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# Fairness, Markets, and Ability To Pay: Evidence from Compensation Executives

By DAVID I. LEVINE\*

*This paper examines a unique data set based on surveys of 139 compensation executives. Respondents read scenarios describing a hypothetical company and its labor market, and recommended wage changes for several positions. Contrary to some popular theories, differences in unemployment, quit rates, and a company's return of assets led to almost no change in respondents' recommended wage increases. When market wages for closely related occupations diverged, most respondents did not recommend adjusting relative wages within the company; but when the occupations were not closely related (blue vs. white collar), most respondents recommended adjusting relative wages to reflect market forces. (JEL J31, J41, J63)*

Most theories of wage determination focus on market forces, perceived fairness, and companies' ability to pay. Economists over the last 30 years have used several tools to investigate the relative importance of these concepts, from deductive theory to statistical analysis of large data sets. However, relatively few American economists since the 1940's and 1950's (Richard A. Lester, 1948; Lloyd G. Reynolds, 1951) have investigated how practicing compensation executives actually determine pay scales.

Understanding the process of wage determination in detail is important for several reasons. Macroeconomists have always been interested in the sources of wage stickiness (if any) and in the persistence of unemploy-

ment. Recent theories of wage rigidity reemphasize John Maynard Keynes's (1936) hypothesis that employee concern for relative pay may cause the nominal and real wage stickiness that is responsible for business cycles (John B. Taylor, 1980; Alan Blinder, 1988; Lawrence Summers, 1988). In addition to long-lasting unemployment, labor economists have also been puzzled by persistent wage differences between companies and industries for workers who appear to be similar. Efficiency-wage theories (Lawrence Katz, 1987) and theories based on a company's ability to pay (e.g., Assar Lindbeck and Dennis Snower, 1986) have been proposed to explain these anomalies.<sup>1</sup>

This paper returns to and updates the previous generation's methodology of institutional description. The analysis is based on a set of field experiments carried out with surveys from 139 compensation executives at large U.S. corporations. Each survey presented a scenario describing market wage rates for different occupations, unemployment rates in the area and industry, and the company's financial condition. Respondents

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<sup>1</sup>Efficiency-wage theories posit that (in some cases) paying high wages can reduce unit labor costs. Plausible channels include increased effort and morale and reduced turnover.

were asked what wage change they would recommend for several positions.

The first section of the questionnaire had an experimental design in which different respondents received different versions of the facts. In the second section of the survey, the participants were asked how they would modify their recommendations if a given fact in the scenario were altered. Interviews with nine compensation executives enriched the survey results. The results examine whether the factors emphasized by the theories mentioned above are perceived as important by compensation executives.

### I. Hypotheses

*Excess Supply and Demand.*—Conventional economic theory implies that changes in real wages depend on labor supply and demand. The wages paid to workers who are hired within a local labor market should depend on the wages and unemployment rate of similar workers in the same area.

At the institutional level, supply-and-demand theory suggests that employers are likely to examine wage surveys and measures of excess supply (e.g., quit rates or unemployment rates) when they set wages. Wage surveys of similar jobs in the local labor market will be used to find out the market wage of the previous year. Workers will be paid the market wage, with several of the following possible adjustments.

First, if employers have other information concerning shocks to the labor market, they may pay more or less than the survey wage to account for shifts in supply or demand. For example, if the wage survey shows programmer wages have risen but the compensation executive knows that a large local computer company is about to lay off a large number of programmers, the company may not raise wages.<sup>2</sup>

In addition, measurement error in the wage survey can lead companies to use av-

erages of wage increases of related occupations. Such averaging is useful, for example, if the shocks to supply and demand of junior and senior carpenters are highly correlated and both market wages are measured with random error.

In the presence of measurement error, company-specific vacancy rates, quit rates and managers' reports of difficulties in filling vacancies are potentially useful indicators of excess supply or demand in a particular occupation at a company. When vacancy rates and quit rates in an occupation are high, a company can surmise that it is paying less than the market wage and should increase wages.

*Ability To Pay.*—Theories of fairness, rent-sharing, and conflict imply that ability to pay is an important determinant of wages, even in nonunion settings. These theories posit that employers with high levels of economic rents will share these rents with their workers because (i) workers have bargaining power due to their ability to withhold effort, collectively quit, and harass and withhold cooperation from new hires (Lindbeck and Snower, 1986); (ii) management fears that workers will join a union (Lester, 1948); (iii) upper management finds life more pleasant with highly compensated workers (John R. Hicks, 1935 p. 8); and (iv) workers perceive that it is fair for managers to share rents. If increasing workers' perceptions of fairness is the motivation for rent-sharing, then such high wages can increase effort, reduce turnover, and reduce labor costs (George Akerlof, 1984). (Alan Carruth and Andrew Oswald [1989] review the evidence for these theories.)

Ability-to-pay theories imply that companies whose corporate profit rates and productivity have recently increased should increase their wages rapidly. The theories do not specify the precise timing of the relationship. For example, do wages react to temporary changes in ability to pay? If not, what indicators do organizations use to determine whether changes in ability to pay are long-lasting?

*Relative Wages Within the Company.*—Industrial-relations researchers' theories of wage determination (Michael J. Piore, 1979),

<sup>2</sup>In fact, there is evidence that executives do not have rational expectations of wages, which may temper these predictions (Jonathan Leonard, 1980; Levine, 1993).

sociologists' and psychologists' theories of internal equity (J. Stacy Adams, 1965; George C. Homans, 1974), and the prescriptions found in compensation textbooks (George Strauss and Leonard Sayles, 1980; Richard Wing, 1984; Frederick Hills, 1987; George T. Milkovich and Jerry M. Newman, 1990) all posit that historical wage relativities are important constraints on wage adjustments. These theories posit that employees usually feel that any reduction in their relative pay is unfair. Lack of motivation, increased turnover and absenteeism, and increased anti-management activity in unions are likely responses to disrupting historical wage relativities between groups that consider themselves similar.

This paper examines three classes of wage relativities that have been emphasized by industrial-relations scholars and compensation texts: (i) between junior and senior workers within a job ladder (e.g., between junior and senior carpenters); (ii) within a broad occupational group (e.g., between carpenters and electricians); and (iii) between broad occupation groups (e.g., between blue-collar workers and professionals [E. Robert Livernash, 1957 p. 149]). The question is: which relativities are important? Compensation texts posit that workers within broad occupational groupings compare their pay scales frequently, and that historical relativities come to be considered fair. This hierarchy is consistent with psychologists' emphasis on frequency of interaction and ease of comparison (Martin Patchen, 1961; Paul Goodman, 1977).

The compensation literature not only emphasizes the importance of maintaining the first two classes of relative wages, but also recommends a system of pay determination based on job evaluations and wage surveys that *institutionalizes* these relativities. Practitioners following the advice of compensation textbooks will automatically maintain relative wage rates both between junior and senior workers within a job ladder and within broad occupational groups.

*Are There Asymmetries in the Adjustment Process?*—The results below search for asymmetries in the adjustment of wages. I examine whether increases in relative mar-

ket wages or declines in unemployment rates lead to larger changes in nominal wage increases than do declines in market wages or increases in unemployment rates.

