 4. REGRESSION RESULTS

The private sector wage equation upon which the pay comparisons are made is presented in Table 1. The human capital dimensions are very important explanators of interpersonal wage variation. The education terms are highly significant, and indicate, with one exception, a monotonic increase of wages with education. According to these estimates, college graduates in this age and demographic group, ceteris paribus, earn 33% more per hour than high school graduates, who in turn earn 12% more than those with no high school training. There is evidence of a college diploma effect, but none at the high school level. The only exception to the wage progression is the slight dip observed at the post-graduate level. The simplest explanation is that many people with post-graduate degrees, most notably teachers and ministers, choose occupations with relatively low pecuniary rewards.

With one exception, the experience terms are large and highly significant. Specific vocational training (SVP) increases earnings for each of the intervals shown, with those in the top category (4 years or more) earning 41% more than those in jobs requiring less than 3 months. Years on the current job (seniority) also appears to be very important. The progression is again monotonic, with a maximum increase of almost 35% for 10 years or more of service. These data indicate that both vocational training and years on the job do affect the wage. Finally, the health term is significant, and indicates that those with a health limitation earn hourly wages approximately 5% lower than those who do not.

The locational variables are also interesting. The coefficient on the price index suggests that money wages do compensate for cost of living

TABLE 1: WAGE RATE COEFFICIENTS, WHITE MEN, PRIVATE SECTOR

(t-statistics in parentheses)
(dependent variable: ln (wage rate))

| | | White Men | |
|---|---|---|---|
| Human Capital Variables | | | |
| Education | 0-8 yrs. | -.120 | (5.40)* |
| | 9-11 | -.019 | (0.75) |
| | 12 | --- | --- |
| | 13-15 | .117 | (3.38)* |
| | 16 | .328 | (7.61)* |
| | 17+ | .298 | (6.23)* |
| Specific Vocational Training (SVP) | 0-3 mo. | --- | --- |
| | 4-23 | .104 | (4.39)* |
| | 24-47 | .239 | (10.62)* |
| | 48+ | .411 | (15.72)* |
| Job Tenure | 0-2 yrs. | --- | --- |
| | 3-5 | .024 | (0.75) |
| | 6-10 | .101 | (3.26)* |
| | 11-15 | .216 | (6.70)* |
| | 16-20 | .255 | (7.78)* |
| | 21+ | .348 | (14.37)* |
| Health Limitation | (0,1) | -.051 | (2.73)* |
| Geographic Variables | | | |
| Region | Northeast | -.026 | (1.11) |
| | North Central | --- | --- |
| | West | -.008 | (0.28) |
| | South | -.092 | (3.46)* |
| | Unknown | -.052 | (1.33) |
| Price Index | (ln (P)) | .755 | (3.32)* |
| SMSA | (0,1) | .037 | (1.08) |
| Unemployment Rate | 0-3.9% | .068 | (2.75)* |
| | 4.0-5.4 | --- | --- |
| | 5.5+ | .156 | (4.34)* |
| Constant | | 5.417 | |
| $\bar{R}^2$ | | .25 | |
| N | | 4357 | |

---designates reference category *significant at 0.01 level

differences. The coefficient is .76, and is not significantly different from 1. The SMSA dummy is positive, but insignificant, suggesting that its usual role, in equations without explicit price terms, is to proxy metropolitan--nonmetropolitan cost of living differences. The regional point estimates indicate that, even after price levels are taken into account, wages are approximately 9% lower in the South. The other regional coefficients are insignificant.[22]

Finally, there is evidence for both of the labor market effects mentioned above. In high unemployment cities (over 5.4% in 1969), wages are nearly 16% higher than in cities in the intermediate range (4.0-5.4%). This supports Hall's equilibrium position.[23] At the same time, however, wages are also higher (than in the intermediate cities) in the areas with the tightest labor markets, with less than 4% unemployed. This implies that the standard labor market effects also exist, and suggests that the wage--unemployment relationship may be U-shaped.

Overall, this appears to be a reasonable wage equation. The coefficients are generally significant, and are of reasonable magnitude. The coefficient of determination, .25, is very respectable for a cross-sectional micro-economic analysis of this type, especially since the sample has already been disaggregated by sex and by race.

