Inertia and Discrimination in the California State Civil Service

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Analysis of the California State Civil Service indicates that its occupational wage structure is very stable. Salaries established in 1931 continue to influence current wages, over 60 years later, even while controlling for market wages. This results from the California Civil Service's policy of maintaining the relative wage structure that was established initially in 1931 despite conflicting market wages. Because the California Civil Service explicitly lowered salaries for female-dominated jobs when it established its initial salary structure, these jobs remained underpaid by $1.6 billion from 1973 to 1993. These findings support notions of wage rigidity and fairness in efficiency wage and institutional labor market theories.

Introduction

Sixty years ago, it was common for employers to pay women less than men. Such behavior not only was legal (there were no equal-pay statutes in existence then) but also was encouraged by those advocating a family wage—a wage rate that allowed the heads of families (who were defined as men) to support their entire family (Kessler-Harris, 1990; Scharf, 1980). Today, paying women less than men solely because of their gender would not be tolerated, and these historical practices would remain curious anecdotes if they had no bearing on current wage structures. But do they?

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This article finds that historical wage rates that underpaid women can remain institutionalized in current wage structures. An examination of the wage structure in the California State Civil Service (California Civil Service) finds that it is remarkably stable—persisting over 60 years. The reason for this stability appears to result from an explicit compensation policy to maintain the historical wage structure. Although the persistence of historical wage structures is interesting in its own right, it is especially important because of its implications for wage differentials by gender. Because the initial salary structure established in the 1930s explicitly underpaid female-dominated jobs, and because this historical salary structure continues to affect the current wage structure, female-dominated jobs remained underpaid by $1.6 billion between 1973 and 1993.

Inertia in Wage Structures

Recent studies indicate that wage structures are remarkably stable over time. Although most of this research analyzes wage structures among industries (Krueger and Summers, 1986; Dickens and Katz, 1987), some have noted that occupational wage differences also exhibit much inertia (Krueger and Summers, 1988). Perhaps the most amusing anecdote is Phelps Brown's (1977) observation that over five *centuries*, craftsmen earned 50 percent more than unskilled laborers. It is as if, he states, folks kept in mind the rule of thumb "half as much again."

The reason for wage inertia is unclear, but some argue that the persistence of both industry and occupational wage patterns can best be explained by concerns about fairness in pay[1] (Thaler, 1989; Phelps Brown, 1977; see also Dickens and Katz, 1987). Institutional labor economists, for example, believe that once a wage structure has prevailed for a period of time, it takes on a moral stature; it is accepted as fair because it has always existed that way (Piore, 1979; Phelps Brown, 1977; Doeringer and Piore, 1971). Thus, in Phelps Brown's example, the 50 percent wage differential between craftsmen and laborers was perceived as fair because it was customary (Phelps Brown, 1977). Such wage relationships become difficult to change because employees view any changes as unfair (Doeringer and Piore, 1971; Ross, 1957; Solow, 1990; Levine, 1993). As a result, employers can be reluctant to change wage relationships, especially in the short run, even if the market dictates otherwise

[1] Thaler (1989) believes that competitive economic forces may increase the pay for a given occupation within a given industry, but they cannot explain why all the occupations in that industry also would receive a pay increase. He argues that only internal equity concerns borne out of notions of fairness would explain such a phenomenon.

(Wing, 1984; see also Le Breton, 1957; Lester, 1948), because employee morale and productivity may suffer (Akerlof and Yellen, 1990; Levine, 1993; Doeringer and Piore, 1971).

Other factors besides fairness also can contribute to stable wage structures. For example, most organizations use job evaluations to determine pay so that jobs that contribute more value to an organization receive higher pay (Bureau of National Affairs, 1976; Milkovich and Newman 1996). Most likely such assessments of which jobs add the greatest value to an organization will remain relatively unchanged over time; this will contribute to a stable wage structure within organizations.

A recent survey confirms that most managers are reluctant to change relative wage rates within their organizations because they believe that the existing wage differentials are important to workers (Blinder and Choi, 1990). In addition, they believe that their companies would be punished —from higher turnover, fewer job applicants, and reduced work effort— if they were known for having unfair wage policies. Facing such reprisals, paying customary wage rates can be the profit-maximizing strategy (Akerlof and Yellen, 1990).

In their fair wage-effort efficiency wage model, for example, Akerlof and Yellen (1990) argue that maintaining occupational wage structures can be profit-maximizing if workers' effort levels depend on receiving customary wage rates (Akerlof and Yellen, 1990). Firms pay customary wage rates, even though these are not the market-clearing wages, because there is no incentive to reduce the wage rate, since workers' effort levels would fall, reducing profits. If wage structures were initially discriminatory, therefore, they can persist if employers are punished for changing them (Akerlof, 1984).

In sum, both theoretical and empirical research suggests that paying customary wages can be an important consideration in compensation structures and that there can be resistance to changing the existing wage structures, especially if such changes can be perceived as unfair. What remains unexamined is to what extent wage structures can persist in the long run or when faced with conflicting market wage rates.[2] This research examines this issue by updating and extending previous research by Kim (1989). The findings provide stronger evidence that customary wages can continue to determine a pay structure in the long run—over 60 years

[2] Many economists believe that in the long run, employers will abandon customary wages in order to remain competitive. However, research on interindustry wage differentials indicates that wage differentials can persist even in the long run (Krueger and Summers, 1988). There has been little empirical analysis of whether occupational wage differentials can persist in the long run, however, especially when market conditions are taken into account.

later—even after accounting for market wage rates. In the next section I describe the California State Civil Service and its pay policies and practices. The subsequent section summarizes Kim (1989) regarding the origins of California's wage structure and how gender was used to lower wages for female-dominated jobs. In the last section I present empirical results indicating that the discriminatory wage structure established in 1931 continues to determine current wages.