## II. Methods

### A. The Survey

*Survey Sample.*—The sample population consisted of the 322 "*Business Week* 1,000" companies that employed at least one member of the American Compensation Association (ACA) whose job title reflected familiarity with compensation. The *Business Week* 1,000 are the publicly traded American corporations with the highest stock-market values. If a company employed more than one ACA member, the survey was sent to the highest-ranking compensation professional. The survey promised respondents that their anonymity would be protected. Survey responses were filled out between February and April 1991.

Usable responses were received from 139 respondents, for a response rate of 43 percent. The median respondent had 10–15 years of experience as a compensation professional. The most common job titles were Director of Compensation and Compensation Manager. Roughly half of the respondents came from manufacturing companies, with the rest distributed throughout finance, energy, utilities, business services, and other industries. There were no apparent response biases correlated with industry or company size. Although the companies surveyed represent only a fraction of the corporate world, respondents' companies have more than 3.5 million employees.

The respondents were familiar with the subject matter and perceived the scenarios described in the survey as realistic. Over 85 percent of the respondents answered "yes" to the question: "Have you ever made the sort of decisions described in this scenario?" (Results were unchanged when the sample was restricted to this subset.) Furthermore, over half of the respondents went to the trouble of adding written comments in the sections provided, confirming that they took the survey seriously. Some of these com-

TABLE 1—WAGE-SETTING SCENARIOS (FROM SECTION 1 OF THE QUESTIONNAIRE)

*Overall State of the Firm and the Economy:*

The unemployment rate in the region is 5% [10%<sup>a</sup>], and has been for the past three years.  
 The unemployment rate in your industry is 5% [10%<sup>a</sup>], and has been for the last three years.

Inflation is running 6%, about the average for the last three years.

The wages of all blue-collar employees in the entire region are up 6% [4%<sup>e</sup>] this year.

Exempt white-collar wages have risen about 6% [12%<sup>e</sup>] in the region.

Wages in the industry nation-wide have risen about 6%.

Quit rates, vacancy rates and managers' reports of difficulties in filling vacancies are all running close to normal for all occupations. [Quit rates and vacancy rates are low, with managers reporting that it is relatively easy to fill openings for all occupations.<sup>a</sup>]

Corporate return on assets is 10% (the industry average) [20% (twice the industry average)<sup>b</sup>], and has been for the past three years.

*Occupational Labor Markets in the Region:*

(In this firm, level I is the entry level, level II workers have 2 to 4 years of experience, and level III workers have 5 to 8 years of experience.)

The wages of carpenter II's in the region have risen 6% [12%<sup>c,d</sup>][4%<sup>e</sup>] this year; they were \$26,000.

The wages of carpenter III's have risen 6% [12%<sup>d</sup>][4%<sup>c,e</sup>] this year; they were \$29,000.

The wages of electrician II's have risen 6% [4%<sup>d,e</sup>] this year; they were \$29,000.

The wages of programmer I's have risen 6% [12%<sup>e</sup>] this year; they were \$29,000.

*Notes:* The facts without brackets are those in the baseline version of the survey. Facts with superscripts a–e vary in alternative versions of the survey.

<sup>a</sup>Fact is true in condition “unemployment high.”

<sup>b</sup>Fact is true in condition “ROA high.”

<sup>c</sup>Fact is true in condition “inequity within a job ladder.”

<sup>d</sup>Fact is true in condition “inequity within a broad occupational group.”

<sup>e</sup>Fact is true in condition “inequity between broad occupational groups.”

ments are included below to enrich the qualitative analysis.

### B. The Questionnaire

Respondents were given the following instructions:

*Assume that you are the compensation vice president of a corporation that hires non-union carpenters, electricians, and computer programmers. The corporation's major offices are all in one region of the country, and the company's compensation philosophy is much like your current employer. Your job is to recommend pay increases for the occupations.*

The first section of the questionnaire presented a set of facts about the state of the economy, the local labor market, and the financial condition of the company (see Table 1). The respondent was asked: “What percentage change in pay would you propose for the salary midpoints of Carpenter II's, Carpenter III's, Electrician II's, and Programmer I's?” (According to the definitions in the survey, level-I workers are entry level, level-II workers have 2–4 years of experience, and level-III workers have 5–8 years of experience.)

Respondents received one of 16 questionnaires, each with different facts. For example, half the surveys stated that the unem-

ployment rate in the region was 5 percent, while the other half stated that unemployment was 10 percent. Return on assets (ROA—a measure of profitability) was either 10 percent or 20 percent. Market wages were either all equal (receiving 6-percent wage increases in the local labor market) or exhibited inequity (a) within a career ladder (Carpenter II's receiving 12 percent; Carpenter III's, 4 percent; and others, 6 percent); (b) within a broad occupational group (carpenters receiving 12 percent, electricians 4 percent, and programmers 6 percent); or (c) between broad occupational groups (Programmer I's and white-collar workers receiving 12 percent; blue-collar occupations, 4 percent).

The experimental design is orthogonal, meaning that the unemployment, ROA, and market wage conditions are independent. Thus, one-quarter of the surveys had high unemployment and high ROA, the second quarter had high unemployment and low ROA, the third quarter had low unemployment and high ROA, and the final quarter had both low unemployment and low ROA. Within each of these quartiles, the four market wage conditions were evenly distributed.<sup>3</sup> This design allowed me to examine how recommended wage levels and relativities varied when labor markets and the employer's financial condition changed.

This method follows previous researchers who presented labor arbitrators with different scenarios and asked them what wage increase they would recommend for workers in public-sector unions (Max Bazerman and Henry Farber, 1985; David Bloom, 1986; Craig Olson et al., 1991). The study by Olson and his coauthors (1991) is particularly relevant because it compares decisions made in experimental situations with the actual decisions made by the same arbitrators in field settings. The decision rules used were similar, supporting the external validity of this paper's methodology.

<sup>3</sup>Thus, the 16 versions of the questionnaire result from a  $2 \times 2 \times 4$  experimental design with two unemployment conditions, two ROA conditions, and four market wage conditions.

In the second section of the survey, the hypothetical facts from the scenario of the first section were modified one at a time. For each fact, respondents were asked whether that information was used in the compensation-setting process at this organization. If they did use the information, they were then asked how the stipulated modification would alter the recommended nominal wage changes. Table 3 presents the questions and summarizes the utilization of these facts.

Some of the questions asked in this section vary as a function of the facts presented in the first section. For example, the respondents who read in the first section that unemployment was 5 percent were asked how their recommendations would change if the unemployment rate had been 10 percent the previous year, and vice versa.

### C. *Supplementary In-Depth Interviews*

In January and February 1992 I conducted nine interviews with compensation executives. The interviews focused on how top decision-makers sometimes modify the recommendations made by their compensation departments. Thus, the interviews complement the survey, since survey respondents had been asked only what pay *recommendations* they would make given the facts presented.