## 5. WAGE COMPARISONS

Average hourly wage rates for each of the categories of white men, in logarithms and in dollars per hour, are shown in Table 2.[24] The federal public administration employees are the highest paid, earning an average of $1.58 per hour more than those in the private sector. State government pay also exceeds

TABLE 2: AVERAGE HOURLY WAGE RATES, IN LN (cents), WHITE MEN, BY INDUSTRY, 1969

| INDUSTRY | AVERAGE LN(WAGE) | AVERAGE WAGE RATE[b] |
|---|---|---|
| Private sector | 5.7797 | $3.24 |
| Federal public administration[a] | 6.1775 | $4.82 |
| State public administration | 6.0558 | $4.27 |
| Local public administration | 5.6896 | $2.96 |

[a]Excluding postal workers, and members of the armed services.

[b]See footnote 24.

the nongovernment average, but by less ($1.03). Finally, the local government workers are the lowest paid, earning an average of $.28 per hour less than private sector employees.

What explains these differences? To what extent can they be attributed to differences in human capital and geographic characteristics? To estimate this, we eliminate the differences due to wage equation coefficients, and estimate what each of the government classes would average if they had their own characteristics, but the private sector wage equation. Mathematically, we calculate

$$\widetilde{\ln W}_G = \sum_i \hat{\beta}_{Pi} \overline{X}_{Gi}, \qquad (G = \text{federal, state, local})$$

where $\widetilde{\ln W}_G$ is the hypothetical average ln (wage) for governmental class G, the $\hat{\beta}_{Pi}$ are the private sector coefficients from Table 1, and the $\overline{X}_{Gi}$ are the actual average characteristics for the employees in G.

According to these calculations, shown in Table 3, if these federal government workers were paid according to the same formula that applies in the private sector, their average ln (wage) would be 5.9782 ($3.95), rather than the 6.1775 ($4.82) they currently enjoy. The difference between 5.9782 and the actual private sector average, 5.7797, is explained by the differences in characteristics. But the difference between 5.9782 and 6.1775 is not. In Smith's terminology, this gap, which is 50% of the actual differential, is an economic rent paid to federal employees.[25] This estimate lies between the 42% estimated by Smith, using 1970 wage rates and private sector coefficients, and the 55% she obtained with 1960 data and the same classification scheme which we use here.[26]

TABLE 3: DECOMPOSITION OF WAGE RATE DIFFERENTIALS, IN LOGARITHMS

| | | As % of total differential |
|---|---|---|
| **Federal Public Administration**[a] | | |
| Total differential | 6.1775 - 5.7797 = .3978 | |
| Explained component | <u>5.9782</u> - 5.7797 = .1958 | 50% |
| Residual (rent) | 6.1775 - <u>5.9782</u> = .1993 | 50% |
| **State Public Administration** | | |
| Total differential | 6.0558 - 5.7797 = .2761 | |
| Explained component | <u>5.8898</u> - 5.7797 = .1101 | 40% |
| Residual (rent) | 6.0558 - 5.8898 = .1660 | 60% |
| **Local Public Administration** | | |
| Total differential | 5.6896 - 5.7797 = -.0901 | |
| Explained component | <u>5.7461</u> - 5.7797 = -.0336 | -37% |
| Residual (rent) | 5.6896 - <u>5.7461</u> = -.0565 | -63% |

[a]Excluding postal workers and members of the armed forces.

Note: The underlined figures are hypothetical public sector averages based on the appropriate government sector characteristics and the private sector coefficients.

Although 50% of the differential cannot be explained, the other 50% can. It is interesting to note why this differential would exist even if federal and private sector employees were paid according to the same formula. Since

$$\overline{\ln W_P} = \Sigma \hat{\beta}_{Pi} \overline{X}_{Pi}, \text{ and}$$

$$\widetilde{\ln W_G} = \Sigma \hat{\beta}_{Pi} \overline{X}_{Gi}, \text{ then}$$

$$\widetilde{\ln W_G} - \overline{\ln W_P} = \Sigma \hat{\beta}_{Pi} (\overline{X}_{Gi} - \overline{X}_{Pi}). \qquad (G = \text{federal, state, local})$$

The explained differential, then, can be decomposed into the parts due to each of the human capital and locational dimensions. These components are then aggregated by category, such as education or tenure. The individual contributions are presented in Table 4.

These estimates suggest that these federal employees would continue to earn more than their private sector counterparts, even in the absence of economic rent, because they have more favorable distributions in all of the categories; they have more education, more training, more years on the job, better health, and, in general, live in areas where wages are higher. Nearly half of the gap that would remain would be attributable to educational advantages, and almost 90% to education, training, and experience.