The Case Study

The California State Civil Service has one of the largest civil service systems in the United States, with 150,000 employees. In 1986, the average full-time female worker earned 74.9 percent of the pay of the average full-time male worker; in 1937, the median female worker earned 73.9 percent of the pay of the median male worker. Although more recent and comparable measures are not available, the similar wage gaps in 1937 and 1986 indicate that it has not been substantially reduced in 50 years. Along with this wage disparity is a high degree of occupational segregation. Of the approximately 4,000 job titles,[3] 78 percent are either male- or female-dominated[4]; 62 percent of all job titles are male-dominated, and 16 percent of all job titles are female-dominated. Thus the California Civil Service reflects the same high degree of occupational segregation and average wage disparity between men and women found nationally in the work force (Reskin and Hartmann, 1986; Bielby and Baron, 1984; Baron and Newman, 1989).

In some respects, because it is a public agency, the California Civil Service appears to be atypical of other enterprises: one-fourth of its employees, for example, are in occupations found only in government (California State Personnel Board, 1969). Yet its compensation practices are not atypical—in fact, they are quite standard (see Milkovich and Newman, 1996). The California Civil Service follows standard practices because it the faces the same labor market forces other employers face; it must compete for workers by both attracting and retaining them, and it uses its compensation structure to accomplish these goals. Like the private sector, it has had to do so while faced with substantial cutbacks and cost pressures over the last 15 years.

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[3] Job titles are detailed occupations. Examples include Clerk II, Janitor I, and Heavy Truck Driver.

[4] *Male-dominated* job titles are defined as job titles in which 70 percent or more incumbents are male, and *female-dominated* job titles as those in which 70 percent or more of the incumbents are female. The 70 percent cutoff is the most commonly used. Only job titles with two or more workers were included in the gender-segregation computations.

The salary system in the California State Civil Service. By law, the California Civil Service had to pay "like salaries" for jobs with "comparable duties and responsibilities" and to consider "prevailing rates" in other public and private businesses. It implemented these mandates by conducting a qualitative job evaluation when it established salaries and "proper internal relationships" among all its job titles.[5] It then used information from its annual salary surveys to determine yearly pay increases (California State Personnel Board, 1975).

The job evaluation involved assessing job titles of their duties and responsibilities and awarding those with greater amounts of these qualities higher pay. During this process, job titles were assigned explicit salary relationships, called *internal salary relationships*, to other job titles. These salary relationships were supposed to reflect the similarities and differences in duties and responsibilities among different jobs. For example, psychiatric technicians could be paid 10 percent less than prison guards (if they were similar but not equivalent in duties and responsibilities). Because each job title had at least one internal salary relationship, the result was a salary structure defined by a complex web of salary relationships. Each salary relationship was documented for each job title on what analysts called *salary history cards*[6] (Atwood, 1986; Crain, 1986).

There was considerable pressure to maintain these internal salary relationships and thus the entire relative wage structure. First, analysts interpreted the law (Government Code 18850) to mean that "internal relationships" were of paramount concern, so they were unwilling to disrupt them (California State Personnel Board, 1975; Atwood, 1986). As a result, even when salary relationships conflicted with the surveyed market wage rates, the California Civil Service often maintained the existing wage structure rather than follow the market rates in the short run:

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[5] The initial job evaluation, which was conducted in 1931, will be described in the next section. Thereafter, whenever a new job title was created, a job evaluation was used in order to establish its salary *within the existing salary structure*. This new job would be compared with the most similar existing job in the California Civil Service, and its salary was determined according to whether it was considered to require greater or fewer "duties and responsibilities." If greater, the salary for the new job would be more than that for the existing job; if fewer, it would be paid less. The exact amount of the wage differential was determined somewhat subjectively. Thus the job evaluation was continuous—undertaken whenever new jobs were created—but these new jobs would be placed in the existing salary structure that was determined by a job evaluation in 1931.

[6] Livernash (1957) describes a similar system in which job titles have an explicit relationship to the key rate (the job title that is surveyed for market wages). In the California Civil Service, however the explicit wage relationships are with job titles that are judged to be the "most similar" to each other—be they key rates or otherwise.

> The Personnel Board believes, as do most large employers, that maintenance of sound and equitable salary relationships within its classification structure is more important than responding to short-term changes in prevailing rates [California State Personnel Board, 1975, p. 1].

(See also Atwood, 1986.) This practice is not unusual. Wing (1984) argues that even in the private sector, employers often view internal relationships as their first priority, with external pay relationships that contradict these being compromised.

Second, the process of administering the compensation plan created resistance to changing the salary structure. When the pay for a given job title was established, the justification for that pay was documented in a detailed memo that described the results of the job evaluation and the resulting internal salary relationships (Atwood, 1986; Crain, 1986). The existence of this documentation made it difficult to change salary relationships, since doing so meant that either the original study was flawed (which analysts were reluctant to admit) or dramatic changes in a job occurred (which was unlikely). Whenever the pay for a particular job was challenged, personnel analysts would review these memos, as well as the salary history cards, to determine if breaking an internal salary relationship was justified (Atwood, 1986). Unless there was a strong rationale for doing so (such as the duties and responsibilities of the job changed greatly), analysts were unlikely to change the wage relationships (Crain, 1986; Leighton, 1987; Atwood, 1986). Thus the very process of conducting a job evaluation, the existence of documentation rationalizing how the salary structure was founded, and the subsequent need for compelling arguments in order to change these prior decisions maintained the status quo.

Third, there were organizational reasons for being reluctant to change the wage structure. Quick and radical changes to a structure as important as compensation could question the legitimacy of the entire salary-setting process and the principles it rests on. Employees would question the validity of a job evaluation, for example, if wages soon dramatically departed from it. Thus the legitimacy of a compensation structure, like any structure, rests on its reliability and stability. These conditions require a certain amount of inertia and resistance to change (Hannan and Freeman, 1984; see also Gerhart and Milkovich, 1990; Livernash, 1957).