*Interview Sample.*—The sample began with four survey respondents who wrote on the survey that they would be willing to discuss the compensation process with me. These were the only executives I interviewed who had actually filled out the survey. I also interviewed three compensation executives who had worked with my colleagues in the recent past. Two other executives were recommended by the original interview respondents. The final sample comprised a spectrum of organizations including a bank, a clothing manufacturer, a computer manufacturer, a utility, and a drug company.

The companies were located in all regions of the country. The executives were quite senior, typically holding a rank of vice-president of compensation at the corporate level.

TABLE 2—MEANS OF RECOMMENDED WAGE CHANGES, BETWEEN SUBJECTS

Row	Condition	Means (standard error) [ <i>t</i> test]				<i>N</i>
		Carpenter II	Carpenter III	Electrician II	Programmer I	
1	All conditions	6.46 (0.199)	6.33 (0.194)	5.41 (0.115)	6.82 (0.188)	139
2A	Baseline unemployment (unemployment = 5 percent)	6.55 (0.271)	6.62 (0.280)	5.45 (0.178)	6.77 (0.252)	74
2B	Unemployment high (unemployment = 10 percent)	6.35 (0.295)	5.99 (0.262)	5.36 (0.143)	6.86 (0.285)	65
2C	Change (lines 2B – 2A)	–0.20 [0.51]	–0.63 [1.65]	–0.09 [0.39]	0.11 [0.23]	
3A	Baseline ROA (ROA = 10 percent)	6.44 (0.278)	6.40 (0.280)	5.34 (0.184)	6.97 (0.293)	70
3B	ROA high (ROA = 20 percent)	6.47 (0.286)	6.26 (0.271)	5.48 (0.140)	6.66 (0.237)	69
3C	Change (lines 3B – 3A)	0.03 [0.08]	0.14 [0.36]	0.13 [0.57]	–0.31 [0.81]	
4A	Baseline wage levels (All occupations receive 6 percent)	5.96 (0.144)	5.97 (0.147)	5.96 (0.144)	6.06 (0.19)	41
4B	Difference from 6-percent inflation rate (line 4A – 6 percent)	–0.04 [–0.27]	–0.03 [–0.20]	–0.04 [–0.27]	0.06 [0.32]	
5A	Inequity within a job ladder (Carpenter II's receive 12 percent; Carpenter III's, 4 percent; others, 6 percent)	7.02 (0.318)	6.41 <sup>a</sup> (0.281)	6.00 (0.175)	6.03 (0.074)	32
5B	Difference from market wages (Line 5A – 12, 4, or 6 percent)	–4.98 [15.6]**	2.41 [8.57]**	0	0.03 [0.41]	
5C	Difference from 6-percent inflation rate (line 5A – 6 percent)	1.02 [3.21]**	0.41 [1.45]	0	0.03 [0.41]	
5D	Difference from baseline conditions (line 5A – 4A)	1.06 [3.01]**	0.44 [1.36]	0.04 [0.16]	–0.03 [0.15]	
6A	Inequity within a broad occupational group (carpenters receive 12 percent; Electrician II's, 4 percent; Programmer I's, 6 percent)	8.83 (0.521)	8.83 (0.521)	5.18 <sup>b</sup> (0.453)	6.15 (0.225)	31
6B	Differences from market wages (line 6A – 12, 4, or 6 percent)	–3.17 [6.10]**	–3.17 [6.10]**	1.18 [2.60]*	0.15 [0.66]	
6C	Difference from 6-percent inflation rate (line 6A – 6 percent)	2.83 [5.43]**	2.83 [5.43]**	–0.82 [1.80]	0.15 [0.66]	
6D	Change from baseline conditions (line 6A – 4A)	2.87 [5.29]**	2.86 [5.27]**	–0.78 [2.20]*	0.09 [0.30]	
7A	Inequity between broad occupational groups (all blue-collar workers receive 4 percent; Programmer I's, 12 percent)	4.42 <sup>c</sup> (0.98)	4.45 <sup>c</sup> (0.98)	4.42 <sup>c</sup> (0.97)	9.01 (0.54)	35

Continued

TABLE 2—Continued

Row	Condition	Means (standard error) [ <i>t</i> test]				<i>N</i>
		Carpenter II	Carpenter III	Electrician II	Programmer I	
7B	Difference from market wages (line 7A–4 or 12 percent)	0.42 [0.43]	0.45 [0.46]	0.42 [0.43]	–2.99 [5.53]**	
7C	Difference from 6-percent inflation rate (line 7A–6 percent)	–1.58 [1.60]	–1.55 [1.58]	–1.58 [1.63]	3.01 [5.57]**	
7D	Change from baseline conditions (lines 7A–4A)	–1.54 [1.55]	–1.55 [1.51]	–1.54 [1.57]	2.95 [5.15]**	

<sup>a</sup>A *t* test rejects the hypothesis (at the 5-percent significance level) that the mean equals the 7.02 percent received by Carpenter II's.

<sup>b</sup>A *t* test rejects the hypothesis (at the 1-percent significance level) that the mean equals the 8.83 percent received by Carpenter II's.

<sup>c</sup>A *t* test rejects the hypothesis (at the 1-percent significance level) that the mean equals the 9.01 percent received by Programmer I's.

\*Difference from corresponding baseline average (row 2A, 3A, or 4A) is statistically significant at the 5-percent level.

\*\*Difference from corresponding baseline average is statistically significant at the 1-percent level.

*The Compensation Process.*—The interview respondents gave consistent descriptions of the compensation process. Compensation departments in large U.S. corporations use job evaluation to slot jobs into grades and then examine several wage surveys to determine wage changes for different grades. In all of the companies, recommendations from compensation departments were passed upward, usually to the senior vice-president of human resources (or similar title) and then to a committee of the corporation's top executives. This committee typically included the chief executive officer, the chief financial officer, and the top human-resource executive of the company. In some decentralized organizations, each subsidiary or division sent its recommendations both to the corporate compensation department and to the division's executive committee.

### III. Results

The between-subjects analysis compares the means of respondents in each of the conditions (Table 2). Regression analysis and nonparametric statistics that address

some of the statistical issues ignored in Table 2 are discussed below; these methodologies do not modify the results in Table 2.

#### A. Does Excess Supply Reduce Wages?

In the baseline scenario respondents read:

*The unemployment rate in the region is 5%, and has been for the past three years. The unemployment rate in your industry is 5%, and has been for the last three years. Quit rates, vacancy rates and managers' reports of difficulties in filling vacancies are all running close to normal for all occupations.*

The facts in the condition "unemployment high" are identical to those of the original (see Table 1), except that this section is replaced with:

*The unemployment rate in the region is 10%, and has been for the past three years. The unemployment rate in your industry is 10%, and has been for the last three years. Quit rates and vacancy rates are low, with managers reporting that it is relatively easy to fill openings for all occupations.*



