

**GROWING APART: THE CHANGING FIRM-SIZE WAGE EFFECT AND ITS
INEQUALITY CONSEQUENCES**

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Growing Apart: The Changing Firm-Size Wage Premium and Its Inequality Consequences

Abstract

Wage inequality in the United States has risen dramatically over the past few decades, prompting scholars to develop a number of theoretical accounts for the upward trend. This study argues that large firms have been a prominent labor-market institution that mitigates inequality. By compensating their low- and middle-wage employees with a greater premium than their higher-wage counterparts, large U.S. firms reduced overall wage dispersion. Yet, broader changes to employment relations associated with the demise of internal labor markets and the emergence of alternative employment arrangements have undermined large firms' role as an equalizing institution. Using data from the *Current Population Survey* and the *Survey of Income and Program Participation*, we find that in 1989, although all private-sector workers benefited from a firm-size wage premium, the premium was significantly higher for individuals at the lower end and middle of the wage distribution compared to those at the higher end. Between 1989 and 2014, the average firm-size wage premium declined markedly. The decline, however, was exclusive to those at the lower end and middle of the wage distribution, while there was no change for those at the higher end. As such, the uneven declines in the premium across the wage spectrum could account for about 20 percent of rising wage inequality during this period, suggesting that firms are of great importance to the study of rising inequality.

Over the past several decades in the United States, one trend that has prompted much interest and debate is the dramatic rise in wage inequality. Driven in large part by a widening wage distribution, income inequality, as measured by the Gini coefficient, rose nearly 21 percent between 1976 and 2014.¹ Although scholars have developed market (e.g., globalization, skill-biased technological change) and institutional (e.g., unionization, public policy) explanations to account for the rise (Morris & Western, 1999), recent studies have begun to investigate whether and how organizations affect the distribution of earnings in the broader labor market (e.g., Avent-Holt & Tomaskovic-Devey, 2014; Song, Price, Guvenen, & Bloom, 2015; Sørensen & Sorenson, 2007). Because organizations are responsible for providing workers with access to remuneration and rewards, they are a likely important driver of wage inequality (Baron & Bielby, 1980). Hence, explanations for rising inequality that consider how organizations' structures and practices change over time hold considerable potential.

Much of the existing research on firms and inequality has focused on firm size (e.g., Kalleberg & Van Buren, 1996; Villemez & Bridges, 1988), and several empirical regularities suggest that large firms shape the distribution of wages in a society. For example, prior research has found that less-educated workers benefit more by working in large firms than do more-educated workers (e.g., Even & Macpherson, 2012; Hollister, 2004), suggesting that large firms compress the distribution of wages. Additionally, previous studies have shown that the proportion of workers employed by large firms in a labor market is negatively associated with the level of wage inequality (e.g., Cobb & Stevens, 2016).

Building on these insights and the broader literature on organizational wage setting (e.g., Cappelli & Chauvin, 1991; Nickerson & Zenger, 2008), we contend that by differentially rewarding workers beyond what would be expected from their human capital characteristics alone, large U.S. firms have served as a prominent labor-market institution that mitigates wage inequality. Specifically, we develop a set of arguments to explain why the wage premium that workers earned for being employed in large firms was larger for low- and middle-wage workers than the wage premium received by higher-wage workers. By compensating their low- and middle-wage workers with a greater wage premium than higher-wage workers,

¹ <https://www.census.gov/hhes/www/income/data/historical/inequality/Table%20IE-1.pdf>

large U.S. firms constrained the wage disparities among individuals in the labor market, thereby lowering wage inequality.

We also argue, however, that broader changes to employment relations associated with the demise of internal labor markets (ILMs) and the emergence of alternative employment arrangements (e.g., Cappelli, 1999; Osterman, 1996) have undermined large firms' role as a wage equalizer. We contend that these processes have driven much of the documented decline in the average firm-size wage premium (e.g., Hollister, 2004) and disproportionately affected lower-wage (i.e., 10th and 25th percentiles) and middle-wage workers (i.e., 50th percentile) in comparison to their higher-wage counterparts (i.e., 90th percentile). One important consequence of this trend is that large firms compress the overall distribution of wages to a much lesser degree than they did in previous decades, thereby contributing to the growth of wage inequality in the United States.