Fourth, compensation administrators believed that employees would become upset if these relationships changed[7]:

[7] It is likely that when employees are upset, more work, disruption, and aggravation are created for personnel analysts. Analysts would naturally want to avoid these consequences and therefore would avoid disrupting the existing wage relationships.

> Employees become accustomed to the existing [salary] relationships. And when you start moving the structure in a variable fashion, it's disruptive. Employees become unhappy. You create problems, grievances [Leighton, 1987, p. 58].
>
> People look at their salary in comparison to other people's salary who may be working in the same setting with them, and there is this underlying feeling on their part that that is permanent, that's the way it should always be, and when these things change, questions are raised and people get upset, and typically you've got to explain why that's changed . . . and so to the degree that the relationships could be maintained, you maintained them [Crain, 1988, p. 168][8]

Thus there were many factors—administrative, organizational, political, and legal—that pressured analysts to maintain the existing salary structure. Because of these, even after the legal mandate changed in 1981 so that salaries were determined by collective bargaining, the salary-setting process remained largely unchanged. Analysts continued to establish salaries for new jobs by using a job evaluation and assigning internal salary relationships, they continued to document these internal salary relationships, and they continued to be reluctant to change them. Although collective bargaining formally gave the union the right to bargain over the pay decisions, the union supported its bargaining positions by arguing over the relative duties and responsibilities of jobs in job evaluations, the existing market wages, and proper internal salary relationships. Thus both the union and the analysts continued to adhere to the principles of job evaluation, internal salary relationships, and market wages in determining wage rates, and disrupting existing salary relationships remained uncommon. Because of this ongoing reluctance to change its salary structure, it is important to examine how the initial salary structure was established.

History of California's Salary Structure

The California Civil Service established its salary and classification system in 1931, after completing a comprehensive classification and salary study. Internal documents from this study indicate that it explicitly lowered salaries for female-dominated jobs. An analyst who worked on the compensation plan explains that sex was one factor used to determine pay (Becker, 1934):

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[8] Although workers were likely to become upset from changing internal relationships within their work setting, as Crain states, these dissatisfactions were not limited to the same work settings. Because information on salary increases throughout the California Civil Service were public knowledge, workers often became upset about changes in internal relationships across work setting as well.

> Certain supplemental factors were also taken into consideration, namely, the opportunity for advancement out of a given . . . [job title], the working conditions, the age, *sex*, and standard of living of the employees normally recruited for a given . . . [job], past and present pay relationships, and the immediate and ultimate cost of the adoption of the plan . . . [emphasis added].

The decision to use gender in determining pay was reached in a curiously straightforward manner. The personnel analysts asked the Civil Service Commission, the appointed policymaking body for personnel matters, to decide on various pay practices, such as whether to pay union rates or geographic differentials. Question 5 asked whether gender should be considered:

> Question 5. Shall any differences in pay on account of sex be made?
>
> POSSIBLE METHODS OF PROCEDURE
>
> Some of the possible methods of answering this question are as follows:
>
> 1. To pay men consistently more than women doing the same kind of work.
> 2. To pay men and women doing the same kind of work the same, regardless of sex.
> 3. When men and women do the same kind of work to make no difference, but to pay somewhat higher for those occupations filled predominately by men than for those occupations filled predominately by women, where, aside from sex, the qualifications are substantially the same.
>
> RECOMMENDED PROCEDURE
>
> The compensation staff recommends that the third of the methods outlined above be followed, the differentials to be limited to those kinds of occupations where in the commercial world distinctions are made in the pay for workers engaged in occupations predominately filled by men as compared to those predominately filled by women ["List of Questions Relating to Financial Policies and Standards to be Answered by the State Civil Service Commission and the Director of Finance," n.d. but attributed to 1930].

According to subsequent memos, the staff's recommendation—paying less for jobs filled predominately by women—was adopted in 1930.

A 1931 memo allows us to estimate by how much women's jobs were underpaid. The author of the memo is explaining why game farm cooks were paid less than workers in similar cook jobs:

> Perhaps the significant factor in the situation is that . . . [the job titles] of Game Farm Cook is filled by women while the others beginning at $100 or over are filled by men. As you know, it is our policy to write lower rates for . . . [job titles] that are filled predominately by women than for those [job titles] that are filled predominately by men. This alone, and possibly some difference in the volume of work performed, can justify a differential [E.C. to R.E.M, August 10, 1931].

The three male-dominated cook jobs had starting pay rates of $110 and top pay rates of $140–$150 per month. In comparison, the female-dominated game farm cooks started at $90 and reached its top pay of $110. Comparing these salaries indicates that the female job was paid 22 to 27 percent (and possibly as great as 36 percent) lower than the equivalent male cook jobs *because of the sex of those performing the work*.[9]

Why did the California Civil Service choose to underpay female jobs? A 1936 memo exposes the rationale. The Executive Officer of Personnel explains that the jobs that received recent pay increases were only those

> related to Janitor and Elevator Operator in that they have the same character of duties and responsibilities and employ about the same type of individual; namely, adults of the so-called working class having very definite family responsibilities. There are a large number of other . . . [job titles], particularly of the clerical type, having the same or even lower salary ranges and involving much larger groups of individuals that probably should be included if considered from every standpoint except that of the type of individual employed. That is to say, the clerical workers are more generally the younger single persons not having the same degree of family responsibility.

The California Civil Service was following the widespread practice of paying a family wage. Because it believed that female workers were single or supported by their husbands and therefore did not need to earn a family wage, it chose to pay lower wages to jobs held by women. Because 75 percent of clerical workers were women and all janitors and elevator operators were men, only the latter received pay increases.