TABLE 3—PERCENTAGE OF RESPONDENTS USING EACH FACTOR

	Not used	Used	Blank
1. The unemployment rate in the region is 10%, not 5% [5%, not 10%].	52	17	31
2. The unemployment rate in your industry is 10%, not 5% [5%, not 10%].	58	13	44
3. There are twice the usual number of qualified applicants for each opening at all jobs.	45	14	42
4. The quit rate of blue-collar employees is roughly double the usual rate.	35	33	32
5. Job vacancy rates of blue-collar jobs at this firm are twice normal rates.	35	32	32
6. For electrician jobs, vacancy rates are quite low, and managers are reporting some difficulty finding enough qualified applicants.	26	31	43
7. For programming jobs, vacancy rates are quite low, and managers are reporting some difficulty finding enough qualified applicants.	25	35	40
8. Corporate return on assets has been 20% (twice the industry average), not 10% [10%, the industry average, not 20%].	50	12	37
9. Productivity at the firm has been increasing at twice the industry average, instead of the industry average.	45	20	34
10. Average wages in the industry rise 10%, not 6%.	16	47	36
11. Average wages in region rise 10%, not 6%.	10	61	28
12. Inflation has been running about 10%, not 6%.	23	38	38

*Notes:* Numbers represent the percentage in each category ( $N = 137$ ). (Figures may not sum to 100 because of rounding.) Alternative facts [in brackets] represent the version of the question for “unemployment high” (rows 1 and 2) or “ROA high” (row 8). Respondents marked “not used” if they typically do not use that information in their wage-setting process. Respondents “used” a fact if they changed one or more recommended pay rate. “Blank” is the residual category; thus, respondents in this category presumably use that information, but either the given manipulation was not large enough to lead to a change in pay or other changes in the environment must also exist to lead to a change in recommendation.

Conventional economic theory suggests that unemployment should have a strong effect on wages. Equity theory and compensation texts, on the other hand, give little emphasis to unemployment rates, vacancy rates, or quit rates as important determinants of wages.

Somewhat surprisingly, moving the regional and industry unemployment rates from 5 percent to 10 percent, lowering vacancy and quit rates, and having managers report little difficulty in filling vacancies has almost no effect on wages (row 2C of Table 2). The effects of higher unemployment are very small, statistically insignificant, and in one of four cases of the wrong sign. As recommended by compensation texts, wage

increases do not respond directly to changes in quantity signals.

The unimportance of unemployment rates is supported by the within-subjects analysis of the second section of the survey. Respondents were asked whether they utilized each piece of information (Table 3). Industry and regional unemployment rates were the two least widely used factors, with both unemployment rates reported as “not used” by more than half of the respondents. Furthermore, fewer than one in six actually modified their proposed wage change when the regional or industry unemployment rates doubled from 5 percent to 10 percent, or fell from 10 percent to 5 percent. (The remaining one-third of respondents some-

times use unemployment rates but did not find the move from 5 percent to 10 percent—a very large change by historical standards—to be large enough to justify a change in wage recommendations.)

In section 2 of the survey, respondents were also asked how their proposed wage changes would be modified when a single fact is altered. Changes in unemployment had little effect on recommended wage changes. If unemployment was low in the scenario in section 1, then raising the regional or industry unemployment rate from 5 percent to 10 percent led respondents to lower their proposed wage increases by between 0.15 percent and 0.37 percent (rows 1A and 2A in Table 4; these figures are found by comparing the responses in section 1 to those of section 2). If unemployment was high in the scenario in section 1, decreasing regional unemployment from 10 percent to 5 percent led to 0.07-percent higher wage increases. The corresponding figures for a reduction in industry unemployment were smaller and not significant (rows 1B and 2B in Table 4).

The interviews strongly supported the hypothesis that unemployment rates are not important determinants of pay changes in large organizations, since the respondents neither formally nor informally considered unemployment rates when determining pay adjustments. One respondent asked incredulously, “You mean take advantage of the fact that there are a lot of people out of work?” She, like most of the other executives, stated, “I think that is very short-sighted.” They all felt that companies had to keep up with the market or lose their good people. Furthermore, they all felt that unemployment rates were not useful indicators of the fundamental determinants of the demand for their employees. Furthermore, although all of the companies had offices that were geographically dispersed, none varied regional wage differentials in response to changes in regional labor-market conditions.

I also asked whether the ultimate decision-makers (e.g., divisional general managers, corporate executive committees, etc.) ever modified a compensation department’s

recommendations based on reports of high unemployment rates. All but one of the respondents claimed that unemployment rates would not influence the executive committee any more than the compensation department. The exception noted, “The division president might say: ‘I read in the local paper there’s 10-percent unemployment and plenty of people around. Why do we have to pay so much?’” The proposed modification would be 0.5–1 percent, never more.

*Do Application, Quit, and Vacancy Rates Affect Wages?*—The results in this section rely on the within-subject responses to examine the effects of several different quantity signals of excess supply or demand in the labor market. In almost all cases, the rate of applications, quits, or vacancies led to wage changes in the predicted direction, and many were statistically significant. At the same time, large changes in these indicators of excess supply led to rather small wage changes.

For example, when the number of applicants doubles for all jobs, wage increases decline by between 0.09 percent and 0.18 percent (the decline is statistically significant only in the case of carpenters; see row 3 of Table 4). Only 14 percent of all respondents changed any of their recommendations in this condition, while 44 percent claimed they never use application rates in pay determination (row 3 of Table 3).

When the quit rates or vacancy rates of blue-collar employees are roughly double the usual rate, wage increases are approximately 0.6 percent higher for blue-collar workers (rows 4 and 5 of Table 4). Programmers enjoy approximately 0.2-percent higher wages in these conditions; spillovers such as these provide some support for equity theory’s emphasis on maintaining relative wages.

Respondents’ written comments made it clear that compensation professionals do not feel that turnover and vacancy problems are primarily a compensation matter. Typical responses are as follows:

“Other factors than base pay increases need to be looked at if quit rates and

TABLE 4—MEAN CHANGE IN THE PERCENTAGE WAGE INCREASE RECOMMENDED  
WHEN A SINGLE FACT IS MODIFIED, WITHIN SUBJECTS

Row	Condition	Mean (standard error)				N
		Carpenter II	Carpenter III	Electrician II	Programmer I	
1A	Unemployment in the region is 10 percent (not 5 percent)	-0.23** (0.12)	-0.25 (0.11)	-0.15 (0.10)	-0.37 (0.14)	72
1B	Unemployment in the region is 5 percent (not 10 percent)	0.07* (0.05)	0.07* (0.05)	0.07 (0.05)	0.06** (0.05)	70
2A	Unemployment in the industry is 10 percent (not 5 percent)	-0.12 (0.06)	-0.12 (0.06)	-0.06 (0.05)	-0.15 (0.10)	72
2B	Unemployment in the industry is 5 percent (not 10 percent)	0.02 (0.06)	-0.02 (0.05)	-0.02 (0.05)	0.02 (0.06)	65
3	There are twice the usual number of qualified applicants for each opening at all jobs	-0.13 <sup>a</sup> (0.06)	-0.13 <sup>a</sup> (0.06)	-0.09 (0.05)	-0.18 (0.10)	137
4	The quit rate of blue-collar employees is roughly double the usual rate	0.53 <sup>b</sup> (0.12)	0.53 <sup>b</sup> (0.12)	0.66 <sup>b</sup> (0.13)	0.20 <sup>b</sup> (0.08)	137
5	Job vacancy rates of blue-collar jobs at this firm are twice normal rates	0.57 <sup>b</sup> (0.13)	0.57 <sup>b</sup> (0.13)	0.69 <sup>b</sup> (0.14)	0.19 <sup>b</sup> (0.09)	137
6	For electrician jobs, vacancy rates are quite low, and managers are reporting some difficulty finding enough qualified applicants	0.14 (0.08)	0.14 (0.08)	0.64 <sup>b</sup> (0.12)	0.08 <sup>a</sup> (0.07)	137
7	For programming jobs, vacancy rates are quite low, and managers are reporting some difficulty finding enough qualified applicants	0.09 (0.07)	0.09 (0.07)	0.15 <sup>b</sup> (0.06)	0.63 <sup>b</sup> (0.14)	137
8A	Corporate return on assets has been 20 percent (twice the industry average), not 10 percent	0.20 (0.08)	0.21 (0.08)	-0.17 (0.07)	0.14 (0.07)	67

*Continued*

vacancies increase—such as management style, workload, morale, etc. Pay is only one piece.”

