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HRM POLICY AND INCREASING INEQUALITY IN A SALARY SURVEY

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Introduction

Data reported in the Bureau of Labor Statistics' Current Population Survey (CPS) show that wage inequality among American workers has grown markedly over the last three decades (see Levy and Murnane [1992]). This rise is apparently at the root of much of the recent increase in the inequality of family income and has fueled an intense debate about the shrinking middle class.

Are changes in human resource management (HRM) behind the increase in wage dispersion, and, if so, what challenges will this pose for companies in the years ahead? To answer these questions, I look at the implications for HRM policy of the rising wage disparity found in a three-decades-long salary survey conducted by the Federal Reserve Bank of Cleveland (FRBC) (Groshen [1991b]).

The analysis reveals that the wages of two hypothetical nonproduction workers who differed in both occupation and employer would have pulled apart over the last three decades even if both remained in the same positions. The paper then explores which aspect of their jobs mattered most: occupation, employer, or individual differences.

I. The FRBC Salary Survey

Few data sets provide information on wages and employers, and no public survey offers occupational and employer detail for a longitudinal sample. The data set studied here, gathered from an annual private salary survey conducted in Cleveland, Cincinnati, and Pittsburgh by the FRBC Personnel Department over the last 33 years, has all of these desired features. The number of participating firms has grown over time and averages 83 per year. Cincinnati firms usually make up one-quarter of the sample, with Cleveland and Pittsburgh evenly represented in the balance.

I use "employer" to mean the employing firm, establishment, division, or collection of local establishments for which wages are reported. Since a participant's choice of the entities to include presumably reflects those for which wage policies are administered

jointly, the ambiguity is not particularly troublesome. The employers surveyed are generally large and include government agencies, banks, manufacturers, trade companies, utilities, universities, hospitals, and insurance firms.

The number of occupations surveyed each year ranges from 43 to 100, with each employer reporting wages for an average of 27 categories. The jobs surveyed are mostly nonproduction positions that can be found in nearly all industries, and many are divided into grade levels. The complete data set has more than 75,000 observations, each giving a year's mean or median salary for those working in a surveyed occupation. Cash bonuses are considered to be part of salary, but fringe benefits are not. From 1980 through 1990, individual salaries within job cell are also available.

Technique

The FRBC data allow the effect of employer wage policies to be examined through variations within and between two well-identified characteristics of employment: occupation and employer, neither of which is well defined in household surveys such as the CPS. Within a salary survey framework, a group of workers in a specific occupation (e.g., job i) for a specific employer (e.g., firm j) is said to belong to "job cell ij." The mean wage for this cell can be described as the sum of four components:

$$(1) \qquad w_{ij} = \mu + \beta_i + \alpha_j + \gamma_{ij},$$

where w_{ij} = log mean (or median) wage of employee in job cell ij; μ = log mean wage for the entire sample; β_i = occupation i differential; α_j = employer j differential; and γ_{ij} = internal labor market (ILM) differential for job cell ij.

Occupational coefficients estimate the average wage difference (over the mean wage in the city) paid to the occupation. Since even fairly broad occupational categories capture much of the variation picked up by standard measures of human capital (Groshen

2

[1991a]), narrowly defined job classifications can proxy well for human capital. Thus, estimated occupational coefficients reflect the product of the average human capital in the occupation times the return to human capital. Similarly, the coefficient on an establishment dummy is the wage premium paid to the average occupation by that employer, and it estimates the establishment's level of wage-relevant attributes (such as size and industry) multiplied by the return to those attributes. An ILM differential is compensation, paid by an employer to a particular occupation, that falls above (or below) the average differential paid by the employer. Essentially, ILM differentials pick up idiosyncratic internal wage ratios.

Salary surveys are not random samples of the population, and entry and exit from them do not necessarily reflect market forces. Thus, surveys are best suited to exploring changes in wages rather than changes in the distribution of jobs. Since a simple time path of the standard deviation of wages among cells in the FRBC data does not control for the possibility that the survey may have expanded to include more diverse occupations and firms, Groshen (1991b) compensates by using "rolling samples." Between any two years, the change in variation is measured only for the subsample of job cells present in both years. These changes are then added to the cumulative sum of previous changes plus the initial variance to obtain the total variance for a hypothetical, unchanged sample.

When the composition of jobs is held constant over time, a change in wage variance will be due to changes in either wage structure or the attributes of occupations and employers over time. In this context, if occupations are not equally represented within each employer, the variance of wages is

$$(2) \qquad \sigma^2(w) = \sigma^2(\beta) + \sigma^2(\alpha) + 2\text{Cov}(\beta,\alpha) + \sigma^2(\gamma).$$

Changes in the variance of wages among constant job cells are composed of changes in one or more of these terms. To obtain wage dispersion, a fifth term for within-cell, or

3

individual, dispersion must be added to the between-cell components. This final component of total wage variation can be examined only during the 1980s in the FRBC sample.