To test our claims, we use data collected from the *Current Population Survey* (CPS) and the *Survey of Income and Program Participation* (SIPP) to investigate how firm-size wage premiums have varied over time and across the wage distribution for private-sector workers between 1989 and 2014. Our findings indicate that, historically, large firms affected overall wage outcomes in two key ways: by raising the average wage and by reducing dispersion. Although all workers at all percentiles of the wage distribution earned more by working for large firms, at the beginning of the observation period, the premium was significantly higher for individuals at the lower and middle of the wage distribution compared to those at the higher end. Yet, while the average firm-size wage premium declined considerably during the period, the decline occurred exclusively among those at the lower end and middle of the wage distribution. Conversely, the firm-size wage premium has remained largely unchanged for those at the higher end. As such, the changing firm-size wage premium could account for about 20 percent of rising wage inequality during this period. These findings are robust against confounding factors such as compositional differences in human capital, tenure, union status, and industry of employment as well as in models accounting for unobservable differences among individuals.

By developing a set of arguments to explain how changes in employment practices of large corporate employers affected wage inequality in the United States, we situate firms squarely in the broader

conversation about the causes of rising inequality. Moreover, this article provides direct evidence showing that large firms help compress the overall wage distribution (e.g., Cobb & Stevens, 2016; Davis & Cobb, 2010), but that their proclivity to do so has diminished considerably over time. Our study, therefore, highlights corporate employers as a proximal mechanism through which broader market and institutional forces affect wage inequality. In so doing, our study answers calls for organizational scholars to more closely examine the ways in which firms' strategies and structures affect society (Barley, 2010; Baron & Bielby, 1980; Hinings & Greenwood, 2002; Parsons, 1956).

FIRMS AND WAGE INEQUALITY

To date, most research on rising wage inequality has focused on market-based (e.g., Autor, 2003) or institutional explanations (e.g., Morris & Western, 1999). Although these studies have greatly enhanced our understanding of the phenomenon, much of the inequality trend remains unexplained. A number of researchers have recently begun to address this gap by examining the role of organizations in rising income inequality (e.g., Cobb, 2016; Sørensen, 2007). Leveraging insights from the neo-structuralist tradition of stratification studies, these researchers contend that firms help determine labor market outcomes such as wage inequality by providing unequal access to remuneration, rewards, and opportunities for advancement (Baron, 1984; Kalleberg & Sørensen, 1979). In fact, studies have shown that between 40 and 50 percent of the total variation in wages emerges from similarly skilled workers being employed in firms that reward them differently (Abowd & Kramarz, 1999; Song et al., 2015).

Many studies in this area have focused on how large firms affect the distribution of wages, following a long tradition of scholarly interests in the effects of firm size on various outcomes (e.g., Blau & Schoenherr, 1971; Kimberly, 1976). Firm size has been found critical in the organization of work (Baron & Bielby, 1984), is associated with the presence of employer-sponsored health-care and retirement benefits as well as better working conditions (Brown, Hamilton, & Medoff, 1990), and is the organizational characteristic most frequently used in studies of stratification (Kalleberg & Van Buren, 1996; Villemez & Bridges, 1988). The attention to firm size in studies of stratification is due, in part, to the fact that research has consistently found that otherwise identical workers earn more when working for large firms—a phenomenon referred to as the firm-size wage premium (or firm-size wage effect). Empirical studies reveal,

for example, that firms with 500 or more workers pay wages that are 30 to 50 percent higher than those of firms with fewer than 25 workers (see Oi & Idson, 1999).

A number of theories for the existence of the firm-size wage premium and its decline have been proposed, and much research on the topic has sought to test these various explanations (e.g., Brown & Medoff, 1989; Hollister, 2004; Troske, 1999). While factors such as compositional differences in human capital, screening and monitoring costs, unionization, and industrial competitiveness have been shown to explain a portion of the firm-size wage premium, scholars have argued that much of the difference is due to the managerial decisions about how to set wages in large firms (e.g., Brown et al., 1990; Cappelli & Chauvin, 1991). If true, this suggests that changes to the firm-size wage premium may also be due, in part, to changing organizational practices regarding how to compensate workers for their labor.