“If we cannot fill our jobs I would recommend some kind of action to correct [the] problem, the last of which would be higher starting rates for new people unless this did not seem to cause a compression problem with existing workers.”

Most succinctly, one respondent noted that a hiring or turnover problem was not typically related to pay. Before changing compensation, “[You] need to know WHY!”

These opinions were consistently repeated in the interviews. Executives all agreed that turnover and managers’ reports

of difficulties in filling vacancies *might* signal a need to change wage levels. On the other hand, *none* of them had ever changed wage levels for these reasons. Instead, they all claimed that these problems typically reflected poor management: “Supervisors try to solve with money their difficulties with managing people.” They also disliked adjusting wages in response to reports of difficulties in filling vacancies, since they felt that recruiters always claimed they needed higher starting wages.

*Implications.*—These compensation executives pay almost no attention to unemployment, vacancy, quit, and application rates. Instead, many of these executives appear to assume, as one noted, that “Unemployment rates tend to be impounded into local wage

TABLE 4—Continued

Row	Condition	Mean (standard error)				N
		Carpenter II	Carpenter III	Electrician II	Programmer I	
8B	Corporate return on assets has been 10 percent (the industry average), not 20 percent	−0.19** (0.08)	−0.19** (0.08)	0.16** (0.07)	−0.18** (0.07)	70
9	Productivity at the firm has been increasing at twice the industry average, instead of the industry average	0.41 <sup>b</sup> (0.08)	0.42 <sup>b</sup> (0.09)	0.39 <sup>b</sup> (0.08)	0.38 <sup>b</sup> (0.08)	137
10	Average wages in the industry rise 10 percent, not 6 percent	1.98 <sup>b</sup> (0.31)	1.98 <sup>b</sup> (0.31)	1.98 <sup>b</sup> (0.31)	2.00 <sup>b</sup> (0.31)	41
11	Average wages in region rise 10 percent, not 6 percent	2.18 <sup>b</sup> (0.31)	2.19 <sup>b</sup> (0.32)	2.18 <sup>b</sup> (0.31)	2.10 <sup>b</sup> (0.32)	41
12	Inflation has been running about 10 percent, not 6 percent	0.85 <sup>b</sup> (0.23)	0.85 <sup>b</sup> (0.23)	0.90 <sup>b</sup> (0.22)	0.85 <sup>b</sup> (0.22)	

*Notes:* Respondents were asked what wage they would recommend if a single given fact were altered. This table gives the mean *difference* from the responses in section 1 due to the alteration of a single fact. The averages include those who stated that they never utilized a given piece of information in wage determination (see Table 3); their difference was recorded as zero. The units are percentage points; thus, the first coefficient in row 1A implies that respondents lowered their recommended wage increase to Carpenter II's by 0.23 percent when unemployment in the region was 10 percent, not 5 percent. Rows 10 and 11 utilize only respondents in the baseline condition, where all wage increases were 6 percent. Values in parentheses are the standard deviations of responses, not the standard errors of the means.

<sup>a</sup>For rows 3–7 and 9–12, a *t* test indicates that the mean difference from the response in section 1 is significantly different from zero at the 5-percent level.

<sup>b</sup>For rows 3–7 and 9–12, a *t* test indicates that the mean difference from the response in section 1 is significantly different from zero at the 1-percent level.

\*For rows 1B, 2B, and 8B, a *t* test indicates that the difference in mean responses between these rows and the corresponding row A is significant at the 5-percent level. (There are no tests for rows 1A, 2A, and 8A).

\*\*For rows 1B, 2B, and 8B, a *t* test indicates that the difference in mean responses between these rows and the corresponding row A is significant at the 1-percent level.

rates, so we do not focus on and build the unemployment rate into our structure changes.” Similarly, company-specific indicators are distrusted, because of the games that managers and recruiters play in trying to enlarge their compensation budgets. If the executives responsible for determining compensation do not utilize information on excess supply and demand but wait for others to adjust first, then it is unsurprising that wages adjust slowly to changes in labor-market conditions.<sup>4</sup>

<sup>4</sup>In a perfectly competitive market where supply always equals demand, prices are the only information needed for decisions, and quantity signals such as unemployment are irrelevant. Since wages in the labor market are adjusted only once or twice each year, the model of continuous market-clearing does not apply, and it is anomalous that quantity signals are given so small a role.

### B. Does Ability To Pay Raise Wages?

In the baseline version of the survey, respondents read:

*Corporate return on assets (ROA) is 10% (the industry average), and has been for the past three years.*

For the ROA-high condition, this statement is replaced by:

*Corporate return on assets (ROA) is 20% (twice the industry average), and has been for the past three years.*

Competitive theory suggests that ROA should have no impact on wages. The several ability-to-pay theories discussed above, on the other hand, suggest that ROA will be an important determinant of wages.

Whether respondents were told that ROA was 10 percent (the industry average) or 20 percent had no effect on their average wage recommendations (row 3C in Table 2). The changes are tiny and statistically insignificant. Moreover, the effects on Carpenter III and Programmer I are positive, the sign opposite that predicted by ability-to-pay theory.

The within-subjects analysis is slightly more favorable for ability-to-pay theories. ROA and productivity were not widely used factors; fewer than 26 percent of respondents changed their recommendations based on a doubling of each of these factors, and more than 35 percent stated that they used neither ROA nor productivity (rows 8 and 9 in Table 3). For subjects with ROA equal to 20 percent (twice the industry average) in section 1, lowering ROA to 10 percent lowered wages by 0.2 percent. For subjects with ROA equal to 10 percent in section 1, doubling ROA to 20 percent raised wages by approximately 0.2 percent (rows 8A and 8B in Table 4).

Productivity growth provided a second measure of ability to pay; it appears to be a somewhat more important determinant of wages. Holding all else constant, if productivity at the firm has been increasing at twice the industry average, instead of at the industry average, respondents recommended approximately 0.4-percent higher wage increases. (There was no statistically or economically significant interaction between ROA and productivity growth.)