These practices were not unusual. It was common to use gender to determine salaries during this time; in fact, many compensation textbooks suggested doing so (see Taylor, 1989; Belcher, 1948; Belcher, 1962; Reynolds, 1951). As a consequence, other gender-biased compensation structures resulted (see for instance, Newman, 1976). Whether such salary structures can continue to exist in the long run is examined next.

The Data and Wage Inertia

The data used for the empirical analyses were hand-collected from the California Civil Service's pay and historical files. Because the analyses control for market wage rates, I included only job titles that were surveyed consistently for prevailing wage rates (called *key jobs* by the

[9] Comparing the game farm cook salary of $90 to $110 with the male cook salaries of $110 to $140 yields a 22 to 27 percent wage reduction, respectively. Comparing it with the $100 to $150 salary range results in a 22 to 36 percent wage reduction.

California Civil Service).[10] According to personnel administrators, 40 job titles met this standard. I traced the history of these 40 job titles back to 1931 using detailed personnel files. Only job titles that could be traced back to 1931 and that were substantially the same job in 1931 were included in the sample. This left 27 key jobs in the sample, since the rest had been created after 1931 or did not list a salary in 1931. Although the sample appears small, it represents one-third of the work force, since job titles with large numbers of workers were usually surveyed for salary data (Doeringer and Piore, 1971).

For each of these job titles, I collected the prescribed monthly salary ranges[11] from 1973 to 1993 from the pay files. From the historical records, I obtained counts of the number of men and women who were employed in each of these jobs during 1935 (no other counts by gender were available during the 1930s) and during 1986. I then collected the market wage rates for each of these job titles between 1973 and 1993 from the California Civil Service's own salary surveys. These surveys included data from approximately 800 to 1000 firms, chosen from a stratified (by industry and size) random sample. Conducted annually, the surveys summarized the mean, median, and interquartile range of the market wage rates for each key job.

The job titles included in the sample are those which are the least likely to be influenced by their historical wage rates. Because they are all surveyed annually for market wage data, their wages were supposed to be determined by these surveyed wage rates. When controlling for these wage rates, therefore, salaries for these jobs should be the least affected by customary wage rates. Thus, if the results indicate that historical salary rates have an effect on present salaries, independent of the prevailing rates, it is likely that the remaining job titles also would be influenced by customary wage rates.

The empirical analysis was performed by examining the extent of wage inertia and, if this was positive, estimating the amount of discrimination in the current salary structure. To examine whether the 1931 salaries still affect present salary levels, irrespective of market wage rates, the following GLS regression was run:

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[10] Key jobs are similar to benchmark job titles (Livernash, 1957). They are surveyed in the local labor market to determine the rates other employers pay. Salary increases for all other job titles are determined by these key jobs. See Livernash (1957).

[11] The only salary data in the California Civil Service that were available were the prescribed salary ranges for each job title. Thus "salary" or "wage" rates in the California Civil Service always indicate prescribed salary rates.

$$\text{wage}_{i,t} = \beta_0 + \beta_1 \text{wage}_{i,31} + \beta_2 \text{market wage}_{i,t} + \gamma_t + u_{i,t} \qquad (1)$$

where $\text{wage}_{i,t}$ is the natural log of the real (in 1982 dollars) prescribed monthly salary for the California Civil Service's *i*th job title in time *t*, $\text{wage}_{i,31}$ is the natural log of the real prescribed monthly salary for the California Civil Service's *i*th job title in 1931, market $\text{wage}_{i,t}$ is the natural log of the real surveyed (monthly) salary rate for the California Civil Service's *i*th job title in time *t*, γ_t is the fixed effect (dummy variable) for the calendar year, and $u_{i,t}$ is the error term.

This regression was run over the 27 key job titles using annual data from 1973 to 1993.[12] Our interest is the estimate of β_1; if positive and significant, it will indicate that historical wages can persist in the long run, even when market wage rates are considered. β_2 is expected to be greater than zero, since market wage rates were considered in determining salaries.[13] A GLS estimator was used in order to correct for first-order serial correlation. Table 1 shows the means of the variables. Table 2 shows the regression results.

As Table 2 shows, the model is a very strong predictor of current salaries, given the high R^2 values. As expected, the coefficients of the prevailing rate measures are significant and large. A 1 percent increase in the prevailing market rates increases current salaries by 0.8 percent. Given that the sample was restricted to jobs that were surveyed and most likely to follow these market wage rates, this is not surprising. Nevertheless, these results nicely confirm standard competitive economic theory that wages are determined by market forces.

However, wages also seem to be determined by their historical rates. β_1, the coefficient of 1931 salaries, is very significant (at the 0.01 percent level) and positive. An increase of 1 percent of 1931 salaries amounts to a 0.16 to 0.21 percent increase in current salaries. Thus it appears that the salaries established in 1931, when the original salary structure was determined, continue to influence the present salary structure in California, independently of its surveyed salary rates. This is consistent with

[12] If all data were present, I would have 567 observations (27 job titles over 21 years). However, some job titles were abolished before 1993; others had data missing for some years. Thus I was left with 277 data points.

[13] The California Civil Service compared the average of its salary to the median and average of the surveyed rates, its prescribed entry-level salary to the first quartile, and its prescribed maximum salary to the third quartile of the surveyed rates. Because I did not have information on average salaries by job title, I compared the median and weighted average of the surveyed rates to the midpoint of its prescribed salary range.