More recently, organizational scholars have expanded upon these insights and argued that it is not just that large firms pay workers more on average than do smaller firms but that they compress the wage distribution by paying lower- and middle-skill workers a larger wage premium and paying higher-skilled workers closer to their marginal product (Cappelli, 2001; Cobb, 2016). For example, Davis and Cobb (2010) theorized that although wages within large firms vary by hierarchical level, concerns for equity constrain the disjuncture from one level to the next. Such compression tends to benefit low- and middle-skilled individuals, who receive a greater wage premium than do their higher-skilled counterparts. By raising the wage floor for those in lower and middle portions of the skill distribution, as more individuals are brought within the boundaries of large firms, wage inequality within the labor market will likely be lowered. Yet, these studies have never directly examined whether large firms systematically compress wages in the manner highlighted in prior research. This research also assumes that large firms' propensity to compress wages has remained relatively constant over time (Cobb & Stevens, 2016).

Building on this prior research, we argue that by providing their low- and middle-wage employees a greater wage premium than their high-wage counterparts, large U.S. firms have historically been an equalizing institution that helped mitigate wage inequality. We extend this work by contending that the changing employment practices documented in prior studies (e.g., Cappelli, 1999; Kalleberg, 2011) have set the pay for these workers closer to market rates, which disproportionately reduced the wage premium

received by low- and middle-wage workers in large firms.² Consequently, changes to large firms' compensation schemes contributed to rising wage inequality in the United States.

Firm-Size Wage Premiums across the Wage Distribution

Human-capital-based theories emphasize that earnings are primarily an outcome of an individual's productive capacity (e.g., Becker, 1964). As such, individuals with identical skills should obtain relatively equivalent earnings regardless of the job they are in. In practice, however, wages are often tied to jobs rather than workers (Granovetter, 1981), and once we allow features of a job to affect wage outcomes, how firms match workers to jobs and how they reward workers for their labor become the primary determinants of how labor income is distributed in a society (Sørensen & Sorenson, 2007).

Assigning wages to jobs is a hallmark of internal labor markets (ILMs)—a set of practices once commonly used by corporate employers to determine how workers are allocated to jobs and how they are rewarded for their labor (Doeringer & Piore, 1971). Previous research has found firm size to be strongly correlated with firms' use of ILMs (e.g., Kalleberg & Van Buren, 1996). ILMs emerged in the aftermath of World War II in most large U.S. firms as a consequence of fierce negotiations between labor unions and management over the terms of employment. In an attempt to curtail managerial discretion over compensation decisions and to reduce opportunities for discrimination, favoritism, and nepotism, collective bargaining agreements helped institutionalize bureaucratic routines for allocating workers to jobs and setting their pay (Lichtenstein, 2002). These systems were also adopted by nonunionized workplaces in an effort to forestall unionization (Jacoby, 1985) and to help comply with governmental regulations promoting equal opportunity (Dobbin, Sutton, Meyer, & Scott, 1993).

A defining characteristic of wage-setting schemes in ILMs was that wages were almost exclusively based on the job that an individual held rather than the characteristics of that individual (Doeringer & Piore, 1971; Granovetter, 1981). Although jobs that require greater levels of competencies and are more valued by the firm receive greater pay, compensation systems inside ILMs were developed to create a sense of

² Throughout, we make reference to pay being determined by worker productivity and market dynamics. We are agnostic, however, regarding whether wages are a true reflection of productivity and market factors or an outcome of social processes that influence perceptions of worker value (Avent-Holt & Tomaskovic-Devey, 2014). Here, we are concerned only with the going wage in the labor market rather than what factors determine that wage.

internal pay equity (Dulebohn & Werling, 2007). That is, by assigning wages to jobs and establishing criteria by which jobs are compared, employers hoped to mitigate perceptions of inequity in how wages throughout the hierarchy are set (Osterman, 1999; Pfeffer & Davis-Blake, 1992). To create perceptions of equity, firms are likely to compress wages both horizontally, whereby workers in the same job receive roughly equal pay, and vertically, whereby the distribution of pay throughout the hierarchy is compressed relative to an expected marginal product schedule (Nickerson & Zenger, 2008).

To compress wages vertically, large firms can raise the wage floor for lower-wage workers and/or reduce the wages of higher-wage workers. There are reasons, however, to expect that vertical compression has been more commonly accomplished by raising the wage floor for lower-wage workers. For example, paying below market wages may make it difficult for large firms to attract and retain higher-skilled workers (Zenger, 1994). To the extent that large firms rely on the presence of these workers to transform resources into output, firms may be reluctant to pay them below market rates. Furthermore, offering a wage premium—that is, wages above what would be realized in a perfectly competitive market—can be used as a means to ensure worker loyalty, reduce shirking, and/or stave off unionization attempts (Yellen, 1984). Because these concerns could be stronger with regard to lower- and middle-wage workers (e.g., production workers), we might expect firms to offer a larger premium to those at the lower end and middle of the wage distribution as opposed to those at the higher end.

