Declining Inter-Industry Wage Dispersion in the U.S.*

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ABSTRACT

Industrial effects on the wages of workers have long been significant features of inequality in the U.S. labor force. Previous research indicates that wage differentials across industries were increasing through the mid 1980's. Using more recent data, however, we find that the level of inter-industry wage dispersion thereafter declined by 36% from 1986 to 2002 despite the continuation of the general trend towards increasing inequality in the labor force as a whole. This decline in inter-industry wage dispersion is consistently evident across gender and educational groups. Using multi-level growth curve models, our multivariate results indicate that the decline is only weakly related to industrial changes in education, occupational mix, or even productivity in terms of value added per worker despite the fact that the latter variable had been a critical factor in the prior period of rising inter-industry dispersion. By contrast, for the more recent period, our analysis reveals that the most important factors associated with the decline in inter-industry wage dispersion are changing organizational power relations as measured by unionization rates and the proportion of part-time workers. Theoretically, this result may indicate the evolution of technologies or organizations that reduce the costs to firms of not paying efficiency wages to their workforces as a whole. That is, firms may be less economically obliged to pass on a portion of their industrial rents to broad groups of their workers but may now be engaged in more micro-level negotiation with individual workers depending upon their particular sources of bargaining power vis-à-vis the employer..

INTRODUCTION

According to conventional economic theory, competition in labor markets tends to force employers to pay workers wages that reflect their human capital investments and consequent marginal productivities. While such competitive forces are undoubtedly operating to a significant extent in labor markets (Berg and Kalleberg 2001), it is nonetheless also well known that industrial effects on the wages of workers have long been observed in the U.S. labor force (Bibb and Form 1977; Kalleberg, Wallace and Althauser 1981; Krueger and Summers 1987). Although high-wage industries tend to employ workers who have higher levels of schooling and work skills, many researchers would probably agree that industries do have net institutional effects that cannot be fully explained by human capital or productivity differentials alone (Lang, Leonard and Lilien 1987; Krueger and Summers 1987, 1988; Bell and Freeman 1991; Dickens and Lang 1985; Hodson 1983; Beck, Horan and Tolbert 1978).

One prior study indicates that wage differentials across industries had been growing for several decades and had continued to increase through the mid 1980's (Bell and Freeman 1991). This growing dispersion was probably a major motivating factor behind the extensive discussion of efficiency wages and industrial rent sharing during the late 1980's and 1990's. As is well known, however, international pressures on the U.S. economy have heightened since the mid 1980's due to increased globalization in trade and production. The issue of industrial wage differentials therefore needs to be revisited using more recent data in order to assess the current situation given the heightened level of competition in the U.S. economy (Berg and Kalleberg 2001).

In this paper, we update the analysis of inter-industry wage dispersion. In doing so, we investigate industrial wage differentials in conjunction with the well known general trend towards rising wage inequality. We assess whether some of the conventional explanations for rising wage inequality can be used to help explain changes in industrial wage differentials. Thus, our analysis seeks to provide empirical results that are pertinent for understanding both industrial wage differentials and rising wage inequality more generally.

Competitive Labor Market Views

Although there is broad consensus that inequality has been increasing since the 1980's, there is far less agreement about the underlying sources of this trend. One explanation that enjoys a certain popularity in economics is that skill biased technological changes (SBTC) are largely responsible for the recent growth of inequality (Juhn, Murphy and Pierce 1993; Autor, Katz, and Krueger 1998. Acemoglu 2002). This view is lodged within the traditional labor economics model according to which competitive forces tend to force the wages of workers to reflect their marginal productivities. Employers paying wages above this competitive level will be unable to meet their labor costs and will therefore be eliminated by the market. Employers paying below this competitive level will be unable to retain adequately productive workers and will thus also go out of business. According to this argument emphasizing competitive market forces, wage differentials across industries should ultimately derive from skill differences between the workers employed in those industries (Sørensen 1994; Keane 1993) although there may also be some role for compensating differentials since these are assumed to derive from market competition as well (Tahlin 1991).

The major prediction of the SBTC view is that industrial wage differentials should change according to changes in the respective skill mixes and changes in the returns to skills. That is, inter-industry wage dispersion varies over time due to two factors: skill biased technological changes that have increased the returns to skills, and changes in the skill mixes across industries over time. Given the usual assumption that SBTC has increased the returns to skills, inter-industrial wage dispersion can decline over time only if average skill differentials across industries are declining. In sum, this view predicts that declining dispersion would occur due to changes in the educational and occupational mix of workers across industries. Once these factors controlled for, the competitive labor market approach expects that there would be no systematic changes in inter-industry wage dispersion.

Efficiency Wage Views

While the competitive labor market approach denies the persistence of inter-industry wage differentials, other research provides some explanations of why employers could pay workers wages above market-clearing levels. One major tradition of this sort is the efficiency wage view (Weakliem and Frenkel 1993; Krueger 1991; Cappelli and Chauvin 1991; Holzer, Katz, and Krueger 1991; Campbell and Kamlani 1997; Akerlof and Yellen 1986; Weiss 1990). A fundamental assumption of this view is that the quality or productivity of workers is not fully known or observed in all respects to employers. Given this assumption, employers cannot always pay workers exactly according to their marginal productivities

As noted by Akerloff and Yellen (1986, p. 4), "Under these circumstances [where worker quality or productivity is not completely known], the payment of a wage in excess of market-clearing may be an effective way for firms to provide workers with the incentive to work rather than shirk." That is, the typical assumption of the efficiency wage literature---that productivity is not clearly measured for at least some types of workers---results in the conclusion that some workers are paid in excess of the market average for the worker's human capital assets. This higher wage---which is also known as the efficiency wage---is often paid by employers in order to ensure that their workers are working hard rather than shirking (or that they are, on average, of higher quality on unobserved aspects of human capital).

The rationale for this assumption is typically motivational: workers being paid efficiency wages will work with greater effort because they have more to lose by being dismissed from their job due to inadequate performance. These models often include some monitoring parameter which refers to the probability that shirking workers will be dismissed. Firm productivity would not be increased if workers had nothing to lose from inadequate job performance; that is, if they enjoyed no efficiency wage or if their employment were absolutely guaranteed (see also Lenski 2001).

An additional explanation for efficiency wages is to reduce turn-over (Akerlof and Yellen 1986, 1990). Turn-over incurs the costs of replacing workers which may involve expensive time and fees spent on search, recruitment, advertisement, and screening. Furthermore, to the extent that firms may have provided training for their workers, turn-over involves the costs of training the new recruits. The total costs of turn-over may be affected by the rate of unemployment in the external labor market for the type of workers that the firm would recruit.

Another rationale for efficiency wages is the fair wage-effort hypothesis. As stated Akerloff and Yellen (1990, p. 255), "According to the fair wage-effort hypothesis, workers proportionately withdraw effort as their actual wage falls short of their fair wage." Experimental results regarding the effect of underpayment on work effort tend to support the hypothesis of reduced productivity among workers who experience relative deprivation in wages (Adams and Rosenbaum 1962; Goodman and Friedman 1971; Lawler and O'Gara 1967; Martin 1981; Pritchard, Dunnette and Jorgenson 1972; Schmitt and Marwell 1972; Valenzi and Andrews 1971; Vroom 1964). A recent study of manufacturing industries finds that, net of control variables, productivity declines to the extent that wages are below the market level (Liu and Sakamoto 2005).