II. Results

Table 1 summarizes the results for standard deviations after controlling for compositional changes. Distribution changes are omitted both by measuring the dispersion of the medians (or means) of job cells, with a weight of one per cell, and by using rolling samples. Column 1 shows that wage variation increased substantially in all three cities in each of the decades covered, particularly in the late 1970s.

During the 1960s, inequality rose primarily as a result of increasing occupational differentials and ILM variations. Widening ILM premia suggest that employers loosened their adherence to external market differentials over the decade. In the 1970s, occupational and ILM differentials continued to diverge. In addition, wage premia paid by employers underwent a large, apparently permanent increase in dispersion, reflecting a marked jump in the union wage differential, or in differentials between utilities, government, and durable-goods manufacturers on the one hand, and financial industry employers on the other. During the 1980s, the only evident source of increasing inequality was the widening of occupational wage differentials, a trend that can be linked to increased returns to general education. Employer and ILM differentials showed little change during the decade.

Two other components of wage dispersion did not contribute to the rise in inequality. First, no trend was obvious in the small component resulting from the covariance between occupation and employer. Second, wage dispersion among workers within job cell in the 1980s (the only period for which it can be measured) was negligible and showed no increase.

4

These findings are generally consistent with those of Davis and Haltiwanger (1991), who conclude that within-plant wage dispersion accounted for most of the growth in inequality among nonproduction manufacturing workers between 1963 and 1986. For production workers, the role of between-plant wage dispersion and its growth was much stronger.

III. Did HRM Policy Changes Cause the Rising Inequality?

HRM versus Non-HRM Explanations

Perhaps the most frequently cited hypothesis for the rising wage inequality of the 1980s is "deindustrialization," or the net creation of disproportionately low- and high-wage employers or occupations. This is not essentially an HRM explanation. Other non-HRM candidates include increased returns to skills or training (due to technological advances or international competition) and the rising inequality of training.

The HRM hypotheses are linked to two major trends in the labor market. First, unionization has declined dramatically over the past three decades. Since unionized establishments and industries have lower wage dispersion than their nonunion counterparts (Freeman [1980]), this trend is a natural suspect. Historically, unions have sought low wage dispersion within and among employers in order to enhance the cohesion of their bargaining units, to reduce labor-cost competition among employers, and to narrow supervisors' scope for adjusting wages in an unfair or arbitrary manner.

Second, coincident with declining unionization, employers have implemented a variety of new human resource strategies in the past two to three decades. In contrast to the union model, these practices include the institution of clear internal productivity-related incentives for workers, such as individual or group bonuses, merit-based raises, and profit-sharing plans, any of which could raise wage dispersion directly. In addition, the absence of unionization may allow employers to use internal wage levels as a

5

competitive device, which could raise interfirm wage variation (particularly in the short run).

Industrial Restructuring: Total Wage Variation

The results obtained in this study allow rejection of a central non-HRM hypothesis as the *sole* source of rising wage dispersion. Because increases in dispersion over the past three decades can be seen even when occupations and employers are held constant, they cannot be a direct effect of deindustrialization alone. This finding is consistent with results reported in Leonard and Jacobson (1990). Even if two workers did not change jobs over the entire sample period, if they started out in different jobs, their wages still would have diverged markedly. This means that wage distributions diverged *within* existing firms and occupations.

Rising Returns to Training and Skills: Variation among Occupations

The recent increase in returns to education (see Bound and Johnson [1989]) has amplified occupational wage differences. When FRBC occupational differentials are regressed on the level of specific vocational preparation (SVP) and general educational development (GED) for the occupation in each year, returns to SVP are fairly flat over the period, with the exception of a jump in the mid-1970s. In contrast, the coefficient on GED rises consistently, except for a sharp drop-off in the mid-1970s, which is followed by rapid recovery over the 1980s. Results of the FRBC survey suggest that rising returns to general education are a major component of the increased inequality, while returns to vocational preparation are essentially unchanged.

HRM policy has either accommodated a technologically driven increase in demand for educated labor or fueled the increase in demand through a reorganization of the American workplace. If the latter holds, the growing inequality must be traceable in some part to changes in employers' HRM policies.

6

HRM Wage-Level Strategies: Variation among Employers

Employer wage differentials, which have been shown to account for a substantial portion of total wage variation (Groshen [1991a]), have been linked to observable employer characteristics (e.g., industry, firm size, and method of pay). However, no single theoretical source has gained a consensus. Possible explanations include unions' decreasing ability to remove wages from competition, or changes in either compensating differentials, the degree of employee sorting, efficiency wages, or the implicit profit-sharing premia paid by employers.

Most of the increase in the dispersion of employer differentials occurred in the second half of the 1970s. Among the five surveyed employers showing both a large decline in their premia from 1974 to 1980 and an increased distance from the mean, four are banks and one is an insurer -- and all are nonunion. By contrast, among the 17 employers with marked wage increases that moved farther from the mean, 14 are at least partly unionized (nine are durable-goods manufacturers, six are utility or telephone companies, three are government agencies, and one is a nondurable-goods manufacturer). This result is consistent with the burgeoning inflation and loose labor markets of the 1970s, as well as with the greater prevalence of cost-of-living indexing under unionization.