*Qualitative Results Concerning Ability To Pay.*—The survey and interview results were more favorable for ability-to-pay theories. One respondent went so far as to state, “Today the greatest consideration in determining wages is the ability to pay. We refer to market conditions, equity, etc., but the final question is ‘Can we afford this?’”

The interview respondents emphasized that ability to pay usually is not an important factor for the *recommendations* of the compensation department. However, they did state that ability to pay affected compensation. The resolution to this paradox is that the compensation department typically leaves an evaluation of ability to pay to the

executive committee. Given this division of labor, the respondents said that the compensation department’s proposed salary budget is usually accepted when the company is doing well. The respondents all agreed that in bad times (e.g., when profits and sales are declining), on the other hand, the executive committee of the organization is likely to reduce the salary-increase budget by 0.5–1.0 percentage point.

A second element in resolving the paradox is the limited measures of ability to pay in the survey. As one respondent noted, “ROA and productivity are only partial determinants of the organization’s financial health.” Numerous alternative indicators of ability to pay were mentioned, including cash flow, corporate and business unit performance, ratio of net earnings to labor costs, and “What the CFO [chief financial officer] says we can afford!” Additional research will need to examine different levels of the corporation, different measures of ability to pay, and the distinction between times of normal and very poor ability to pay.

### C. How Rigid Are Relative Wages Within a Company?

This section compares the four different patterns of occupational wages that could be present in a respondent’s scenario. In the baseline scenario, the occupational labor markets in the region show 6-percent wage increases for all four occupations: Carpenter II’s, Carpenter III’s, Electrician II’s, and Programmer I’s.<sup>5</sup>

*Wage Differences within a Career Ladder.*—In this condition respondents read that

<sup>5</sup>The scenarios included only information on wage changes, not on wage levels. The instructions specified that the respondents should assume that the hypothetical company’s compensation philosophy is much like the respondent’s current employer. This instruction was intended to capture the wage level of the company, since wage levels vary according to corporate compensation strategy. Written comments from the respondents implied that, as desired, they were assuming that the company had been paying its desired wage level.

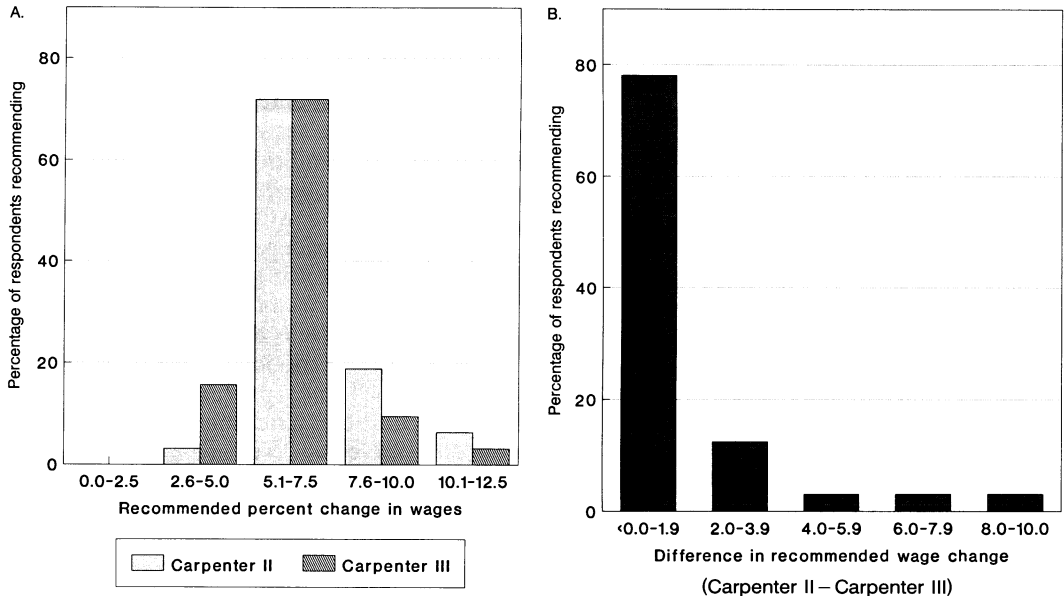


FIGURE 1. A) RECOMMENDED PERCENT CHANGE IN WAGE; B) DIFFERENCE IN RECOMMENDED WAGE CHANGE (CARPENTER II – CARPENTER III)

the market wages of Carpenter II's in the region have risen 12 percent, while the wages of Carpenter III's have risen 4 percent this year (instead of both increasing 6 percent in the baseline). If internal equity between junior and senior workers is important, then Carpenter II's and Carpenter III's at this company should receive similar wage increases, even though their surveyed market wages diverge substantially.

Faced with market wages that differed within a career ladder, respondents maintained wage relativities. Specifically, Carpenter II's received wage increases only 1.0 percent greater than in the baseline, while Carpenter III's received increases 0.4 percent *greater* than in the baseline (row 5D in Table 2). Carpenter III's come out ahead if their own market wage falls by 2 percent when, at the same time, Carpenter II's have a 6-percent higher market wage.

In this condition only one respondent (3 percent) paid the market differentials of 12 percent to Carpenter II's and 4 percent to Carpenter III's. On the other hand, a striking 72 percent recommended identical wages

increases to both Carpenter II's and Carpenter III's. Figure 1A shows the distribution of recommended wage changes for Carpenter II's and Carpenter III's. Figure 1B, which charts the difference between them, shows the concentration of responses recommending identical wage changes.

*Wage Differences within a Broad Occupational Group.*—The situation was quite different when the pay difference was between the carpenter and electrician job ladders. In this condition the wages of both Carpenter II's and Carpenter III's have risen 12 percent this year, while the wages of Electrician II's have risen 4 percent this year (instead of 6 percent for both carpenters and electricians in the baseline). If internal equity within broad occupational groups is important, then the recommended wage increases for carpenters at this company should be substantially below the 12 percent received by carpenters at other companies.

The recommended wage changes in this case for both Carpenter II's and Carpenter III's were 2.9-percent greater than the baseline, while Electrician II's received 0.8 per-

cent less than in the baseline (row 6D in Table 2). Thus, an 8-percent difference in the wages reported in the surveys led to a 3.7-percent difference in the wages assigned, for an elasticity of 0.46. Figure 2A shows the distribution of recommended wage changes for Carpenter II's and Electrician II's in this condition.

The elasticity of 0.46 is somewhat misleading, since most respondents showed an elasticity of either zero or unity. Figure 2B charts the difference between the wage recommendations for Carpenter II's and Electrician II's. Forty-five percent of the respondents in this condition gave Carpenter II's and Electrician II's identical wage changes, exactly as recommended by compensation textbooks. In their written responses many respondents referred to fixed relative pay within broad occupational groups. For example, "We adjust ranges based on median national increases. We have two ranges (exempt and non-exempt)."

The respondents who maintained internal wage norms did not claim that they would do so forever. For example, one respondent noted:

I would (and have) consider removing [carpenters] from the rest of the workforce for salary range consideration. I would review the past few years' wage history and might establish separate wage structures....

To automatically increase their midpoints by 12% would place them in a higher wage grade and destroy internal equity. The major considerations in wage grade determination are both internal and external equity. In an unstructured, few-major-player industry such as [mine], we place heavier emphasis on internal equity, as market matches are few.