In a related strand of research, the assumption is made that employees feel that it is fair that their wages are linked to the market performance of their firms. That is, employees expect to have higher wages when their firms perform well whereas when their firms are faltering in the market then workers' expectations about wages are lowered. In this way, Krueger and Summers (1987) relate productivity growth and profit gains to the extent to which workers' wages are above the market level. Bell and Freeman (1991) reaffirm that changes in industrial rents are positively correlated with the profits. Devereux (2005) finds a link between employment growth with wage changes across industries. The results of these studies are consistent with the essentially efficiency wage view that "over some range, profits are an increasing function of the wage rate offered" (Krueger and Summers 1987:260).

The efficiency wage approach suggests the hypothesis that changes in inter-industry wage differentials will reflect changes in profits over time. Industries that have higher profits will have effectively reduced unnecessary turn-over, addressed motivational issues in labor force management, and promoted a wage distribution that more workers are likely to view as fair. These sources of higher profits will then affect changes in average wage differentials across industries over time.

Changes in Organizational Power Relations

The recent growth in wage inequality coincides with institutional changes in the American economy. Although different researchers emphasize different aspects of these changes, there appears to be relatively widespread consensus that the American economy has entered a new phase since the mid 1980's (Acemoglu, 2002; Autor, Katz and Kearny, 2006; Berg and Kalleberg, 2001; Budros, 1997; Cappelli, 2001, 2006; Card and DiNardo, 2002; Cornfield and Fletcher, 2001; DiPrete, 2005; Dunne et al., 2004; Frenkel, 2003; Hollister, 2004; Jacoby, 2001; Kalleberg, 2003; Lindbeck and Snower, 2000; Meyer, 2001; Zuckerman, 2000). Although both economists and sociologists usually acknowledge these changes, economists tend to view them in the context of their general neoclassical theory according to which changes in technology and firm organization are driven by competitive market forces to yield more efficient and productive work arrangements (as mentioned above). In contrast to economists, however, sociologists are less presumptuous that the New Economy can be simply described in terms of market competitiveness (Budros, 1997; Davis et al., 1994; Hirsch and Soucey, 2006; Zuckerman, 2000). Rather than being understood solely in terms of competitive market forces and changes in labor supply and demand, sociologists interpret labor market changes as deriving from conflict over control of the production process and over the distribution of the economic surplus (Granovetter and Tilly 1988; Fligstein and Fernandez 1988). Therefore, in this view, changes in inter-industry wage dispersion at least partly derive from changes in the relative power of workers across industries in regard to the capacity to effectively extract the economic surplus.

In other words, organizational restructuring and other institutional changes associated with the rise of the New Economy at least partially reflect power differentials between social groups rather than deriving from a Pareto-optimal, competitive equilibrium of the sort envisioned in economists' conceptualization of economic efficiency (Pindyck and Rubinfeld 2001). An example of the role of power differentials is declining unionization rates (Cornfield and Fletcher 2001). Freeman (1988) argues that an important source of the decline of unionization in the U.S. is the anti-labor tactics of management. Wages are generally associated with the percentage unionized in an industry, although this relationship has varied over time (Linneman, Wachter and Carter 1990; Bratsberg and Ragan 2002).

Although Freeman's analysis represents an important contribution, it nonetheless remains plausible that declining unionism may not derive solely from managerial coercion alone (Clawson and Clawson 1999). Nelson (2001) argues that a "new industrial relations" has replaced traditional anti-labor tactics. In the new industrial relations, "Value commitment and value consensus consequently become conduits for social influence—not conflict and coercion, not bureaucratic pressure to conform to externally imposed rules" (Nelson 2001, p.51). Due to new information technologies, workers' productivities can be more carefully documented, and communication is improved. Extensive meetings and quality control circles involving both managers and workers in flattened organizational hierarchies actively produce and reinforce workers' commitment and consensus. Workers thereby begin to share managerial goals and to develop anti-union attitudes. In this way, union power is eroded in the New Economy and the influence of management is strengthened.

Another source of increasing inequality in the changes associated with the New Economy includes the increase in part-time employment and non-standard work arrangements (Kalleberg 2000). Workers who are placed into this situation are usually not choosing it voluntarily but are rather more vulnerable and lack bargaining power within the firm (Kalleberg 2003; Cappelli 2001; Hirsch and Soucey 2006). Nonstandard work arrangements reflect organizational attempts to achieve flexibility by externalizing some of their activities (Pfeffer and Baron 1988), but in doing so, workers' preferences for more stable employment are being downtrodden as firms are being structured to "seek greater profits in order to reward shareholders and top managers" (Kalleberg 2001, p. 203).

There is also evidence of a general decline in internal labor markets. As stated by (Cappelli 2001, p. 207), "internalized employment arrangements that buffer jobs from market pressures are giving way to arrangements that rely much more heavily on outside market forces to manage employees." For example, Phillips and Sorensen (2003) show that broadcasting companies are less likely to use internal promotion when they have stronger bargaining power, and instead replace vacant managerial positions with outside candidates. Thus, the decline in internal labor markets represents an organizational change that has increased wage inequalities, but this restructuring "raises questions for sociologists of work about fundamental shifts in the distribution of power and authority in the organization…." (Hirsch and Soucey, 2006 p. 181).

In a more theoretical analysis, Sørensen (1996) argues that these sorts of organizational changes (e.g., disappearing internal labor markets, declining unionization rates, and the increasing use of nonstandard labor arrangements) lead to the elimination of "composite rents" that previously used to benefit workers as well as to promote some efficiency gains for firms. These changes increase the level of total inequality, however, since "composite rents" usually protected workers from outside competition (especially those with limited individual bargaining power) and helped to promote homogeneity and social cohesion among workers. The implications of Sørensen's analysis are that the organizational changes being fostered in the New Economy are reducing the need of employers to share rents with workers resulting in capitalists' gains and increased inequality due to rising rewards for upper-level managers (Sørensen 2000, p.1550).

DATA, METHODS, AND ANALYTICAL STRATEGY

Hypotheses

None of the foregoing theoretical discussion rules out the possibility of a general decline in the degree of dispersion in inter-industry wage differentials. Although the efficiency wage approach generally assumes that industrial rents and thus industrial wage premiums are to some extent endemic in some industries, this view seems able to accommodate changes in the size and distribution of wage differentials across industries due to varying growth rates, profit levels, and changing technologies for the monitoring and surveillance of workers. In general, the foregoing theories suggest the following three hypotheses that we investigate in our empirical analysis.

Hypothesis 1: Deriving from the competitive labor market approach and the SBTC explanation, inter-industry wage dispersion is predicted to decline over time due to changes in the skill mix across industries and in the wage premium for skills.

Hypothesis 2: Inspired by the efficiency wage approach, inter-industry wage dispersion is predicted to depend on and correlate with changes in productivity across industries.

Hypothesis 3: Consistent with the sociological perspective on changes in organizational power relations, inter-industry wage dispersion is predicted to be associated with changes in the level of unionization and the employment of part-time workers.