TABLE 1

DESCRIPTIVE STATISTICS OF VARIABLES USED

	Mean	SD	*N*
Real monthly salary in the California Civil Service ($w_{i,t}$)			
Midpoint of the prescribed range	1701.3	632.70	277
First quartile of the prescribed range	1541.1	571.18	277
Third quartile of the prescribed range	1879.6	701.84	277
Real 1931 monthly salary in the California Civil Service ($w_{i,31}$)			
Midpoint of the prescribed range	887.77	370.19	277
First quartile of the prescribed range	796.25	333.7	277
Third quartile of the prescribed range	979.29	409.07	277
Real surveyed salary rates			
Median of surveyed rates	1976.5	758.4	277
Average of surveyed rates	1984.7	758.4	277
First quartile of the surveyed rates	1827.1	711.81	277
Third quartile of the surveyed rates	2132.6	799.89	277
Dummy variable (=1 if 70 percent or more women in 1935)	0.37	0.48	264
Dummy variable (=1 if 70 percent or more women in 1986)	0.35	0.48	187

Note: The GNP Personal Consumption Index (1982 = 100) was used to adjust salaries.

TABLE 2

WAGE INERTIA

	(1)	(2)	(3)	(4)
Intercept	8028[a]	0.4574[a]	1.1191[a]	0.4049[a]
	(0.0828)	(0.0788)	(0.0874)	(0.1010)
1931 wage	0.2016[a]	0.1669[a]	0.1614[a]	0.2119[a]
	(0.0181)	(0.0173)	(0.02028)	(0.0208)
Surveyed Salaries				
Median	0.7503[a]			
	(0.0193)			
Average		0.8038[a]		
		(0.0190)		
First quartile			0.7634[a]	
			(0.0209)	
Third quartile				0.7683[a]
				(0.2119)
Adjusted R^2	0.9924	0.9934	0.9904	0.9901
N	277	277	277	277

Notes: Dependent variable = ln of the real monthly salary in California, 1973–1993 (standard errors are in parentheses). Corrections for first-order serial correlation and fixed effects year dummy variables were included (not shown). 1931 wage is the natural log of the real midpoint (1 and 2), entry (3), and maximum (4) monthly salary of the state's *i*th key job in 1931. The GNP Personal Consumption Index (1982 = 100) was used to deflate salaries. Median is the natural log of the real median of the surveyed rates for occupation *i*. Average is the natural log of the real average of the surveyed rates for occupation *i*. First quartile is the natural log of the real first quartile of the surveyed rates for occupation *i*. Third quartile is the natural log of the real third quartile of the surveyed rates for occupation *i*.

[a] $p < .0001$.

California's salary-setting policy, which uses customary internal wage relationships to set salaries.

Because these wages discriminated against women, it is important to examine to what extent historical discrimination persists in current wage rates. To estimate the amount of discrimination that occurred in 1931, wages in 1931 were regressed on a dummy variable that was equal to 1 if at least 70 percent of the incumbents were women in 1935.[14] The coefficient on this dummy variable was –0.2. This implies that female-dominated jobs were underpaid 18 percent in 1931, which is consistent with the qualitative evidence in which female cook jobs were underpaid between 22 and 37 percent. Given this amount of historical discrimination, these jobs remain underpaid 3 to 4 percent (0.18 times 0.16 or 0.21) currently *from the existence of inertia in wage structures!* However, this estimate understates the total amount that female-dominated jobs are underpaid due to inertia and historical discrimination, because it assumes that these jobs have the same amount of wage inertia as do all other jobs in the California Civil Service. Female-dominated jobs, it turns out, seem to have more wage inertia than other jobs. To show this, a slightly different variation of the model was run.

Historical discrimination and current wage rates. In order to examine the effects of historical discrimination imbedded in wage inertia separately from nondiscriminatory wage inertia, the 1931 wages were decomposed into a discriminatory and nondiscriminatory component. The nondiscriminatory component is the wage that would have existed in 1931 if discrimination had never occurred. The discriminatory component δ is the amount each female-dominated job in 1931 was underpaid because of discrimination:

$$\text{Wage}_{31} = g(\text{nondiscrim. wage}_{31} + \delta) \qquad g_1 > 0;\ \delta < 0$$
$$\text{for female-dominated jobs, 0 otherwise} \tag{2}$$

Suppose also that current wages are a function of historical wages (those observed in 1931) and market wage rates:

$$\text{Wage} = f\,(\text{wage}_{31}, \text{market wage}) \qquad f_1 > 0;\ f_2 > 0 \tag{3}$$

[14] $\text{Wage}_{i,31} = \alpha + \alpha \text{Dfem35}_i + u_i$.

Putting Eq. (2) into Eq. (3), current wages can be estimated as a function of market wage rates, a discriminatory component from underpaying female jobs in 1931, and the nondiscriminatory historical wage rate:

$$\text{Wage} = h(\text{nondiscrim. wage}_{31} + \delta, \text{market wage}) \quad h_1 > 0;\ h_2 > 0 \qquad (4)$$

–0.2 was used as an estimate of δ, since this was consistent with the results from the regression of 1931 wages on a dummy variable (=1 if female-dominated in 1935), as well as the qualitative estimates (from the cook memo) of the extent to which female-dominated jobs were underpaid in the 1930s. This estimate was used in the following GLS regression[15]:

$$\begin{aligned}\text{Wage}_{i,t} = {} & \beta_0 + \beta_1(\text{wage}_{i,31} - \delta\text{Dfem35}) + \beta_2\text{market wage}_{i,t} \\ & + \beta_3\text{Dfem35}_i + \beta_4\text{Dfem86}_i + \gamma_t + e_{i,t}\end{aligned} \qquad (5)$$

where $\text{wage}_{i,t}$ is the natural log of the real (in 1982 dollars) prescribed monthly salary for the California Civil Service's *i*th job title in time *t*, $\text{wage}_{i,31}$ is the natural log of the real prescribed monthly salary for the California Civil Service's *i*th job title in 1931, δ is the estimated amount of discrimination in 1931 (–0.2), market $\text{wage}_{i,t}$ is the natural log of the real surveyed (monthly) salary rate for the California Civil Service's *i*th job title in time *t*, Dfem35_i is a dummy variable that equals 1 if 70 percent or more incumbents in the *i*th job title were women in 1935 and 0 otherwise, Dfem86_i is a dummy variable that equals 1 if 70 percent or more incumbents in the *i*th job title were women in 1986 and 0 otherwise, γ_t is the fixed effect (dummy variable) for the calendar year, and $e_{i,t}$ is the error term.