Supporting these claims, prior evidence has shown that premium wages were historically more common for production jobs than for professional jobs (Cappelli & Chauvin, 1991; Raff & Summers, 1987). There is also evidence that the firm-size wage premium was higher for those with lower levels of education (Even & Macpherson, 2012; Hollister, 2004), suggesting that lower- and middle-wage employees benefited disproportionately from large-firm employment. Taken together, we expect that large firms are particularly apt to vertically compress wages by raising the wage floor for lower- and middle-wage workers, such that the firm-size wage premium will be higher for lower- and middle-wage workers than their higher-wage counterparts. Stated formally, we expect the following:

Hypothesis 1: Firm-size wage premiums are larger for low- and middle-wage workers than for high-wage workers.

Hypothesis 1 implies that the wage-setting practices of large firms affect the overall distribution of wages in a society. Specifically, our prediction suggests that if the firm-size wage premiums for low- and middle-wage workers was higher than the premiums received by high-wage workers, then the overall distribution of wages was more compressed than would be expected if workers were paid market rates for their labor, *ceteris paribus*. Stated differently, wage inequality in the United States would have been higher were there no firm-size wage premium.

Changing Firm-Size Wage Premium over Time

The discussion above contends that large firms are likely to compress the wage distribution by paying higher wage premiums to low- and middle-wage workers. Yet, many large U.S. corporations now compete in progressively less certain environments as advances in information and communication technologies, globalization, and deregulation have raised product market competition and shortened product life cycles (Osterman, 1999). Financial market pressures have also increased, compelling firms to maintain a shorter-term focus on market performance (Davis, 2016; Lin, 2016; Lin & Tomaskovic-Devey, 2013). The heightened uncertainty that these changes place on firms has motivated many large U.S. companies to shift some of that uncertainty onto their workers (Cobb, 2015). In so doing, many of these employers have profoundly restructured their employment relations by altering the way they remunerate individuals for their labor and where they place firm boundaries (Cobb, 2016; Jacoby, 2005). The end result of these transformations, we contend, has disproportionately affected those at the lower end and middle of the wage distribution. In this section, we highlight these interwoven changes and discuss their impacts on the firm-size wage premium for workers at different points in the wage distribution.

First, research has documented a steady decline in the prevalence of ILMs over the past four decades (e.g., Piore, 2002). One of the main pieces of evidence to support this claim is the decline in the returns to tenure with the same employer (Cappelli, 2001; Chauvin, 1992; DiPrete, Goux, & Maurin, 2002). Other indications of the declining ILMs are large firms' increased use of external hiring (Bidwell, 2011), lower tenure rates (Bidwell, 2013), and reductions in firm-sponsored training (Knoke & Kalleberg, 1994).

As ILMs have declined, in their place has emerged a set of external, market-based employment practices where wages are more likely to be based on workers' relative performance, skills, and credentials,

as well as on the broader market forces of supply and demand. One such system designed to closely link productivity to pay is pay-for-performance schemes, which became increasingly widespread after the 1982 recession as U.S. firms faced pressures to improve worker efficiency; between 80 and 90 percent of U.S. corporations implemented such plans in the following decades (Heneman & Werner, 2005).

Unlike wage setting in ILMs, performance-pay schemes focus on observed differences in worker productivity and therefore tend to exaggerate the wage gap between more- and less-productive workers (Bandiera, Barankay, & Rasul, 2007). As such, external market-based compensation systems are “rent destroying” for many low- and middle-wage workers as they reduce workers’ ability to earn a wage premium for their labor (Dencker & Fang, 2016). In contrast, evidence has found that firms have become more likely to use performance-based compensation systems that reward higher-skilled, higher-ranking workers, which has greatly increased the wages of these workers (Lemieux, MacLeod, & Parent, 2009).

In addition to the demise of ILMs, other practices have helped reshape firm boundaries in ways that disproportionately lower the economic rewards for lower- and middle-wage workers. A prime example of such practices is the use of outsourcing and other nonstandard work arrangements (Davis-Blake & Broschak, 2009). Beginning in the early 1990’s, many large firms, particularly those involved in the production of goods, sent their manufacturing overseas, and many back-office services found new homes domestically and abroad. Spurred by new theory emphasizing the importance of firms to focus on their “core competence” (Lepak & Snell, 1999), as well as financial markets rewarding firms for generating profits while harboring fewer physical assets (Lin, 2016), firms began to externalize their workforce through the use of outsourcing and other non-standard work arrangements.