Data and Variables

We use the Merged Outgoing Rotation File of the Current Population Survey (CPS-MORG) from 1979 to 2002. We restrict our sample to the age range of 18 to 65, and we do not include the self-employed or persons employed in the armed forces. For our multivariate analysis, we use a sub-sample of these data from 1983 to 2002 because the occupational codes in the CPS-MORG were fundamentally changed in 1983 (relative to the earlier years) and because information on union membership was not available in this data set prior to that year.

Using these data we calculate the means of log hourly wages in each industry for each year. These industry-specific means serve as our dependent variable in statistical models in which the unit of analysis is the industry-year. Our industrial classification scheme consists of 42 two-digit industries that include all major sectors including manufacturing as well as service industries. The use of a more detailed classification of industries is not feasible because adequate information on industrial productivity for three or four digit coding system was not available. In the following, data on industrial productivity refer to dollars of value added in the given year per full-time equivalent worker using the information from the Annual Industry Accounts of the Bureau of Economic Analysis. Some minor recoding of two-digit industries was required in order to obtain an industrial classification that is consistent across the two datasets (i.e., the CPS-MORG and the Annual Industry Accounts). To investigate hypothesis discussed above, the following variables are also used.

Demographic and Geographic Indicators: The percent female and the mean age of workers by industry are included in our models. Race effects are estimated by variables for the percent black, the percent Hispanic, and the percent Asian or other race. Non-Hispanic white workers serve as the reference group. Since married workers may show higher productivity, the percent married is also controlled for. Regarding geographic variables, we use the percent of workers who are residents in a metropolitan area because they may be paid more due to living costs or other compensating differentials. Previous research (e.g., Krueger and Summers 1987) reports that moving businesses to the south reduces labor costs so we control for the percent of workers who reside in a southern state.

Skill Composition and Technological Change: In our analysis, skill variables include two types: education and occupation. The education variables refer to the percent high school graduates, the percent with some college, the percent with a bachelor's degree, and the percent with an advanced degree. The reference group for education is workers who have less than a high school diploma. For the occupation variables, we use thirteen two-digit occupations with the managerial category serving as the reference group. Education variables measure more general skills while the occupation variables indicate skills that are more specific to a particular job category. Although most studies arguing for skill biased technological change focus on the effects of educational variables, some occupational groups may command occupational rents by controlling or altering market conditions (Grusky 2005; Bhattacharya 2005). For this reason, changing inter-industry dispersion could at least partially derive from changes in the occupational mix of industries which is likely to vary over time.

Factors Relating to Economic Rents: Two measures of rent-related factors are used in our analysis. The first one is the percent of all employees in the labor force that are employed by the particular industry. We refer to this variable as the labor share of the industry, and it indicates employment growth (or decline) over time. The second variable that we use is the logged dollar amount of annual value added per full-time equivalent worker in the industry. This latter variable indicates productivity which also changes over time. Due to major changes in the methodology underlying the data provided in the Annual Industry Accounts since 1998, we are not able to calculate a consistent measure of industrial productivity since 1998. We therefore estimate the effect of productivity for only a sub-sample of the data from 1983 to1997.

Organizational Change: We use two variables that are related to organizational changes. The first one is the percent of workers who are union members in the industry. Unions certainly affect processes involved in wage determination. The presence and development of internal labor market structures are also strongly associated with unionization (Cornfield 1991). The second variable that we use is the percent of part-time workers. Part-time workers are defined as those whose usual hours of work for their main job are less than 35 hours per week. Given that our dependent variable is measured in terms of the hourly wage rather than earnings, part-time employment does not have any direct accounting relationship with the dependent variable. For this reason, the effect of part-time employment in our models can be more readily interpreted as reflecting organizational change in employment arrangements.

Statistical Methods

Declining inter-industry dispersion implies that wage growth rates by industry are not constant but vary across industry. Multilevel growth curve models using random intercepts are well suited to investigate this sort of time-dependent process. Equation (1) shows our Baseline Model:

$$Y_{ij} = [\gamma_{10} + \gamma_{20}TIME_{ij} + \gamma_{30}TIME_{ij}^2] + [\zeta_{1j} + \zeta_{2j}TIME_{ij} + \varepsilon_{ij}] \qquad (1)$$

$$\varepsilon_{ij} \sim N(0, \theta) \text{ and } \begin{pmatrix} \zeta_{1j} \\ \zeta_{2j} \end{pmatrix} \sim N\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} \psi_{11} \psi_{12} \\ \psi_{21} \psi_{22} \end{bmatrix} \right)$$

where Y_{ij} refers to the mean log-wage of industry *i* at time *j*. The first bracket of Equation (1) refers to the fixed effects while the second bracket contains the random components. γ_{10} denotes the grand mean of mean log-wage across industries and ζ_{1j} refers to the deviations from that grand mean. γ_{20} refers to the grand mean of the slope of *TIME* and ζ_{2j} refers to the deviation of each industry from the grand mean of the slope. *TIME* is centered to the initial year which in our models is 1983. Time-squared is added in order to account for the curvilinearity of the industrial wage trajectories during this time period.[1] ε_{ij} is assumed to be normal with a mean of 0 and a constant variance, θ. ζ_{1j} and ζ_{1j} are assumed to be jointly normal with means of 0 and a variance-covariance matrix consisting of ψ_{11}, ψ_{22}, and ψ_{12}. Differentiated growth rates across industries (i.e., a statistically significant variance for the slopes of *TIME* as indicated by ψ_{22}) imply that inter-industry wage dispersions are changing over time. A positive association between intercepts and slopes (i.e., a statistically significant and positive $\psi_{12)}$ suggest that the dispersion is growing while a negative association indicates that it is declining.

To extend this Baseline Model, we add a matrix of time-varying explanatory variables, X_{ijk} which consists of the demographic variables, geographic variables, skill variables, rent-related variables, and organizational variables as discussed above. Equation (2) is our full model:

$$Y_{ij} = [\gamma_{10} + \gamma_{20} TIME_{ij} + \gamma_{30} TIME_{ij}^2 + \sum \gamma_{k0} X_{ijk}] + [\zeta_{1j} + \zeta_{2j} TIME_{ij} + \varepsilon_{ij}] \qquad (2)$$

[1] Appendix 1 shows that the mean of mean log-wage declined slightly between 1979 and 1990 but then grown by .118 from 1990 to 2002. More detailed information on wage trajectories by industry is available from the first author.

In Equation (2), the initial level of inter-industry wage dispersion is captured by the random intercept, ζ_{1j} and its variance, ψ_{11}. Differentiated rates of change in wages across industries over time are represented by the random slope for *TIME* and its variance, ψ_{22}. Factors that can account for this variability constitute the sources of the change in inter-industry inequality. For this reason, we assess the proportion of the variance of ζ_{2j} that is explained by the industrial covariates. That is, we calculate how much of ψ_{22} can be reduced by controlling for the additional explanatory variables, and we ascertain which variables account for what proportion of this reduction.