β_1 will estimate the amount of wage inertia that continues into the present. β_3, on the other hand, will measure the extent to which current wages are underpaid because historical discrimination continues to affect present salaries. This coefficient will reflect both the effect of underpaying female-dominated jobs historically and any differences in the amount of wage inertia in female-dominated jobs. β_4 will enable us to analyze the extent to which wages are underpaid because of *current* discrimination in salary setting.

[15] I would like to thank Bill Dickens for suggesting this specification.

The results are displayed in Table 3. Because the results were similar no matter which measure of the surveyed rates was used, and because the median of the surveyed rates showed neither the largest nor the smallest estimates of the coefficients, only the results using the median of the surveyed rates are shown in order to more easily read this table. These results indicate that β_1 is still significant, large, and similar to previous results. A 1 percent increase in the historical wages increases salaries currently by 0.17 percent. In addition, the estimate of the effect of surveyed rates on current salaries is also unchanged: A 1 percent increase in the market wage rate increases current salaries by 0.77 percent.

The coefficients on the two (historical and current) discrimination measures reveal an interesting story. In regression (1), only Dfem35, a dummy variable that was equal to 1 if the job title was predominately female in 1935, was included. The results from this regression indicate that even when holding the 1931 wages (purged of discrimination) constant, and even when considering the market wage rates, current salaries for jobs that were female dominated in 1935 remained underpaid by 7 percent, or $1487 per year. The cost of remedying this discrimination amounts to $1.6 billion (in 1982 dollars) for the period between 1973 and 1993, excluding interest from correcting the underpayment many years later.

TABLE 3

HISTORICAL DISCRIMINATION (DECOMPOSING 1931 SALARIES)

	(1)	(2)	(3)
Intercept	0.50128[a] (0.08105)	0.43558[b] (0.1162)	.48747[a] (0.1094)
1931 wage purged of discrimination	0.18464[a] (0.018)	0.13313[a] (0.02229)	.17287[a] (0.02236)
Market wage (median of)	0.75586[a] (0.01911)	0.80762[a] (0.0274)	0.76603[a] (0.027)
Dummy variable = 1 if women were 70 percent + in 1935	–0.07363[a] (0.00914)		–0.06350[a] (0.01274)
Dummy variable = 1 if women were 70 percent + in 1986		–0.02713[c] (0.01256)	0.00565 (0.01349)
Adjusted R^2	.99356	.99484	.99546
N	264	187	187

Notes: The dependent variable is the natural log of the California Civil Service's midpoint of the prescribed salary range. Standard errors are in parentheses. The estimates that appear are those using the median of the surveyed wage rates. Corrections for serial correlation and year dummy variables were included.

[a] $p < .0001$.

[b] $p < .001$.

[c] $p < .05$.

Regressions (2) and (3) allow us to examine whether in addition to this underpayment, *current* discrimination in wage setting underpaid female-dominated jobs even further. These regressions add Dfem86, a dummy variable that was equal to 1 if the job title was female dominated in 1986. The results from regression (2) indicate that jobs that were female dominated in 1986 were underpaid even when accounting for historical and market wage rates. However, this underpayment disappears in regression (3), when the historical discrimination variable is added to the regression. Thus it appears that salaries for female-dominated jobs were underpaid in the current period of time not because of *recent* discrimination in wage setting (irrespective of the market wages and historical salaries) but because of historical discrimination that continued to affect current salaries. [Note that although the coefficient on the historical discrimination variable is reduced slightly in regression (3), it remains insignificantly different from the estimate in the first regression (1).]

These regressions may underestimate the amount of wage discrimination that exists at the present time. By controlling for market wage rates, the results would miss systematic biases in how these wage rates were either collected or used (Rynes and Milkovich, 1986). In the state of Washington, for example, Bridges and Nelson (1989) found that female-dominated jobs were more likely than male-dominated jobs to be surveyed for market wages. For those jobs not surveyed, salaries for male-dominated jobs were likely to be determined internally from other male-dominated jobs, while those for female-dominated jobs were likely to be determined by other female-dominated jobs. These biases can insulate the male-dominated jobs from market wage comparisons, while the pay of female-dominated jobs would remain low (relative to the skills required) because of relatively low market wages plus internal relationships with other low-paid female-dominated jobs.

In addition, if other establishments reduced pay for female-dominated jobs either historically (see Lester, 1948) or currently, the prevailing rate measures could include the gender bias of other firms (Grune, 1984). In fact, the California Civil Service included in its salary surveys some establishments that were found guilty of sex discrimination (Boughton, 1987). By controlling for the prevailing rate measures and any gender bias in these measures, these results could underestimate the extent to which discrimination on the basis of sex continues to influence present salaries. Thus the underpayment of female-dominated jobs by $1.6 billion between 1973 and 1993 may be a conservative estimate of the extent to which traditionally female jobs have been underpaid.

These results were subjected to a battery of tests. First, I examined whether the results continued to hold up under different specifications. The results persisted, however, despite testing a variety of different specifications.[16] For example, as a conservative test of both models, I performed a hierarchical regression that first removed all variation associated with current surveyed wages. The results are reported in Tables 4 and 5. The coefficients are nearly as large and are still significant: Each increase of 10 percent in the 1931 wages increases current salaries by 0.9 to 0.13 percent, and current salaries are underpaid 5 percent because of historical discrimination continuing to influence salary rates. Although the coefficient on current (1986) gender composition is significant and positive in regression (4), it switches signs (and is significant, with $-0.03 < \beta < -0.02.$; $p < .05$) when all three other measures of surveyed salary rates were used. Overall, these results confirm that historical salaries and the underpayment of wages in female-dominated jobs continue to affect current salaries.