When state public administration employees are analyzed, we also find evidence of economic rent (see Table 3). Only 40% of the log differential can be explained by differences in characteristics, leaving 60% of the gap as rent.[27] Although this percentage is larger than the analogous federal figure, it is a larger percentage of a smaller total differential than in the federal case.

TABLE 4: DECOMPOSITION OF DIFFERENTIALS EXPLAINED BY HUMAN CAPITAL AND LOCATIONAL DIMENSIONS

| | FEDERAL[a] | | STATE | | LOCAL | |
|---|---|---|---|---|---|---|
| Predicted public admin. ln(wage) | 5.9782 | ($3.95) | 5.8898 | ($3.61) | 5.7461 | ($3.13) |
| Actual private sector ln(wage) | 5.7797 | ( 3.24) | 5.7797 | ( 3.24) | 5.7797 | ( 3.24) |
| Difference | .1985 | | .1101 | | -.0336 | |
| CATEGORY | | | | | | |
| Education | .0860 | (43%) | .1086 | (99%) | -.0035 | (10%) |
| Vocational Training (SVP) | .0566 | (29%) | .0611 | (55%) | -.0038 | (11%) |
| Job Tenure | .0359 | (18%) | -.0470 | (-43%) | -.0182 | (54%) |
| Health | .0015 | ( 1%) | .0028 | ( 3%) | -.0024 | ( 7%) |
| Location | .0185 | ( 9%) | -.0154 | (-14%) | -.0057 | (17%) |
| | .1985 | | .1101 | | -.0336 | |

[a]Excluding postal workers and members of the armed services.

Why would state employees continue to earn more than private sector workers even in the absence of rent? Primarily because they have more education and more training. In fact, as shown in Table 4, these factors are partially offset by the fact that state employees have, on average, fewer years of experience on their current jobs than do those in the private sector. This is probably due to the recent rapid growth in state government employment.

Finally, we analyze local public administration workers, who average $0.28 per hour less than those in the nongovernment sector. According to the estimates in Table 3, this is only partly because of less favorable human capital and geographic characteristics. If these local government workers enjoyed the private sector coefficients, their log average would be 5.7461, still less than the private sector average. The difference between 5.7797 and 5.7461 is due to human capital and location--primarily fewer years of on-the-job experience, as shown in Table 4. But the gap between 5.7461 and 5.6896 (63% of the total) cannot be attributed to these characteristics. It is a negative rent associated with employment in the local government sector.

## 6. OTHER COMPENSATION COMPONENTS

The evidence above suggests that older workers in federal and state public administration are paid higher wages than measureably equivalent individuals in the private sector. In this section, we review briefly the evidence which exists on fringe benefits and job stability, and present some new estimates on specific job attributes. We are primarily

interested in whether the comparisons in these other dimensions confirm the conclusions drawn above, or whether the higher government wages might be offsetting other less favorable components.

The evidence which does exist on fringe benefits and job stability suggests that, on average, government jobs are more attractive than those in the private sector in both of these dimensions. For example, in a 1973 publication on supplementary compensation in the PATC survey industries, the Bureau of Labor Statistics compared supplementary compensation in the private sector with that in the Federal government for 1970. The Federal supplements averaged 27.8% of basic wages and salaries, while in the private sector, the average was 26.6%.[28] A study of municipal employee benefits concludes that "municipalities outspend private industry in the area of 'fringe benefits' by almost 1 to almost 6½% of pay per hours worked."[29] In the area of employment stability, the government sector also appears to be superior. Fogel and Lewin report that employee turnover rates are 19% in state and local, and 22% in federal government, compared to 58% in private manufacturing.[30] In a study of labor turnover in 1966, Hall estimates that the probability of a government sector male becoming unemployed is less than half the probability of a private wage or salary employee.[31]

The third component of the non-wage package--working conditions--is more difficult to measure. We have attempted some rough estimates, using the sample of individuals employed in this study, and series of job characteristics used by the Department of Labor. For each respondent, we have the probability that his job has certain particular attributes.[32] These probabilities are specific to the person's Census 3-digit occupational code. The probability distributions acrogs respondents for all of the job

characteristics are very bimodal (for a given occupation, a particular attribute is either very likely or very unlikely), so the arithmetic mean is an exceptionally poor summary statistic. Therefore, we present for each attribute the percentage of the subgroup (private, federal, state or local) with probability 0.50 or over; that is, the percentage of each group who probably have the characteristic.