RESULTS

[Figure 1 about here]

Figure 1 shows the variance in the mean log-wage across the 42 two-digit industries. The variance grew until the mid of the 1980's and then peaked in 1986. Thereafter, it started to decline in spite of the continued growth of wage inequality in the labor force as a whole. The basic pattern of the trend is the same for both genders although female workers show lower inter-industrial wage dispersion than male workers throughout this period. When broken down by educational levels, the growth in the inter-industry dispersion in the early 1980's is less obvious but the trend thereafter in the decline in this variation is clearly evident. In sum, the decline in inter-industry wage dispersion is ubiquitous across gender and educational groups. This same basic conclusion is evident when the analysis is repeated using 3-digit industry codes.[2]

[2] We also estimated regression models of log-wages to examine the net effects of about 300 industry dummy variables after controlling for demographic variables and education over this

Multivariate Analysis

[Table 1 about here]

To assess the various hypotheses regarding the inter-industrial wage dispersion, we estimate multi-level growth curve models. Table 1 shows the results. The first section of Table 1 indicates variables we controlled for by models. The next sections show the variance components of our models for total workers followed by the results of female workers and male workers. The coefficients estimated for explanatory variables in selected models are shown in Table 2 and Table 3.

Our Baseline Model controls only time variables without any substantial explanatory variables, setting intercepts and slopes of time random. The variance of intercepts, ψ_{11} for Baseline Model among total workers is .08801 and the variance of slopes, ψ_{22} is .000029. Both variances are statistically significant at any conventional levels. That is, both intercepts and slopes vary across industries. The declining inter-industry dispersion implies that some industries will show higher yearly wage growth rates than others. It also connotes that industries which have relatively lower initial mean wage are more likely to show higher growth rates and vice verse. As expected, the covariance of intercepts and slopes, ψ_{12} are negative and significant.

Our main interest is how much variance of slopes can be explained by additional variables. Model 1 controls for demographic variables in addition to time variables. In Model 1, the variance of slopes is reduced to .000024 or by 17 percent and the variance of intercept is reduced by 27 percent. Geographic variables also seem to be explaining a substantial portion of differentiated industrial wage growth rates. ψ_{22} is diminished to .000021 in Model 2. In other

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time period. Using these results, we calculated the variances of the estimated coefficients across the industry dummy variables for each year. The decline of inter-industry wage dispersion is again evident.

words, total 28 percent of the variance of slopes are accounted for by demographic and geographic variables, while 41 percent of the variance of intercepts are due to the differences of these variables. Model 2 of Table 2 shows that 10 percent increase of female workers in an industry is likely to reduce the mean of log wage by .026. The effects of racial groups, however, are not significant except Hispanic. The increase of Hispanic workers tends to reduce mean wages. In regard to geographic variables, moving firms to metro areas is likely to increase wages, while moving to southern states has an opposite effect as expected.

[Table 2 about here]

In Model 3, we add variables representing workers' skill differentials. Contrary to the expectation of the competitive labor market theories and also to the skill biased technological change views, adding education and occupation variables do not largely bring down the amount of variance of slopes across industries. The variance of slopes declines slightly from .000021 to .000020. Comparing to Model 2, adding skill variables, which consist of 4 educational variables and 13 occupational variables, improves accountability of the variance of slopes by only 5 percent. In regard to the variance of intercepts, however, skill variables explain the variance substantially. Total proportion of variance explained for intercepts in Model 3 is 66 percent, which is an increase of 43 percent comparing to the previous model. This large explanatory power of skill variables, however, does not necessarily indicate that most cross-sectional variance can be attributed to skill differentials of individual workers across industries. Dickens and Katz (1986) show that average education by industry is consistently positively associated with industrial mean wages even after controlling for individual workers' educations. That is, there are some synergy effects that cannot be regressed to individuals. In sum, skill variables seem to be capable to account for the cross-sectional wage differentials across industries but they appear to have little explanatory power regarding the declining inter-industry wage dispersion for this time period. Therefore, hypothesis 1 is only weakly supported.

Efficiency wage theories or rent sharing views predict that the measures of industrial productivity or growth should have major impacts on the changes of inter-industrial wage dispersion. Contrary to this expectation, our Model 4, Model 8 and Model 9 suggest that the recent decline of inter-industry inequality is not strongly associated with these factors. In Model 4, the industrial share of workers among total work force is controlled for in addition to the demographic, geographic and skill variables. The amount of the variance of slopes, ψ_{22} is virtually not changed at all in Model 4 comparing to Model 3. The log-likelihood ratio statistic reaffirms this finding. That is, the addition of the industrial growth variable (i.e., the share of workers by industry among total work force) does not improve the fitness of our model. After controlling for organizational variables in Model 8, we estimate again the effect of the industrial growth. Like Model 4, we find that the industrial growth does hardly affect the variance of slopes. The coefficient of the industrial growth in Model 8 of Table 2 is not statistically significant.

Efficiency wage theories or rent sharing views may attribute industrial rents to the differentials of productivity rather than the industrial growth rates. To address this concern, we inquire the joint effect of the industrial growth and the productivity (i.e., the effect of the logged dollar amount of annual value added per full-time equivalent worker) using a sub-sample of year 1983-1997. In comparison with Model 3, adding two rent-related variables do not change the proportion of variance explained for slopes significantly,[3] while after factoring in industrial variables in Model 9, the joint effect of rent-related variables become a little bigger than Model 4

[3] The results of this model, which can be obtained from the authors, is not shown in Table 1.

or Model 8. Consistent with the efficiency wage theories and rent sharing views, the coefficient of productivity is, although marginal, significant.[4] Their variance-of-slopes-reducing impacts, however, are substantially smaller than the organizational effects discussed below.

Model 5 controls for the proportion of part time workers and Model 6 controls for the unionization rates on top of the variables introduced in Model 3. Adding the percentage of part time workers ameliorates the proportion of variance explained for slopes to 48 percent, which is an increase of 25 percent from Model 3. Similarly, the union effect accounts for the additional 30 percent for the variance of slopes from Model 3. Combined these two variables in Model 7, the variance of slopes is reduced to .0000098 from .000029 for Baseline Model and .000020 for Model 3, which is a 67 percent improvement from Baseline Model and a 51 percent improvement from Model 3 respectively. The log-likelihood ratio statistics using -2LL are also showing significant betterment of Model 5 and Model 6 comparing to Model 3, and additional improvement of Model 7 comparing to Model 5 and 6.

As shown in Model 8 of Table 2, the coefficients of part time and union are highly significant. A decrease of 10 percent point of union membership in an industry is likely to curtail industrial mean hourly wages by .04 log dollars and an increase of 10 percent point of part time workers will reduce wages by .06 log dollars. Table 2 also reveals that the covariance between intercepts and slopes is substantially reduced in Model 8, although it is still marginally significant at .05 α-level. In sum, organizational variables such as the proportions of union and part time workers explain the differentials of wage growth rate across industries and the association

[4] Cohn (1990) contends that in the perfect competitive labor markets, workers' wages should match with their marginal productivities, but the observed correlation between productivity and wage can be blurred by two sources: one is due to unobserved productivity and the other is due to institutional elements such as incentive wage, union, or internal labor market. He argues that once aggregate longitudinal data is used, the impacts of these sources are reduced, thus the correlation between productivity and wage will be stronger than individual level data.

between the initial levels of mean hourly wage by industry and their growth rates better than any other variables.