Outsourcing limits the amount of within-firm heterogeneity of abilities and rewards, allowing firms to disperse wages without triggering perceptions of inequity among high- and low-skilled workers (Rawley & Simcoe, 2010). Rather than administrative rules and procedures determining pay, once a job is outsourced, its external market becomes a reference point by which wages are set (Kochan & Riordan, 2016). Supporting this view, Dube and Kaplan (2010) found that outsourced janitors and security guards routinely earned less than their in-house counterparts, primarily because firms replaced relatively middle- to high-paying jobs with lower-paying jobs. Similar trends have been found in studies on subcontracting in

call centers (Batt, Colvin, & Keefe, 2002), hotels (Hertz, 2010), and cafeterias (McCain, 2009). Meanwhile, many high-skilled contract workers benefit from outsourcing as they frequently earn higher wages than their in-house counterparts (Kunda, Barley, & Evans, 2002).

What these results therefore suggest is that once a job is separated from a firm's ILM its wages will be set more closely to the market rate (Cappelli, 2001). Moreover, outsourcing, and the threat of outsourcing, may depress the wages of non-outsourced workers by reducing their bargaining power (Bernhardt, Batt, Houseman, & Appelbaum, 2016). The implication, then, is that lower- and middle-wage workers will be most negatively affected by outsourcing and other nonstandard work arrangements. While firms of all sizes can use these arrangements, evidence suggests outsourcing and nonstandard work practices are used more prevalently by larger firms (Cappelli & Keller, 2013). Hence the probability of jobs being outsourced and the effect of this on wages is a function of firm size, which will be reflected in a steeper decline in the wage premium for low- and middle-wage workers relative to high-wage workers.

To summarize, due to a combination of factors that heightened product market competition and increased financial-market pressures, large U.S. employers undertook a number of strategies to enhance their operational flexibility, improve productivity, and lower labor costs. Some of these changes, including dismantling ILMs, relying on external market wage-setting practices, and redrawing firm boundaries, altered employment relations in ways that have been particularly detrimental to lower- and middle-wage workers relative to higher-wage ones. As such, we anticipate that the firm-size wage premium once earned by lower- and middle-wage workers will have declined to a greater extent than has the premium for higher-wage workers. Stated formally, we expect that:

Hypothesis 2: The firm-size wage premium has declined more rapidly for low- and middle-wage workers than for high-wage workers.

A key consequence of our prediction in hypothesis 2 is that we expect wage inequality in the United States to have risen due to the differential declines in the firm-size wage premium. That is, if hypotheses 1 and 2 are correct, rising wage inequality during this period can be partially explained by the fact that large firms are no longer compressing wages in the manner they did in decades prior.

DATA AND ANALYTICAL STRATEGY

Data

We used files from the *Annual Social and Economic Supplement* to the CPS from 1990 to 2015 to examine how the firm-size wage premium changed over time and across wage distribution and to measure the total impact of that change on wage inequality.³ Because the CPS asks about earnings in the prior year, the reported earnings are for 1989 through 2014. The survey is based on random samples of U.S. households, so our results are representative of the U.S. working population. Our samples include full- and part-time workers aged 25 to 65 and employed in the private sector. Self-employed and governmental workers are excluded from the analysis because their earnings are less relevant to the theoretical questions at hand. In analyses available in the online appendix, we used the SIPP from 1996 to 2008, and the findings are substantively similar to those presented below.⁴

A common problem in using these surveys to study inequality is top-coding. The CPS imputes the earnings of top earners to ensure anonymity, which prevents the researchers from accurately estimating the average wage premium. The proportion of earners who were top-coded slowly increased over time. For women, the number increased from 0.02 percent in 1975 to 0.86 percent in 2007; for men, the number increased from 1.18 percent to 2.59 percent over the same period (see Armour, Burkhauser, & Larrimore, 2016). Because our scope of analysis was restricted to those at or below the 90th wage percentile, however, our findings were unaffected by top-coding.