We present data for five job characteristics. The first is hypothesized to be a favorable attribute; the rest, unfavorable. The job characteristics are:

1) VARIETY or WHOLE ACTIVITY: involving a variety of duties often characterized by frequent change, or the direction, control and planning of an entire activity or the activities of others;

2) REPETITIVE or SPECIFIC INSTRUCTIONS: involving repetitive or short cycle operations carried out according to set procedures or sequences, or doing things only under specific instructions, allowing little or no room for independent action or judgment in working out problems;

3) STRENGTH: involving heavy work, or very heavy work;

4) PHYSICAL: involving other physical activities, such as climbing, balancing, stooping, kneeling, crouching, crawling, reaching or handling, and

5) BAD WORKING CONDITIONS: involving extreme heat or cold, wet or humid conditions, noise or vibrations, hazards, fumes, odors, toxic conditions, dust or poor ventilation.[33]

According to Table 5, federal public administration employees have more favorable distributions than private sector workers in all five dimensions. Their jobs are more likely to involve variety or the performance of an entire activity, are less likely to involve repetitive

Table 5

PERCENT OF RESPONDENTS WITH JOB CHARACTERISTIC PROBABILITY OVER 0.49, BY INDUSTRY

| | INDUSTRY | | | |
|---|---|---|---|---|
| JOB CHARACTERISTIC | PRIVATE SECTOR | FEDERAL PUB. ADMIN. | STATE PUB. ADMIN. | LOCAL PUB. ADMIN. |
| Variety or whole activity | 47.9% | 57.5% | 63.6% | 62.7% |
| Repetitive or specific instruction | 36.9 | 24.8 | 27.3 | 36.5 |
| Strength | 6.8 | 4.4 | 0 | 15.9 |
| Physical | 35.9 | 30.1 | 19.7 | 38.1 |
| Bad working conditions | 48.3 | 33.6 | 30.3 | 51.6 |
| N | 4357 | 114 | 70 | 130 |

tasks or work under specific instructions, and are less likely to require strength or other physical activity, or take place under bad working conditions. The same is true for the state jobs. They appear superior to the private jobs, and, in fact, seem marginally better than the federal jobs. The evidence is less clear in the local government sector. Although they are more likely to involve variety, they are also more likely to require strength or physical activity, and to involve unpleasant working conditions.

There are legitimate objections to the use of the characteristics. They are to a certain extent endogenous, since the respondents chose the jobs that they have, and it is admittedly a subjective judgment whether they are favorable or not. What is interesting (for instance, with variety) or boring (involving repetitive tasks) to one person may not be to another. We are willing to hypothesize, however, that, except for the first, these are on average undesirable job characteristics for men of this age, ones which they would not be willing to pay, in terms of lower wages, to have. If this premise is accepted, then we have strengthened our earlier results.

## 7. CONCLUSIONS

With a sample of mature men, new measures of experience and training, and a less restrictive functional specification, we have expanded and confirmed the earlier work of Smith, and Fogel and Lewin. We find evidence of positive rents associated with federal public administration employment, and attribute half of the raw federal-private differential to this factor. The other half of the differential can be explained by the superior endowments of education, training and experience, and the more favorable health

and geographic characteristics which the federal workers have. In addition, we find evidence of a similar rent associated with state employment. Although the size of the overall differential is smaller than in the federal case, a larger proportion of it is rent. Finally, we find that local government employees are paid slightly less then they would be if they had their own characteristics, and the private sector coefficients. This negative rent is much smaller than either of the positive rents mentioned above.

We looked also at the other components of compensation--fringe benefits, job stability and job characteristics, and found nothing to dispel our conclusions. Federal and state employees, on average, appear to have better fringe benefits and more job stability than workers in the private sector. They also appear to have more favorable job attributes, at least along the dimensions we have been able to measure. For local government workers, the job attributes do not dominate those in the private sector, so this factor does not explain the negative rent discussed above.

In conclusion, these results support the predictions of Fogel and Lewin, that the particulars of the wage comparison process, the mechanics of the BLS private sector surveys, and the politics of governmental wage determination will combine to raise government pay scales above those in the private sector, and that the magnitude of the differential increases with the size of the governmental unit.[34] Though we have not tested the following hypothesis, we suspect that individuals enjoying positive rents will be more reluctant than others, ceteris paribus, to withdraw voluntarily from their jobs. If so, these same people may be especially sensitive to the types of changes in compulsory retirement provisions which are currently being proposed.