Estimates by Gender

[Table 3 about here]

It is well-known that the trends of wage growth and unionization rate over time differ by gender. Therefore, although the declines of inter-industry inequalities are evident for both male and female in Figure 1, they can be induced by different causes. In order to address this concern, we estimate our models separately for male and female. The last two sections of Table 1 show the results of variance components of growth curve models by gender. Indeed, some factors work differently for men and women. For example, for female, geographic factors account for 22 percent of the variance of slopes and demographic variables have little impacts, while for men, demographic variables have significantly variance-reducing impacts and geographic components work only weakly.[5]

In regard to the impacts of rent-related variables and organizational variables, however, the results for female and male demonstrate the same effects. The impacts of rent-related variables on the variance of slopes are negligible, while the effects of organizational variables are huge. In case of female, the variance of slopes diminishes to .0000071 after controlling for organizational variables in Model 7. Comparing to Model 3, that is equivalent to a 58 percent decrease. For men, the impacts of organizational factors are relatively smaller than female but they are still the biggest factors accounting for the changing inter-industry wage dispersion.

[5] Since the trajectory of mean hourly wage for women is not curvilinear, we do not control for Time-squared for female models. When we try to control for Time-squared in our Baseline Model, the effect of Time-squared turns out to be statistically insignificant.

These differences between male and female upon industrial variables are due mostly to the differentiated impacts of part time workers. While the impact of part time workers for female is huge, it is relatively mild for male. Meanwhile, the effects of union are similar for both genders. Table 3 shows that the coefficient for each variable is similar for both men and women regardless of the differentiated impacts of those variables on the variance of slopes.

Sensitivity Analysis

To check the sensitivity of our results by model specifications, we do counterfactual analyses applying different analytical methods. First we estimate the effects of same explanatory variables as Model 9 with an OLS regression analysis. And then calculate the predicted inter-industry wage variances which are therefore the estimations after removing unobserved heterogeneity. Table 4 is our results.

[Table 4 about here]

The variance of inter-industry hourly wage actually goes down from .0650 for 1983 to .0476 for 2002. Our estimation which is shown in the last three columns in Table 4 also demonstrates that the inter-industry wage variance declines from .0620 to .0512 during 1983 and 2002. If only demographic variables change over this time period, the predicted inter-industry wage variance is .0614 for 2002 which is a decline from 1983 but its amount is small. Geographic variables contribute mildly to the decline of variance. Skill components and rent-related variables, however, are conducing to the increase of variance rather than causing its reduction, when only skill composition changes between 1983 and 2002 and other things are equal. Once again, organizational variables are main causes of declining inter-industry wage dispersion. All things equal, organizational changes induce .0203 drop of the variance which is almost double of the total amount of drop between 1983 and 2002. For the further checks of sensitivity, we test fixed effects models, getting the similar results. Another model using a manufacturing sub-sample in which the shares of imported products[6] are added produces basically the same results as reported in Table 1, although statistically less significant thanks to the smaller sample size.[7]

DISCUSSION AND CONCLUSION

In this paper, we have tracked the change of inter-industry wage dispersion since 1979 and investigated the sources of this change with a sub-sample for the period of 1983 to 2002. Our results reveal some rather surprising patterns. First, inter-industry wage dispersion increased until 1986 but thereafter declined despite the continued increase in wage inequality in the labor force. By 2002, the level of the inter-industry wage dispersion was actually lower than it was in 1979. Second, after disaggregating by gender and educational level, this trend towards declining inter-industry wage dispersion remains clearly evident for all of these demographic groups in the labor force. That is, the decline is not explained by changes in demographic patterns of employment across industries.

Third, contrary to the expectation of the competitive labor market views, the changes of inter-industry wage dispersion are not strongly associated with the changes of workers' skill

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6 The shares of imported variable are calculated from data provided by the Center for International Data at the University of California, Davis (http://cid.econ.ucdavis.edu/data/sasstata/usxss.html). The share of imported goods in our analysis is actually positively correlated with the changes of industrial mean wages over time after controlling for various factors. To some extent, this result is consistent with the previous findings of Lawrence and Lawrence (1985) who explore why unions in such industries as steel and automobiles have responded to increased foreign competition by raising wages. Bratsberg and Ragan (2002) also show that the union premium within industry over time is positively associated with the increased import penetration.

7 We also estimate the same growth curve models using the data of 1979 to 2002 in which occupation and union variables are not available. Our conclusion is not altered. All the results which are not reported here can be obtained from the authors.

related variables such as education or occupation. Fourth, in contradiction of the previous researches which usually support efficiency wage theories, changing inter-industry wage dispersion is not accounted for by the industrial revenue growth or the increase of marginal productivity per capita as well. Fifth and lastly, congruent with organizational power relation change perspectives, the majority of the changes are explained by organizational changes measured by the proportion of part timers and union covered workers.

Fligstein and Shin (2003) argue that American organizations undergo two waves of organizational changes during the last quarter of the 20th century. The first wave started in early 1980's and the second wave started in early 1990's. They contend that the first wave targeted lower skilled workers and the second wave do harmful impacts on managers and professionals. In the same vein, Farber (1997) assert that the recent corporate reorganization has two paces: the first is characterized by permanent closure and downsizing of production facilities and the second one involves downsizing more white-collar corporate functions. The timing of declining inter-industrial wage dispersion matches well with their two wave stories. As shown in Figure 1, the inter-industry wage dispersions for less educated workers clearly started to decline in the late 1980's, while one for college educated workers begin to sink after 1993.

One reason, among others suggested by efficiency wage theories, why employers pay higher wages than market clearing levels is to reduce workers' shirking. Shirking could be more important in managerial jobs where there is more opportunity to exercise discretion (Krueger 1991). Because of this, industrial rents move more closely with managerial wages than any other occupations (Osburn 2000). However, the technological development and accompanying organizational changes weakened this correlation. Nelson (2001) asserts that "Much computer technology involves organizational routines and decisions with particular reference to middle management tasks (p.42)." Therefore, once middle level managerial tasks are automated by IT technology, the motive of "efficiency wages" vanishes.

Linkage between productivity and high wage, which is the basic assumption of the efficiency wage theories, looks broken in American economy. It seems workers' productivity gains are no longer broadly shared by workers. Labor productivity in the non-farm sector during 2000 and 2006 rose by 18 percent, but workers' weekly wages rose only by one percent in the same period (Sum et al. 2006). Most gains due to the increased productivity appear to be accrued to the small number of top managers (Sum et al. 2006). Organizational power relation perspectives in sociology propose the strong association between productivity and wage was imposed as a result of capital-labor accord in which employers get a reasonably disciplined labor force without serious collective actions, while by which workers get growing wages (Kalleberg, Wallace, and Raffalovich 1984; Wallace, Leicht, and Raffalovich 1999), thus when the power balance between contracting parties lean to one side, this accord can be broken and then the correlation between productivity and wage can be dim. Declining union memberships and growing part-time workers may signify diminishing ability of collective wage bargaining for the labor side.

According to Akerlof's (1984) sociological version of efficiency theory, workers' productivity is affected by their concept of fairness. Workers feel that when firms earn more profits, employers have to share them with employees; otherwise, they feel employers treat them unfairly. The judgment of fairness is also dependent on workers' reference groups (Kahneman, Knetsch and Thaler 1986) or their self-identity (Akerlof and Kranton 2003). That is, the levels of fair amounts of profit shares depend on social norms. This theory implies that if social norms change, firms' practice of profit sharing with employees could also be changed. In other words, altering social norms regarding profit sharing is employers' interest. Thus, "American manager have regularly, if more slowly than from 1980-2000, seemingly developed ever new "employment relationships" (Berg and Kalleberg 2001,p.14)" to change social norms.