For respondents such as these, market forces eventually win out over historical relativities, but the process takes several years. The presence of these delays is supported by the interviews discussed below.

A somewhat smaller proportion of respondents were equally clear that they paid

no attention to equity considerations. Thirty-five percent followed the market precisely, recommending 12-percent wage increases for carpenters and 4 percent for Electrician II's. As one respondent noted, "Bottom line: midpoints = competitive pay rates." If equity theory is correct, then these respondents evidently do not perceive that electricians considered carpenters to be an important reference group.

An exploratory analysis was carried out to determine whether there were differences between the respondents who gave equal pay increases to carpenters and electricians in this condition and those who gave very unequal increases. Neither the years of experience of the respondent, nor the employment change that the respondent's company has experienced in the previous 12 months was correlated with whether a respondent maintained internal or external equity. The data cannot reject the hypothesis that industry effects are uncorrelated with the proportion of companies that pay equal wages. (The finance, insurance, and real-estate industry had some suggestive differences. In this industry group, five respondents paid an 8-percent wage difference, one paid a 6-percent difference, and only one paid equal wages.)

*Wage Differences between Occupational Groups.*—In this condition, wages of Carpenter II's, Carpenter III's, Electrician II's, and all blue-collar employees in the entire region were up 4 percent this year (not 6 percent, as in the baseline). Programmer I's and exempt (i.e., professional and managerial) white-collar wages rose 12 percent in the region (not 6 percent).

If internal equity across broad occupational groups is important, then Programmer I's would have wage increases substantially below the 12 percent found for Programmer I's at other companies. Moreover, if internal equity within broad occupational groups is stronger than between occupation groups, then the recommended increase in programmer wages will be larger than the increase in carpenter wages in the previous condition. Finally, theories of internal equity suggest that fewer respondents

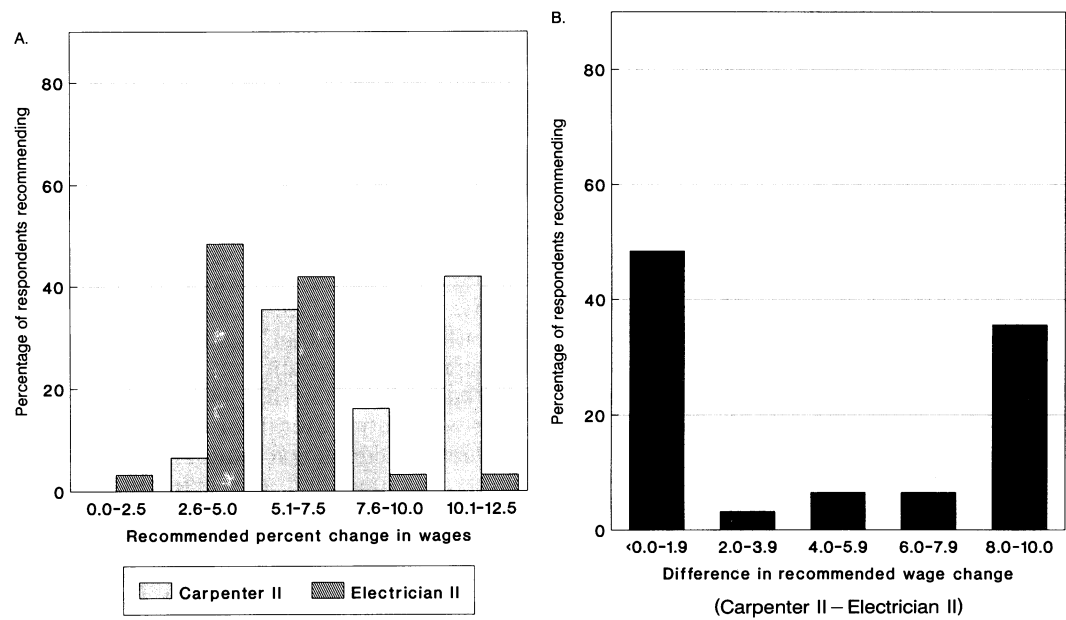


FIGURE 2. A) RECOMMENDED PERCENT CHANGE IN WAGE; B) DIFFERENCE IN RECOMMENDED WAGE CHANGE (CARPENTER II – ELECTRICIAN II)

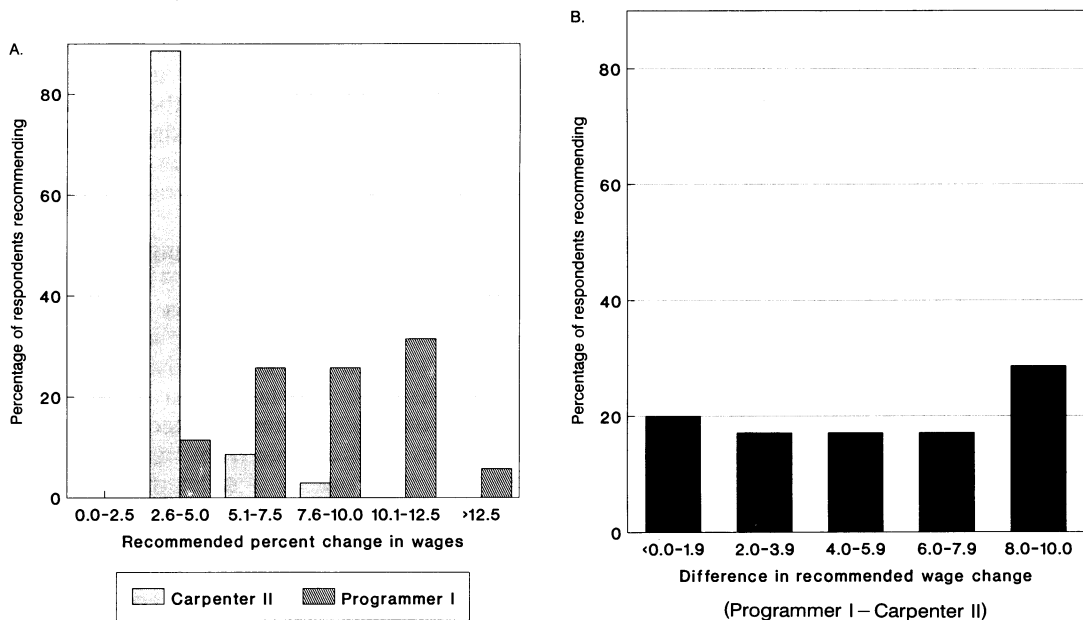


FIGURE 3. A) RECOMMENDED PERCENT CHANGE IN WAGE; B) DIFFERENCE IN RECOMMENDED WAGE CHANGE (PROGRAMMER I – CARPENTER II)



will recommend identical wage changes in the previous condition.

In fact, the average effects of market wages diverging between the blue-collar and the professional ladders were similar to the effects between carpenters and electricians. The average recommended wage increases for blue-collar occupations were all roughly 1.5-percent less than in the baseline, while programmers received 3.0-percent more than in the baseline (row 7D in Table 2). An 8-percent difference in the wages reported in the surveys led to a 4.6-percent difference in the wages assigned (elasticity = 0.55). Figure 3 graphs the distributions of responses.