NOTES

[1]Walter Fogel and David Lewin, "Wage Determination in the Public Sector," Industrial and Labor Relations Review, Vol. 27, No. 3 (April 1974), p. 411. See also Sharon Smith, "Pay Differentials Between Federal Government and Private Sector Workers," Industrial and Labor Relations Review, Vol. 29, No. 2 (January 1976). These two articles provide concise and informative histories of the comparability doctrine.

[2]L. Earl Lewis, "Federal Pay Comparability Procedures," Monthly Labor Review, Vol. 92, No. 2 (February 1969), p. 12.

[3]Fogel and Lewin, "Wage Determination," pp. 425-426; Smith, "Pay Differentials," p. 180.

[4]Richard A. Lester, "Pay Differentials by Size of Establishment," Industrial Relations, Vol. 7, No. 1 (October 1967), pp. 57-67.

[5]Smith, "Pay Differentials," p. 182.

[6]Fogel and Lewin, "Wage Determination," p. 430. Another study which employs the same methodology (comparing wages for similar jobs, not for similar people) concludes that "average monthly salaries of municipal government employees in selected office clerical occupations were higher than their private industry counterparts in 9 of 11 large cities examined by the Bureau of Labor Statistics. A smaller majority of the cities also showed a pay advantage over private industry for data processing and for maintenance and custodial groups of occupations." See Stephen H. Perloff, "Comparing municipal salaries with industry and Federal pay," Monthly Labor Review, Vol. 94, No. 10 (October 1971), p. 46.

[7]Smith, "Pay Differentials," Sharon P. Smith, "Government Wage Differentials by Sex," Journal of Human Resources, Vol. XI, No. 2 (Spring 1976); Sharon P. Smith, "Government Wage Differentials," Journal of Urban Economics, Vol. 4, No. 3 (July 1977); and Sharon P. Smith, Equal Pay in the Public Sector: Fact or Fantasy? (Princeton, N.J.: Industrial Relations Section, Princeton University, forthcoming).

[8]Sharon P. Smith, "Reply," Industrial and Labor Relations Review, Vol. 31, No. 1 (October 1977), p. 84.

[9]Smith, "Government Wage Differentials," p. 263.

[10]Smith, "Government Wage Differentials," pp. 260-261.

[11]See for example, Ronald Oaxaca, "Sex Discrimination in Wages," in Discrimination in the Labor Market, edited by Orley Ashenfelter and Albert Rees (Princeton: Princeton University Press, 1973), and Alan Blinder "Wage Discrimination: Reduced Form and Structural Estimates," Journal of Human Resources, Vol. 8, No. 4 (Fall 1973), pp. 436-455.

[12]Smith points out that employing a national sample "brings additional difficulties as a consequence of differences in the cost of living across both city size and geographic region." (Smith, "Reply," p. 82). This problem has been eliminated here.

[13]Jacob Mincer, Schooling, Experience and Earnings (New York: National Bureau of Economic Research, Columbia University Press, 1974), p. 47.

[14]U.S. Department of Labor, Bureau of Employment Security, Worker Trait Requirements for 4000 Jobs, (Washington, D.C.: U.S. Government Printing Office, 1965), p. 110. The derivation of the SVP variables is the same as the derivation of the job characteristics, which is described below.

[15]The Bureau of Labor Statistics (BLS) estimates cost of living indices for 39 SMSAs. Indices were assigned for other SMSAs as follows. If an index was known for an adjacent or closely neighboring SMSA, that index was used. If not, the regional metropolitan average was used. For those not in an SMSA, the regional metropolitan average was utilized. A listing of all the cost of living assignments is available from the author.

[16]Robert E. Hall, "Why is Unemployment So High at Full Employment?" Brookings Papers on Economic Activity, 3: 1970, p. 377.

[17]There is a small errors-in-variables problem associated with the SMSA dummy, for two reasons. First, the RHS respondents were drawn from 19 discontinued CPS rotation groups, going back as far as mid-1966. The SMSA information was drawn during the respondents' time in the CPS, and was not updated for the RHS. Therefore, the SMSA dummy will be inaccurate for anyone who moved from inside an SMSA to outside, or vice versa, in the interim. Using Census migration statistics, we have estimated that this may be the case for less than 4% of the RHS Sample. (See Joseph F. Quinn, "The Microeconomics of Early Retirement: A Cross Sectional View," unpublished dissertation, Massachusetts Institute of Technology, 1975, pp. 86-88.) Secondly, the SMSA designations are those used in the 1960 Census, and will be inaccurate for anyone living in an area which became an SMSA between 1960 and 1969.