Technological changes may provide better environments for managers to develop these new relationships. As long as technological changes work inclined toward managerial sides, employers invest more assets to expedite these technological changes. Thus, "technological changes, far from being an exogenous objective process that transforms labor markets, is an endogenous outcome of labor market bargaining processes (Fligstein and Fernandez 1988: p.19)." Throughout these processes, managers indoctrinate workers with firms' interests. Employees have a negative attitude toward unions and are more likely to accept managerial decisions to reduce costs for more profits without any improvements for employees' benefits, and in turn their wage bargaining tend to be determined by individual processes. This shifting norm started in a narrow range of industries in the 1980's and has been spreading progressively ever since (Mitchell 1985).

In sum, firms may be less economically obliged to pass on a portion of their industrial rents to broad groups of their workers but may now be engaged in more micro-level bargaining with individual workers depending upon their bargaining power or other efficiency-wage considerations. This evolution from firm-level to individual-level bargaining processes may partly explain the dual phenomena of increasing inequality across workers as a whole and the rising significance of unions as the last institutional source of group bargaining that can influence mean wage differentials across industries. We do emphasize that although percent union and percent part-time workers seem to explain the declining inter-industry wage dispersion quite well in our analysis, we do not assert that these two variables determine industrial wage premiums. Unionization and part time workers do not represent all the characteristics of organizational changes. We feel the specific mechanism connecting these variables with the changing industrial premium needs to be investigated with a firm level data which includes information about bargaining processes. What we propose here is that technology per se does not seem to determine the level of inequality. The linkage between productivity and employees' wages is mediated by organizational practices in firms, and how firms develop their organizational practices are subject to the workplace power relations. Our results clearly indicate that further sociological investigations on organizational changes are required to understand various aspects of changing inequality in American economy, since the skill biased technological change stories do not explain the diverse facets of the changes.

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Table 1. Variance Components of Multilevel Growth Curve Models of Industrial Mean of Log Hourly Wage, 1983-2002

	Baseline Model	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9[a]
Controlled Fixed Effects										
Time	●	●	●	●	●	●	●	●	●	●
Demographic Variables		●	●	●	●	●	●	●	●	●
Geographic Variables			●	●	●	●	●	●	●	●
Skill Variables				●	●	●	●	●	●	●
Rent Related Variables										
Labor Share					●				●	●
Value Added Per Worker										●
Organizational Variables										
Part Timer						●		●	●	●
Union							●	●	●	●
(1) Total										
Variance Components										
ψ_{11}	.08801	.06421	.05207	.02963	.03639	.02006	.02194	.01367	.01380	.00883
ψ_{12}	-.00114	-.00078	-.00065	-.00073	-.00080	-.00051	-.00051	-.00032	-.00032	-.00020
ψ_{22}	.000029	.000024	.000021	.000020	.000020	.000015	.000014	.0000098	.0000097	.0000081
Θ	.000702	.000641	.000549	.000441	.000437	.000439	.000435	.000435	.000434	.00028
Proportion of Variance Explained										
From Baseline Model ψ_{11}		.270	.408	.663	.587	.772	.751	.845	.843	.900
ψ_{22}		.172	.276	.310	.310	.483	.517	.663	.666	.721
From Reference Model: Reference Model		Baseline	Model 1	Model 2	Model 3	Model 3	Model 3	Model 3	Model 7	Model 7
ψ_{11}		.270	.189	.431	-.228	.323	.260	.539	-.010	.354
ψ_{22}		.172	.125	.048	.000	.250	.300	.512	.007	.172
-2LL	-3274.5	-3355.7	-3487.6	-3745.8	-3746.8	-3773.0	-3763.0	-3790.6	-3790.7	-3045.8
(Sample Size)	(840)	(840)	(840)	(840)	(840)	(840)	(840)	(840)	(840)	(630)
(2) Female										
Variance Components										
ψ_{11}	.06042	.06020	.05227	.04358	.04461	.02347	.04135	.02129	.02038	.00645
ψ_{12}	-.00067	-.00068	-.00053	-.00081	-.00082	-.00044	-.00066	-.00034	-.00034	-.00012
ψ_{22}	.000018	.000018	.000014	.000017	.000017	.000010	.000012	.0000071	.0000071	.000006
Θ	.001243	.001282	.001153	.000939	.000938	.000929	.000931	.000925	.000926	.000664
Proportion of Variance Explained										

From Baseline Model	ψ_{11}		.004	.135	.279	.262	.612	.316	.648	.663	.888
	ψ_{22}		.000	.222	.056	.056	.444	.333	.604	.603	.698
From Reference Model:	Reference Model		Baseline	Model 1	Model 2	Model 3	Model 3	Model 3	Model 3	Model 7	Model 7
	ψ_{11}		.004	.132	.166	-.024	.461	.051	.511	.043	.430
	ψ_{22}		.000	.222	-.214	.000	.412	.294	.580	-.002	.033
-2LL		-2796.5	-2844.8	-2940.5	-3154.4	-3154.5	-3191.3	-3165.9	-3200.3	-3200.5	-2574.4
(Sample Size)		(840)	(840)	(840)	(840)	(840)	(840)	(840)	(840)	(840)	(630)
(3) Male											
Variance Components											
ψ_{11}		.07888	.05319	.04381	.02703	.02703	.01827	.01985	.01394	.01395	.01123
ψ_{12}		-.00070	-.00062	-.00059	-.00070	-.00070	-.00053	-.00051	-.00041	-.00041	-.00032
ψ_{22}		.000024	.000020	.000019	.000019	.000019	.000016	.000014	.000013	.000013	.000013
Θ		.001090	.000994	.000907	.000745	.000745	.000707	.000740	.000704	.000704	.000407
Proportion of Variance Explained											
From Baseline Model	ψ_{11}		.326	.445	.657	.657	.768	.748	.823	.823	.853
	ψ_{22}		.167	.208	.208	.208	.333	.417	.458	.458	.567
From Reference Model:	Reference Model		Baseline	Model 1	Model 2	Model 3	Model 3	Model 3	Model 3	Model 7	Model 7
	ψ_{11}		.326	.176	.383	.000	.324	.266	.484	-.001	.121
	ψ_{22}		.167	.050	.000	.000	.158	.263	.316	.000	.000
-2LL		-2936.8	-3036.4	-3120.2	-3365.7	-3365.7	-3440.0	-3382.2	-3455.6	-3455.8	-2830.7
(Sample Size)		(840)	(840)	(840)	(840)	(840)	(840)	(840)	(840)	(840)	(630)

Notes: (a) Data of Year 1983-1997 is used

(b) $\psi_{11}$and ψ_{22} of the Baseline Model for Model 9 of the total population is .08801 and .000029 and $\psi_{11}$and ψ_{22} of the Model 8 is .01367 and .0000098 respectively.

(c) $\psi_{11}$and ψ_{22} of the Baseline Model for Model 9 of the female group is .05780 and .000020 and $\psi_{11}$and ψ_{22} of the Model 8 is .01132 and .0000060 respectively.

(d) $\psi_{11}$and ψ_{22} of the Baseline Model for Model 9 of the male group is .07659 and .000030 and $\psi_{11}$and ψ_{22} of the Model 8 is .01278 and .0000013 respectively.