Thus, the large increases in employer wage differentials in the late 1970s were due mainly to widening of the union wage differential or differentials paid by durable-goods manufacturers and utilities, and perhaps to the effects of bank deregulation and the unionization of federal jobs. Among the many unanswered questions about this result is why the increase in variance among employers appears to be so long-lived. And how can the decline of union power be responsible, since, presumably, this would have reduced, not lifted, union wages?

Market Insulation: ILM Variations in Pay Ratios

The variation of ILM differentials across firms measures the lack of uniformity of internal pay relationships among them. This component would have grown if workers' quest for job security in the high-unemployment periods of the late 1970s and early 1980s had insulated employers' internal labor markets from external pressures. Then, internal pay relationships could have deviated substantially from overall market averages and would have increased wage variation due to the ILM component. Alternatively, rapid technological change during these years could have created a temporary period of uncertainty, with relative pay relationships varying widely among firms. Finally, increases in employer wage differentials may have bought a degree of insulation from external market pay ratios, allowing corresponding increases in ILM variation.

The pattern found in the FRBC sample suggests that the latter explanation is untenable, since the increased idiosyncrasy of internal wage relationships during the 1960s and 1970s *preceded* the increase in wage variation by employer. Instead, growth in this component may reflect a rise in uncertainty about market pay ratios, varying lags in adjustment to external changes, or greater insulation from the market due to workers' desire for job security.

Biased Wage Changes: Employer-Occupation Covariance

Positive covariance indicates that companies with high wages also tend to employ workers in high-wage occupations. If this term grows while the distribution of jobs is held constant, it implies that firms with high or growing wages also employ more than their share of occupations with high or increasing wages. Such a shift might occur if the use of efficiency wages has grown among employers with high-skill occupations, or if competitive pressures have reduced wages mostly for low-skill workers in low-wage

8

firms. Table 1 shows that the covariance term (which is negligible and positive) exhibits no trend over the period and thus is not a source of increasing inequality.

Merit Pay: Wage Variation within Job Cells

The increased use of merit raises (as opposed to uniform cost-of-living adjustments or promotions) might widen the range of wages paid by employers within occupation. The full distribution of wages within job cells, which is available for the 1980s, can be used to capture this effect, since about 80 percent of the respondents reported that they implemented or strengthened their form of pay-for-performance and merit raises during the decade. Nevertheless, the last column of table 1 shows that wage variation within job cells was unchanged over this period. Furthermore, since the standard deviation of wages within job cells is quite low, even if this component were nonexistent in 1957, its appearance sometime before 1980 would not have increased the total variation by much. This finding does not rule out the possibility that merit pay can substantially affect individuals' wages; it merely suggests that merit pay systems probably have no greater association with higher wage inequality than do seniority-based systems.

IV. Conclusion

All in all, HRM policy changes do not seem to be strongly implicated in the rising wage dispersion of the last three decades. The increased use of performance-based raises and a decline in the union wage premium can be ruled out as causes, as can total reliance on the non-HRM hypothesis of deindustrialization. Rising occupational differentials are likewise not an obvious result of HRM policies, although widening ILM premia suggest some role for such policies in the 1960s and 1970s.

Nevertheless, rising income disparity is likely to affect many aspects of HRM practices. In particular, the dramatic widening of occupational wage differentials means that workplaces will house employees with more disparate incomes than in the recent past.

The change to more within-house inequality, if not the wider disparities themselves, may pose distinct challenges to employers with highly bureaucratic or very flat wage structures.

Employers may react to these pressures by fighting to maintain desired ILM ratios, but this could prove costly in terms of turnover or in the overall wage differential necessary to avoid excessive turnover. Another strategy may be to spin off some top or bottom employees through contracting out for their services, or by breaking up the company into smaller, more-uniform subsidiaries or establishments. Perhaps some of the downsizing and increased reliance on contracting out in the 1980s was a response to these pressures.

Alternatively, employers may choose to redesign their personnel practices to accommodate the new ratios. If so, these inherently less cohesive wage structures may require a renewed emphasis on mobility-enhancing programs, such as in-house training.

Finally, the scope of HRM itself could be altered significantly in the years ahead. Increased wage disparities may grant human resource managers greater latitude to manage their compensation strategies. On the other hand, pressures from external occupational labor markets could narrow their latitude to the point that employers finally become the "price-takers" economists have always assumed them to be.

10

Table 1

Average Annual Rate of Change
of the Standard Deviation of Log Wages

	Total Between Cells	Between-Cell Components				Within Cells
		Occupation	Employer	ILM	Covariance	
1961-70	.002	.001	.000	.002	.000	n.a.
1971-80	.005	.003	.006	.003	.000	n.a.
1981-90	.003	.003	- .001	.000	.000	.000

Source: FRBC salary survey (see Groshen [1991b]).

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