A second limitation of using CPS data is that the original surveys are mainly constructed to track national trends with cross-sectional samples and therefore not readily available for longitudinal analysis. With repeated cross-sectional data, we cannot account for potential unobservable human capital factors that may help explain our results. However, we take advantage of the CPS's rotating panel design to match some of these workers over time, which allowed us to run models with individual-fixed effects as a

³ The annual CPS is preferable to the monthly CPS because it captures annual and quarterly bonuses, a crucial form of pay for high-skilled workers. Although the CPS began measuring firm size in 1988, a key control, union status, was not measured until 1990, in the March supplement. Thus, we began our analysis with the 1990 CPS.

⁴ The SIPP provides more detailed information on workers' tenure, which is useful for teasing out the effects of this confounding factor. However, the survey only has three firm-size categories (< 25, 25–99, 100+) and at the time the study was conducted, SIPP data was only available up to 2008.

robustness check. We detail how we constructed our panel in the online appendix.

Variables

Following prior research on the firm-size wage premium (e.g., Hollister, 2004) and research on the wage inequality (e.g., Lemieux, 2008), our dependent variable is the logged hourly wage, calculated as the inflation-adjusted (to 2014 dollars) annual wage and salary earnings divided by annual work hours. The CPS specifically prompts each respondent to include overtime pay, tips, bonuses, and commissions, which helps ensure that these earnings are included in addition to the respondent's base pay. We conducted additional analyses using logged annual earnings and unimputed earnings data to gauge the potential effects of work-hour polarization (Jacobs & Gerson, 2005) and hot-deck imputation (Mouw & Kalleberg, 2010). The results were substantively similar to the results presented below and are available upon request.

Our main explanatory variable was the total number of persons who worked for the respondent's employer during the preceding calendar year, counting all locations where the employer operated. The variable is self-reported but in broad categories, as respondents may not have precise information on how many people were employed in their firms. To produce consistent estimates across time, we assigned the respondents to the following groups: fewer than 100 employees, between 100 and 499 employees, between 500 and 999 employees, and 1,000 or more employees.⁵ We identified the firm-size wage premium by estimating the logged wage difference between the latter three groups and the first group at the 10th, 25th, 50th, 75th, and 90th percentiles of the wage distribution.

Figure 1 presents the proportion of workers who worked in firms across the firm-size categories. It shows that about 40 percent of the private-sector workers were employed by enterprises with fewer than 100 employees, about 16 percent were employed in firms with between 100 and 499 employees, 6 percent were employed in business with 500 to 999 employees, and 37 percent were employed in firms with at least 1,000 employees. The pattern is largely stable in the period of analysis, and the fluctuation for firms with

⁵ The firm-size measure has changed two times between 1988 and 2015 in the CPS. The original 1988 categories included < 25, 25–99, 100–499, 500–999, and 1,000+. The first category was replaced with < 10 and 10–24 in 1992, and this latter category along with 25–99 was replaced with 10–49 and 50–99 in 2011. We created four consistent categories: fewer than 100, 100–499, 500–999, and 1,000 or more employees.

500 to 999 employees is mostly driven by its small share. The share of workers who were employed by firms with 1,000-plus employees increased by around 7 percent compared to the 1989 level, while the share of firms with 100 to 499 employees declined by about 13 percent.⁶ In the online appendix, we also include a series of stacked area plots that show how employment by firm size has varied over time across the wage distribution. Generally, high-wage workers are more likely to work for large firms than are low-wage workers. But over time, we see that there is a small increase in the likelihood that low-wage worker and a small decrease in the likelihood that a high-wage worker is employed by a large firm.

|---- Insert Figure 1 about Here ----|

We included a series of confounding variables in our regression analysis. One popular explanation for the firm-size wage premium is that it is due to the ability and/or desire of large firms to attract more productive workers. Screening and monitoring costs are likely to increase as firms grow (Garen, 1985); thus large firms pay wage premiums both to attract higher-quality workers and to discourage workers from shirking. Indeed, studies have found that between one-third and one-half of the gross differences in wages between large and small firms can be explained by human capital characteristics (e.g., Troske, 1999). To help ensure that the wage premium and changes to it were not driven by human capital differences, we controlled for the level of education, age, and its squared term, which approximate worker skill. Given well-established differences in earnings by race (e.g., McCall, 2001) we included a set of binary indicators to account for respondents' race/ethnicity. We also included a set of interaction terms between gender, marital, and parental status to account for differences in earnings by gender, which are also affected by marital and parental status and vary across the earnings distribution (Budig & Hodges, 2010).⁷

Other researchers have postulated that firm-size wage premiums may be due to higher rates of unionization in large firms and the use in large firms of wage premiums to stave off labor-organizing

⁶ Davis and Cobb (2010) found that between 1970 and 2010, the proportion of workers employed by the largest 10, 50, and 100 corporate employers declined. This discrepancy is most likely explained by our focus on a shorter time period and our much broader categorization of large firm size.