A strong version of pay-structure rigidity was exhibited by the 17 percent of the respondents who recommended identical wage increases for all four jobs (as compared to 45 percent who maintained equality between carpenters and electricians). This rigidity was explained by one respondent who noted that his company constructed "a salary curve representing our entire salary structure (*all grades*)!" Thirty-five percent recommended wage changes approximately as large as the market differential, the same proportion as when the wage difference was within a broad occupational group.

As above, neither the respondent's experience nor the employment change at the respondent's company was correlated with whether a company maintained internal or external equity. Furthermore, all industries had similar patterns of responses.

As predicted by equity theories, respondents were very concerned with maintaining equity with a career path (Carpenter II's vs. Carpenter III's), less concerned about equity within broad occupational groupings (carpenters vs. electricians), and only slightly concerned about equity between occupational groups (carpenters and electricians vs. programmers).

*Within-Subjects Analysis.*—The within-subjects analysis asked each respondent how his or her recommendations would change if the average industry wage rose by 10 percent (not 6 percent) for all workers (row 10 of Table 4), and if the average regional wage rose by 10 percent for all workers (row

11 of Table 4). These relative wage measures were the most common; more than 85 percent of the respondents used both industry and regional information, and all respondents utilized either regional or industry survey data on average pay levels.

Both region and industry wage differences had approximately equal effects: a 4-percent change in surveyed wages led to a 2-percent change in wage recommendations. In the qualitative evidence, many respondents noted that regional wage surveys were more important for blue-collar occupations, while national industry wage surveys were more useful for exempt jobs.

*Interview Results on Wage Structure.*—The interviews qualified the extreme market-equity division found in the between-subjects experiment. Specifically, none of the companies claimed to ignore the market in setting relative wages, and *all* of them acknowledged that internal equity (and other factors) led to long lags in adjusting relative wages.

All but one of the respondents noted problems when adjusting relative pay in response to market forces: "There is a morale cost.... People complain." If you pay new workers more than senior ones, "You will have an employee revolt on your hands," and employees start to "type up a résumé, gossip," and so forth. Even the companies that claimed to be market-driven agreed that changing relative wages in response to market forces reduced morale and increased turnover.

In addition to acknowledging the effects of equity forces, respondents also universally agreed that any change in relative wages would occur only after several years of movement in market relativities. A primary reason for this lag is fear of measurement error. Respondents stated that internal wages must diverge from the market for several years and by a substantial amount (typically at least 5 percent) before any action is contemplated.

In short, the interviews supported the main conclusion of this section: equity forces are important conditions in wage determination. They moderate the result that a fraction of companies will rapidly accommo-

date changes in measured market wages, since all respondents agreed that relative wages adjusted slowly at their organization even when the objective was to match the market.

The final result of the interviews concerned the compensation process. Respondents were unanimous that, although the CEO and other top executives sometimes alter the overall wage bill in response to ability to pay, they do not change the proposed relative wages.

#### D. *Are There Asymmetries in Wage Adjustments?*

Somewhat surprisingly, there is no evidence of asymmetry in adjustments of real or relative wages in this sample. Increases in ROA had the identical effect as decreases (rows 8A and 8B in Table 4). Increases in industry unemployment had a slightly larger effect on wages than did decreases, but both figures were tiny, and the difference was not statistically significant (rows 1 and 2 in Table 4). Finally, the elasticity of recommended increases with respect to wages is approximately symmetric for wages above and below the market average. When electricians receive less than the rate of inflation and carpenters more, the elasticity is 0.39 for electricians (who are suffering both a real wage decline and a decline relative to the region's average blue-collar worker) and 0.48 for carpenters (row 6D in Table 2). This difference is not statistically significant.

The measured elasticity for carpenters was estimated over a 6-percent change in wages, that of electricians over a 2-percent change in wages; thus, the elasticities are not precisely comparable. Nevertheless, there is no evidence of greater willingness to raise real wages and wages relative to the external market than to lower them. (Asymmetries in adjustments to nominal wages may be larger than the real-wage asymmetries examined here.) Results were similar when blue-collar workers' wage increases in the region were less than inflation, and programmers received more. The downward elasticity (for blue-collar workers) was 0.75,

while the upward elasticity (for programmers) was 0.50 (row 7D in Table 2). Again, this difference is not statistically significant.

#### E. *Alternative Statistical Techniques*

Several additional analyses were carried out to check the robustness of the comparisons of means presented above. Regression analysis was performed to correct for the slight differences in response rates for different versions of the survey. These results are almost identical to those in Table 2. A further regression analysis was consistent with the hypothesis that there are no important interactions among the unemployment, ROA, and market-wage conditions.

Nonparametric tests (Kolmogorov-Smirnov and Kruskal-Wallis one-way ANOVAs), which are less sensitive to nonnormally distributed errors, were also used (*State Reference Manual*, 1992). Again, the results are almost unchanged from those of Table 2.

#### IV. Conclusions

There are several main results of this study:

1. Varying unemployment rates, application rates, vacancy rates, and quit rates has little effect on compensation recommendations.
2. Varying return on assets and productivity has only a small effect on wage recommendations. On the other hand, the qualitative responses from the surveys and interviews indicate that a company's top executives often introduce ability-to-pay considerations that are not present in the recommendations from the compensation department.<sup>6</sup>

<sup>6</sup>The current survey only examined the effects of *high* ability to pay and found weak effects. On the other hand, both my interviews and the surveys carried out by Daniel Kahneman et al. (1986) support the importance of *low* ability to pay. That is, struggling companies may be more likely to reduce real or nominal wages in the face of high unemployment or falling market wages; furthermore, wage reductions when the company is struggling are more likely to be perceived as fair.

3. The results concerning changes in market wages are more complex. (a) When market wages diverged sharply, 72 percent of the respondents maintained constant wage differentials within a career path (Carpenter II's and Carpenter III's). (b) Forty-five percent of the respondents maintained constant wage differentials within a broad occupational group (carpenters and electricians). The rest showed little concern for maintaining these relativities. (c) By contrast, when market wages diverged, only 17 percent of respondents maintained constant wage differentials between broad occupational groups (production workers and computer programmers); 35 percent recommended wage increases to meet the market precisely; and 48 percent recommended intermediate increases.
4. Contrary to past research, there is no evidence of asymmetries in wage changes. Increasing unemployment, falling profitability, or falling occupational wage levels led to at least as large decreases in proposed wage changes as their opposites led to increases. None of the differences was ever statistically significant.

In short, the closer the relation between jobs, the less responsive are recommendations concerning the internal wage structure to market wages. It appears that wage recommendations respond to changes in the market, but considerations of equity are also of considerable importance in tempering the responses of compensation executives.

As many authors have noted, this behavior by wage-setters may account for rigid real wages over the course of a business cycle. It is likely that both relative wages and the entire wage structure respond to market forces over time. Nevertheless, in the course of a few years (the length of a typical business cycle) wages may move slowly toward equilibrium.

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