* p <.05; ** p <.01; ***p <.001 (two tailed test)

Table 2. Estimates of Multilevel Growth Curve Models of Industrial Mean of Log Hourly Wage, 1983-2002.

	Baseline Model	Model 2	Model 3	Model 8	Model 9[a]
Fixed Effects					
Intercept	2.5544***	2.2703***	2.4093***	2.5565***	1.8958***
Time					
Time	-0.0053***	-0.0063***	-0.0089***	-0.0077***	-0.0020
Time x Time	0.0004***	0.0006***	0.0006***	0.0006***	-0.0001
Demographic Variables					
Age		0.0003	0.0027	0.0003	0.0030
Female		-0.2590***	-0.1811***	-0.1617**	-0.1156*
Black		-0.1146	-0.0335	-0.1275	-0.2243**
Hispanic		-0.1541*	-0.0090	-0.0446	0.0041
Asian and other races		-0.2664	-0.2202	-0.1889	0.0222
Married		0.2733***	0.2208***	0.2227***	0.2192***
Geographic Variables					
Metro		0.3738***	0.2762***	0.2869***	0.2767***
South		-0.1114*	-0.0567	-0.0370	0.0283
Skill Variables					
Education					
High School Grad			0.2031	0.1867**	0.2439***
Some College			-0.0096	-0.0080	0.1915**
BA			0.3455***	0.2983**	0.5174***
Advanced Degree			0.3781**	0.3325*	0.3852**
Occupation					
Professional			0.0609	-0.0428	-0.0053
Technician			0.3788**	0.3410*	0.0767
Sales			-0.2290*	-0.2722*	-0.3585**
Administrative Support			-0.2928**	-0.3354***	-0.2948***
Private HH Service			-0.4964***	-0.5763***	-0.4239***
Protective Service			-0.0796	-0.3541	-0.4941*
Other Service			-0.9337***	-1.0004***	-0.8561***
Precision production etc.			-0.2641**	-0.3615***	-0.3062***
Machine operators			-0.5573***	-0.6312***	-0.4696***
Transportation/moving			-0.3716**	-0.4552***	-0.3184*
Laborers			-0.6990***	-0.8162***	-0.7729***
Farming/Forestry/Fishing			-0.7531***	-0.8060***	-0.6464***
Rent-related Variables					
Growth:Labor Share				0.1191	0.6489
Value Added Per Worker					0.0318**
Organizational Variables					
Part Timer				-0.3887***	-0.5566***
Union				0.2407***	0.3641***
Variance Components	0.08801***	0.05207***	0.02963***	0.01380***	0.00883***
ψ_{11}	-0.00114***	-0.00065***	-0.00073***	-0.00032*	-0.00020**
ψ_{12}	0.000029***	0.000021***	0.000020***	0.0000097***	0.0000081***
ψ_{22}	0.000702***	0.000549***	0.000441***	0.000434***	0.00028***
θ					
-2LL	-3274.5	-3487.6	-3745.8	-3790.7	-3045.8
(Sample Size)	(840)	(840)	(840)	(840)	(630)

Notes: Model numbers are matching with Table 2. (a) Data of Year 1983-1997 is used.
* p <.05; ** p <.01; ***p <.001 (two tailed test)

Table 3. Estimates of Multilevel Growth Curve Models of Industrial Mean of Log Hourly Wage by Gender, 1983-1997.

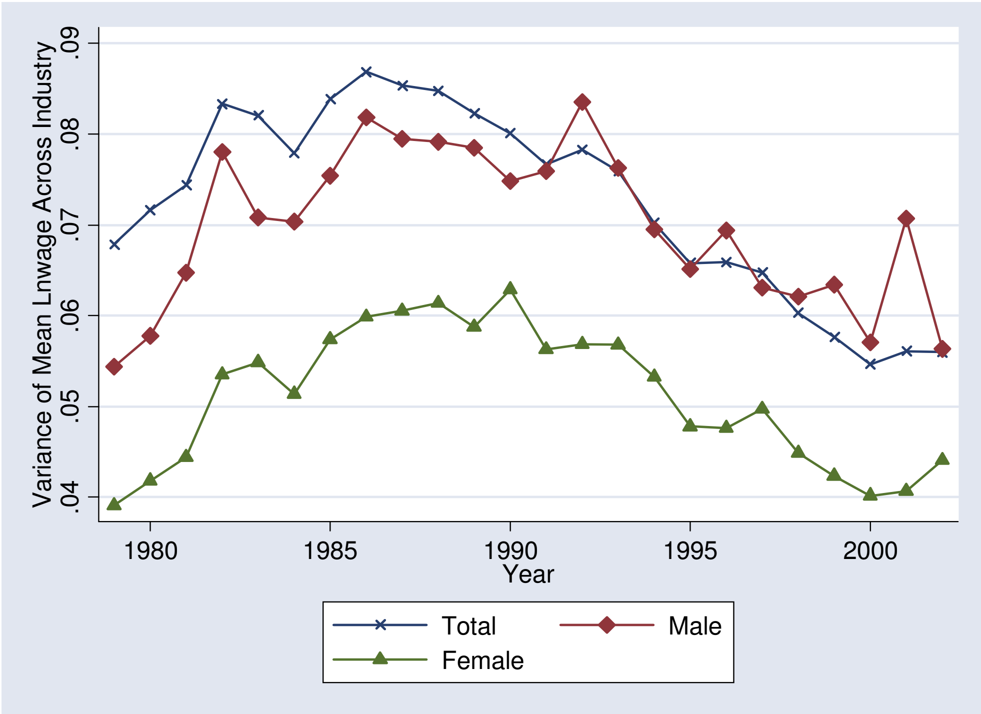
	Female (Model 9)	Male (Model 9)
Fixed Effects		
Intercept	1.2292***	1.8541***
Time		
Time	-.0050***	-.0043**
Time x Time		.0000
Demographic Variables		
Age	.0054**	.0034
Black	.0289	-.1024
Hispanic	.1092	-.1254
Asian and other races	.2325*	-.1501
Married	.0353	.2484***
Geographic Variables		
Metro	.2474***	.3005***
South	-.0629	.0881*
Skill Variables		
Education		
High School Grad	.3818***	.1577**
Some College	.3707***	.2257***
BA	.5904***	.4570***
Advanced Degree	.9509***	.4459***
Occupation		
Professional	.1044	.1287
Technician	.1796	.0579
Sales	-.0783	-.0283
Administrative Support	-.1854**	-.1490
Private HH Service	-.3822***	-.6326***
Protective Service	.3471	-.2702
Other Service	-.6014***	-.7425***
Precision production etc.	-.3384***	-.1477*
Machine operators	-.3274***	-.3529***
Transportation/moving	-.3123	-.3461**
Laborers	-.1693	-.4723***
Farming/Forestry/Fishing	-4606***	-.4809***
Rent-related Variables		
Growth:Labor Share	-.2077	-.1614
Value Added Per Worker	.0618***	.0259*
Organizational Variables		
Part Timer	-.4500***	-.5557***
Union	.2226***	.3067***
Variance Components		
ψ_{11}	.00645***	.01123***
ψ_{12}	-.00012*	-.00032***
ψ_{22}	.000006**	.000013***
θ	.000664***	.000407***
-2LL	-2574.4	-2830.7
(Sample Size)	(630)	(630)