Second, I examined whether these results were compromised when faced with strong market forces. When faced with rapid increases in external wage rates, the California Civil Service may be more inclined to follow the market wages and disregard the customary ones in order to retain and recruit competent employees. To see if larger changes in market wage rates affected the results, I ran a variety of regressions that included interaction terms with changes in market wage rates. (I also divided the data into high, low, and average increases in their market wage rates and ran the regressions separately for each group.) The results consistently indicated that historical wage rates and the underpayment of female jobs on current wage rates were not affected when there were stronger market pressures. This indicates that even when market wages were increasing rapidly, the California Civil Service was not any more likely to follow these external wage rates.

Third, I examined whether compensating wage differentials for differences in working conditions could be responsible for the significant

[16] Neither using wage changes (rather than levels) nor lagging the surveyed wages one period (in case the salaries adjusted with a lag to these market wage rates) resulted in higher coefficients on the salary survey variables or lower coefficients on the historical wage variables. In addition, using salary rankings in 1931 instead of actual salary levels as an independent variable for the wage inertia model shows slightly stronger results on the historical wage rates—the elasticity of wages with respect to historical wage rates was 0.3 to 0.4. [These elasticities were estimated by examining the effect of a 1 standard deviation change in the independent variable on the dependent variable (these calculations are available on request).]

TABLE 4

HIERARCHICAL REGRESSION FOR WAGE INERTIA

	(1)	(2)	(3)	(4)
Intercept	.35132[a]	.13779	.63454[a]	.067455
	(.09749)	(.09491)	(.09716)	(.1268)
Surveyed Salaries				
Median	.93539[a]			
	(.01294)			
Average		.96271[a]		
		(.01258)		
First quartile			.89325[a]	
			(.01304)	
Third quartile				.97529[a]
				(.01665)
Adjusted R^2	.99821	.99839	.99791	.99742
N	277	277	277	277
Intercept	−.74711[a]	−.58289[a]	−.86918[a]	−.85556[a]
	(0.6952)	(0.06548)	(0.07504)	(0.08329)
1931 wage	.11483[a]	.09123[a]	.13312[a]	.13145[a]
	(.0103)	(.009706)	(.01132)	(.01216)
Adjusted R^2	.42667	.40859	.39263	.47565
N	277	277	277	277

Notes: Standard errors are in parentheses. The first (top) results were from the following regression: $w_{i,t} = \alpha_0 + \alpha_1 \text{market wage}_{i,t} + e_{i,t}$. The second (bottom) results were from: $\hat{e}_{i,t} = \beta_0 + \beta_1 w_{i,31} + \gamma_t + u_{i,t}$. Corrections for first-order serial correlation were included.

[a] $p < .0001$.

coefficients on the historical salaries or the wage discrimination variables.[17] This would occur if there were differences between the California Civil Service and other employers in the working conditions among the occupations that existed in 1931 and these differences persisted over 50 years. Yet none of the various evaluations of the California Civil Service's salary surveys found such systematic differences in working conditions among its occupations that would lead to such a pattern of long-term salary differentials over time (California State Personnel Board, 1971; Crain, 1986).

One explanation for the significant coefficients on these variables could be that the California Civil Service requires different levels of human capital

[17] The existence of wage compression also was ruled out. No systematic differences in wage differentials between the California Civil Service's and the surveyed wages were found in low-paid compared with high-paid jobs. Various definitions of low-paid and high-paid job cutoffs were examined, with consistent results. In addition, there were no patterns in these wage differentials over the time period examined or by the sex composition of the jobs.

TABLE 5

HIERARCHICAL REGRESSIONS FOR HISTORICAL DISCRIMINATION

	(1)	(2)	(3)
Intercept	.35132[b]	.31829[c]	.31829[c]
	(.1001)	(.1135)	(.1135)
Market wage (median)	.93539[a]	.93878[a]	.93878[a]
	(.01328)	(.01514)	(.01514)
Adjusted R^2	.9998	.99221	.99221
N	264	187	187
Intercept	–.69700[a]	–.58501[a]	–.63867[a]
	(.07098)	(.08475)	(.08275)
1931 wage (purged of discrimination)	.10883[a]	.09109[a]	.99786[a]
	(.01047)	(.01231)	(.01207)
Dummy variable (= 1 if female-dominated in 1935)	–.04758[a]		–.04844[b]
	(.007915)		(.01258)
Dummy variable (= 1 if female-dominated in 1986)		–.00784	.02709[d]
		(.009293)	(.01274)
Adjusted R^2	.43912	.38871	.43369
N	264	187	187

Notes: Standard errors are in parentheses. The first (top) results were from the following regression: $w_{i,t} = \alpha_0 + \alpha_1 \text{market wage}_{i,t} + e_{i,t}$. The second (bottom) results were from: $\hat{e}_{i,t}$ on the variables in each column plus year dummy variables. Corrections for first-order serial correlation were included.

[a] $p < .0001$.
[b] $p < .001$.
[c] $p < .01$.
[d] $p < .05$.