[18]The price index (P) is in fact entered as ln(P), so that the coefficient in the log-linear format is interpretable as an elasticity.

[19]See, for example, Oaxaca, "Sex Discrimination," and Blinder, "Wage Discrimination."

[20]For a detailed description of the RHS, see Lola M. Irelan, "Retirement History Study: Introduction," Social Security Bulletin 35 (November 1973), pp. 3-8.

[21]We have also eliminated a small group of postal workers from the sample of federal workers.

[22]For 6% of this sample, the data on region were missing. These respondents are described by the regional dummy UNKNOWN.

[23]It is important to note that the unemployment rate is probably measuring long run labor market conditions. Hall has suggested this by pointing out that there is considerable stability in the relative ranking of cities over time. In other words, there seem to be traditionally high unemployment cities and traditionally low unemployment cities.

[24]Since the wages are measured in national logarithims, all of the dollar averages referred to are geometric, not arithmetic, means.

[25]It is not strictly legitimate to attribute a residual to any one cause. For example, the residuals might be due to some unmeasurable human capital characteristic with which the federal employees are especially well endowed. The unprovable hypothesis implicit here is that unobserved differences cannot explain these residuals, and that a substantial portion of them does represent economic rent.

[26]Smith, "Pay Differentials," p. 195.

[27]The conclusion that economic rent exists at the state level contrasts the findings of Smith ("Government Wage Differentials"). The most likely explanation of this is that Smith has disaggregated by class of worker,

whereas we have utilized the industrial classifications, and therefore have included only government public administration employees. It is interesting to note in this context that in her earlier paper ("Pay Differentials"), the estimate of the rent in the federal sector declined from 55 to 42% as she went from the industrial categorization (and 1960 data) to the class of worker classification (and 1970 data). Either the passage of time as the difference in classification scheme might explain the change in results.

[28]U.S. Department of Labor, Bureau of Labor Statistics, Supplementary Compensation in the PATC Survey Industries, Report 419 (Washington, D.C.: U.S. Government Printing Office, 1973), Table 10.

[29]Edward H. Friend, First National Survey of Employee Benefits for Full-Time Personnel of U.S. Municipalities, (Washington, D.C.: Labor Management Relations Service, 1972), p. 3. The 1% refers to general personnel and the 6½% to police and firemen. Friend points out that these estimates are probably underestimates for 3 reasons:

1) many cities have underfinanced pension plans, and owe accrued benefits in excess of what they have actually funded. Only the actual pension costs to the municipalities are counted here;

2) the survey undersampled large cities, where fringe benefits are in general more generous, and

3) the cities representing the Northeast, where fringes are the highest, are predominately small cities.

[30]Fogel and Lewin, "Wage Determination," pp. 410-411.

[31]Robert Hall, "Turnover in the Labor Force," Brookings Papers on Economic Activity, 3: 1972, p. 716.

[32]The Department of Labor has developed detailed descriptions of each of the nearly 14,000 jobs listed in the Dictionary of Occupational Titles (DOT). (U.S. Bureau of Employment Security, Worker Trait Requirements for 4000 Jobs (Washington, D.C.: U.S. Government Printing Office, 1965)). Most data sources, however, including the one used here, employ the Census classification scheme. With the help of a cross-classification matrix which gives the probability of holding each of the DOT jobs, given one's Census 3-digit occupation, we were able to calculate expected job characteristics, or the probability that each respondent's job has specific attributes. For example, the probability that Census occupation K has job characteristic J is calculated as follows:

$$\text{Prob}(J|K) = \Sigma_i[\text{Prob}(J|DOT_i) \cdot \text{Prob}(DOT_i|K)]$$

where i ranges over all DOT jobs. The terms "$\text{Prob}(J|DOT_i)$" will be either 0 or 1, since each DOT job either has the characteristic or does not. The "$\text{Prob}(DOT_i|K)$" terms are derived from the cross-classification matrix, and will sum to 1, with the vast majority being 0. The result of these calculations, for each Census occupation, is a series of probabilities between 0 and 1, one for each job characteristic. These probabilities are then assigned to the individuals in the sample on the basis of their occupational codes.

[33]U.S. Bureau of Employment Security, Worker Trait Requirement, pp. 131, 145, and 150-154.

[34]Fogel and Lewin, "Wage Determination," p. 415.

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