* p <.05; ** p <.01; ***p <.001 (two tailed test)

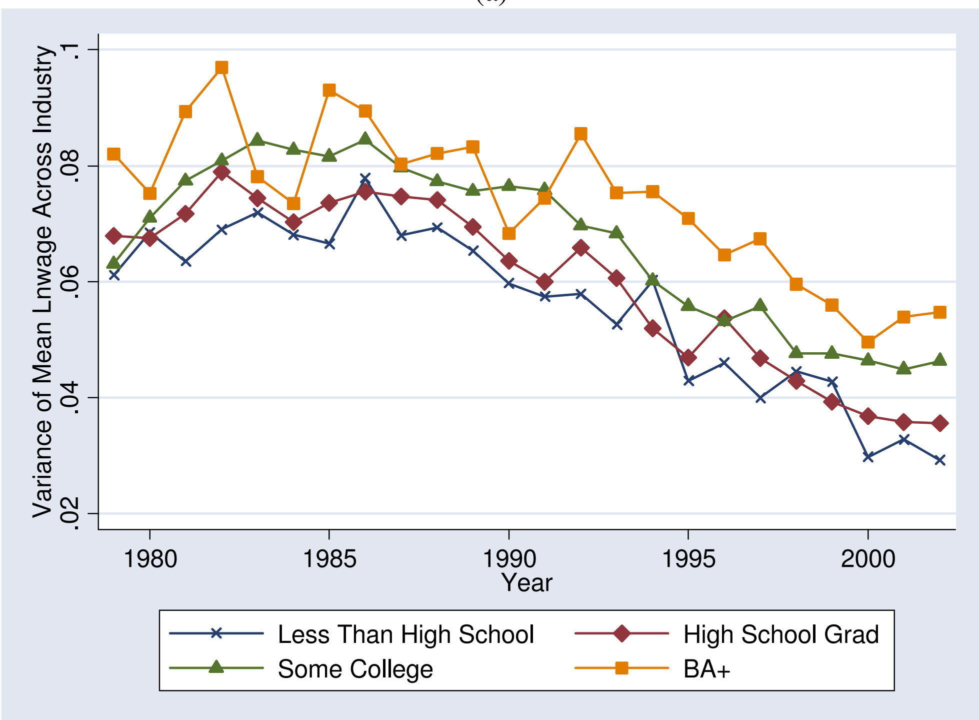
Table 4. Counterfactual Analysis of the Dispersion of Log Wage, 1983-2002

	Actual			Predicted[a]		
	Mean	Variance	Δ(Variance) from 1983	Mean	Variance	Δ(Variance) from 1983
1983	2.505	.0650		2.506	.0620	
2002	2.643	.0476	-.0174	2.607	.0512	-.0109
Counterfactual Analysis: What if only the following variable changes over 1983-2002						
Demographic Variables				2.344	.0614	-.0006
Geographic Variables				2.521	.0578	-.0042
Skill Variables				2.587	.0651	.0031
Organizational Variables				2.462	.0418	-.0203
Rent Related Variables[b]				2.542	.0634	.0014

Notes: (a) Predicted means and variances are estimated based on the OLS regression. (b) Value-Added-Per-Person for 2002 is replaced by Value-Added-Per-Person for 1997.



(a)



(b)

Figure 1. Inter-Industry Variance of Mean Log Wage, 1979-2002

Appendix 1. Descriptive Statistics.

	Total		1979		1990		2002		Change	
	Mean	st.dev.	Mean	st.dev.	Mean	st.dev.	Mean	st.dev.	1979-1990	1990-2002
Log Hourly Wage[a]	2.543	.242	2.546	.226	2.525	.249	2.643	.218	-.021	.118
Max	3.072		2.967		3.034		3.072		.067	.038
Min	1.594		1.669		1.748		2.007		.079	.259
Inter-Industry Inequality										
Gini Index	.052		.048		.053		.044		.005	-.009
Theil Index	.0047		.0040		.0049		.0034		.0009	-.0015
Atkinson Index (e=1)	.0048		.0041		.0051		.0035		.0010	-.0016
Variance	.059		.051		.062		.048		.011	-.014
Demographic Variables										
Age	37.495	2.640	36.566	2.126	37.156	2.417	39.559	2.676	.590	2.403
Female	.478	.219	.442	.226	.483	.213	.493	.212	.041	.010
White	.800	.058	.835	.052	.802	.051	.759	.056	-.033	-.043
Black	.093	.033	.090	.039	.094	.033	.092	.031	.004	-.002
Hispanic	.068	.037	.049	.023	.068	.032	.098	.048	.019	.030
Asian and other races	.039	.014	.026	.009	.037	.011	.051	.016	.011	.014
Married	.622	.083	.677	.069	.603	.078	.587	.082	-.074	-.016
Geographic Variables										
Metro	.747	.096	.690	.100	.765	.088	.775	.077	.075	.010
South	.319	.121	.312	.128	.324	.124	.295	.100	.012	-.029
Skill Variables										
Education										
Less Than High School	.124	.088	.198	.110	.125	.083	.083	.064	-.073	-.042
High School Grad	.365	.097	.387	.084	.371	.092	.326	.361	-.016	-.045
Some College	.270	.062	.228	.057	.262	.055	.300	.057	.034	.038
BA	.164	.079	.130	.080	.163	.075	.196	.082	.033	.033
Advanced Degree	.077	.087	.057	.075	.079	.088	.094	.077	.022	.015
Occupation[b]										
Managerial	.123	.066	.099	.055	.117	.062	.147	.074	.018	.030
Professional	.147	.166	.131	.161	.140	.163	.168	.178	.009	.028
Technician	.037	.039	.035	.039	.037	.039	.037	.039	.002	.000
Sales	.106	.149	.101	.149	.106	.149	.107	.150	.005	.001
Administrative Support	.169	.100	.182	.117	.176	.105	.148	.082	-.006	-.028
Private HH Service	.006	.073	.008	.079	.006	.069	.005	.067	-.002	-.001
Protective Service	.019	.050	.018	.047	.018	.048	.020	.053	.000	.002
Other Service	.110	.119	.112	.124	.108	.119	.114	.122	-.004	.006
Precision production etc.	.112	.143	.123	.144	.113	.144	.104	.149	-.010	-.009
Machine operators	.071	.130	.084	.147	.076	.136	.050	.105	-.008	-.026
Transportation/moving	.044	.070	.045	.067	.044	.070	.043	.076	-.001	-.001
Laborers	.041	.041	.042	.042	.043	.043	.041	.043	.001	-.002
Farming/Forestry/Fishing	.016	.092	.019	.103	.016	.093	.015	.090	-.003	-.001
Rent-related Variables										
Labor Share	.024	.030	.024	.028	.024	.030	.024	.032	-	-
Ln(VAD Per Worker)[a,c]	10.782	.678	10.244	.586	10.905	.639	11.193	.674	.661	.243
Organizational Variables										
Part Time Workers	.101	.110	.100	.118	.103	.114	.089	.090	.003	-.014
Union[b]	.183	.145	.237	.162	.190	.145	.151	.134	-.047	-.039

Notes: (a) 2002 fixed dollars are used. (b) Proportions for 1983 are reported instead of ones for 1979. (c) Dollar values for 1997 are reported instead of ones for 2002.