(and consequently pays different wages) than do other employers for some jobs, and these differences remained unchanged since the 1930s. To examine this, I used 1990 U.S. Census micro data to add proxies for education and age differences between California Civil Service and other workers. The results provide no evidence that differences in human capital bias the estimates shown in Tables 2 through 4.[18] In addition, job descriptions of the

[18] $w_i = ß_0 + ß_1 w31_i + ß_2 \text{census}_i + ß_3 \text{age}_i + ß_4 \text{education}_i + u_i$ and
$w_i = ß_0 + ß_1(w31_i - 0.2*\text{Dfem35}) + ß_2 \text{census}_i + ß_3 \text{age}_i + ß_4 \text{education}_i + ß_5 \text{Dfem35}_i + ß_6 \text{Dfem86}_i + u_i$.
where w_i is the natural log of the real 1990 monthly salary for California Civil Service workers in the ith occupation, census_i is the natural log of the real average monthly salary in 1990 in the ith occupation for those who resided in California but did not work for the state government, $w31_i$ is the natural log of the real 1931 monthly salary for California Civil Service workers in the ith occupation, age_i is the average age for California state workers divided by the average age for nonstate government workers in 1990 in California for the ith occupation, education_i is measured as either (1) the percent of California Civil Service workers who have high school degrees or greater divided by the percent of nonstate government workers who have high school degrees or greater in California in 1990 for the ith occupation; or (2) the percent of California Civil Service workers who have college degrees or greater divided by the percent of nonstate government workers who have college degrees or greater in California in 1990 for the ith occupation, Dfem35_i is a

surveyed jobs suggest that the human capital requirements for California Civil Service jobs were similar to those in the private sector. In addition, no systematic human capital differences could be found by the gender composition of the job to explain away the discrimination variables. Taken together, these results indicate that human capital differences do not appear responsible for the finding that historical salaries and historical discrimination continue to affect current salary levels.

Fourth, I examined whether my findings were representative of jobs that were created after 1931, since more recently created jobs could be subject to less discrimination (see Baron and Newman, 1989). I examined this by regressing current wage rates on market wage rates and the current discrimination measure (the 1986 gender-composition dummy variable). I used two different samples: the previous sample of key rates that traced back to 1931 and a sample of job titles that were created after 1931 and were surveyed for market wage data. This later sample included 376 job titles.[19]

The results (not shown) indicate that the extent of discrimination was not smaller in the more recent jobs (those which did not trace back to 1931). In this later sample, the coefficients on the discrimination dummy variable were either insignificantly different from or greater than those from the sample of jobs that existed in 1931.[20] These results imply that the discrimination in pay does not appear to be lower in newer job titles, when controlling for the market wage rates. Most likely, historical discrimination continues to underpay even newer job titles because of how their pay was established: When a new job was created, its pay was determined by the pay of the job that was considered to be most similar to it (the resulting internal salary relationships reflected the similarity between the jobs). Because female-dominated jobs were always judged to be most similar to another existing female-dominated job, the historical discrimination of the older, underpaid jobs easily could have been incorporated into the pay of newly created ones.

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dummy variable, equal to 1 if the job had 70 percent or more women in 1935, $Dfem86_i$ is a dummy variable, equal to 1 if the job had 70 percent or more women in 1986, and u_i is the error term. Personnel documents were used to trace every job that existed in 1931 to 1990. This left a sample of 400 job titles, which were then matched to three-digit census occupations. The prevailing wage rate for these jobs was calculated from the sample of full-time year-round workers, excluding state government and self-employed workers. Because many occupations had very few workers in them, I excluded those with less than nine workers. This left a sample size of 126 occupations.

[19] Because I no longer have access to the privileged personnel records, I was not able to pick only job titles that were created most recently. I was only able to distinguish between those created in 1931 and those created after this date.

[20] β ranged from –0.01 to –0.06 in the more recent sample and from –.0.01 to –0.02 in the sample that included job titles that traced back to 1931.

Whether these results are representative of other employers is unknown and cannot be examined because of the lack of data. If employers determine wages more by the market and less by job evaluations or customary wages (see Milkovich and Newman, 1996), the extent of discrimination that persists from historical practices will likely be smaller than what was found here.

Conclusion

This article has demonstrated the importance of history in wage setting. History is important because wage structures are very stable; consequently, any wage differentials that are established are likely to continue for decades. Although the reason for such stability is unclear, in the California Civil Service, personnel administrators state that they maintained the historical wage structure because they believed workers would become upset (and productivity would suffer) if relative wage rates changed.

As a consequence, the occupational wage structure remained stable over a long period of time. Even after accounting for its own surveyed salaries, the salaries the California Civil Service established in the 1930s continued to predict the present salary structure—60 years later. These findings are consistent with notions of wage rigidity and fairness in compensation, efficiency wage, and institutional economic theories.

However, this wage stability perpetuated wage differentials that underpaid female-dominated jobs. The original salary structure that was established in 1931 intentionally lowered salaries for female-dominated jobs by approximately 20 percent. Because historical wage rates continue to affect the present salary structure, current salaries continue to underpay female-dominated jobs by 6 to 7 percent. This means that between 1973 and 1993, workers lost approximately $1.6 billion (1982) because of the California Civil Service's policy of maintaining its historical salary structure. In addition, strong market forces do not seem to reduce the discriminatory component imbedded in these wages.

Moreover, the consultant who established the discriminatory wage system in the California Civil Service established compensation systems all over the country—in over "a dozen states, a hundred local governments, and scores of business organizations" (unpublished memo from Fred Telford, 1950). The "list of questions" that asked various organizations about their pay policies— including whether they wanted to underpay women and how—continued to be used in his subsequent consulting work. It is unclear how other organizations answered this question, but it is likely

that they followed the prevailing practice at that time and also chose to underpay women's jobs (as he recommended).

Thus one reason why women are underpaid compared with men may be that historically the salary structures that were established underpaid women's jobs and these structures, through custom and policy, were maintained into the present. The agenda for policymakers and researchers is to examine the extent of this practice. If other jurisdictions maintained a gender-biased structure into the present time, the cost of lost wages in the United States is in the billions of dollars.

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