⁷ The inclusion of these human capital and demographic control variables are also important because prior research has found that in administrative surveys such as the CPS and SIPP some sub-populations, including racial and education-level categories, have been shown to systematically misreport report earnings (Kim & Tamborini, 2014). Although we cannot fully account for individual-level misrepresentations, these control variables help capture any systematic variation across sub-populations in the propensity to misreport earnings.

attempts (Hodson & Kaufman, 1982). Though prior research has found mixed evidence on whether unionization effects are responsible for the firm-size wage premium (Brown & Medoff, 1989; Even & Macpherson, 2012), we included union status to ensure our result was not driven by the de-unionization of the U.S. workforce (Western & Rosenfeld, 2011). To account for the respondent's employment status and to ensure that our effects are not being driven solely by the expansion of part-time work (Kalleberg, 2011), we also included a binary indicator equal to one if the worker was employed part-time.⁸

Moreover, the largest U.S. corporate employers are no longer manufacturers, such as General Motors; they are retailers, such as Wal-Mart. Unlike those in manufacturing and other industrial firms, lower-skilled workers in service-related firms make lower wages and have fewer opportunities for advancement. To help account for industry-level differences in product market competition and to consider the firm-size wage premium independently of the migration of workers from manufacturing to service industries, we included 14 dichotomous variables to adjust for worker industry.⁹ We also ran tests using two-digit SIC codes (57 categories), which yielded similar results. To control for potential differences in geographical location between large and small firms, we controlled for the interaction terms between nine census divisions and metropolitan status. Descriptive statistics for a subset of variables appear in Table 1. Descriptive statistics of all the variables and a correlation matrix are presented in the online appendix.

|---- Insert Table 1 about Here ----|

Model Specification

While previous studies investigated the *average* wage premium of working for a large firm, we relax the unexamined assumption that the firm-size wage premium is constant across high- and low-wage workers and focus on how it may vary across the wage distribution. As such, the conventional estimation strategies such as the ordinary least squares (OLS) model is not suitable for our purpose. We instead use the Re-centered Influence Function (RIF) regression (see Firpo, Fortin, & Lemieux, 2009; Lin, 2015) to examine how the firm-size wage premium changes by wage percentiles.

⁸ One could argue that the expansion of part-time work is part of the emerging employment practices and thus should not be controlled. We include it nonetheless to provide more conservative estimates for our findings.

⁹ The industries are Agriculture, Mining, Construction, Manufacturing, Transportation, Utilities, Wholesale, Retail, Finance and Real Estate, Business Service, Personal Service, Entertainment, Health, and Professional Service.

The logic of this model is based on the statistical concept of influence function: the relation between a data point and the statistics of interest, such as quantile or variance. By re-centering the influence function with statistics of interest and regressing each observation's re-centered influence on the explanatory variables, one can estimate how these variables jointly shape the unconditional statistics of interest. Thus, the RIF regression allows us to examine how firm-size and the other covariates jointly affect the log wage at any specified point in the wage distribution by generating a point estimate for different quantiles in the distribution. That is, the RIF captures a change in the statistic of interest (e.g., the 25th percentile of the wage distribution) in response to a change to an explanatory variable(s).

Analytically, the RIF regression provides advantages over more common estimation techniques. While a standard regression compares mean differences, the RIF allows researchers to estimate quantile-specific effects. This is a useful feature, especially as many studies show that the effects of explanatory variables are rarely uniform throughout the distribution of outcomes. A well-known example is the effect of union status on wages. Unionized workers earn more than nonunion workers on average, but the positive effect diminishes for workers with higher wage potential and turns negative for workers at the higher end of the wage distribution (Lemieux, 2008). Precisely because of this mean-reverting nature, union density tends to reduce wage inequality. Similarly, the effect of the minimum wage is salient at the lower end of the wage distribution but becomes negligible at higher levels (Autor, Manning, & Smith, 2016), and the effect of working in finance is greatest at the higher end of the wage distribution (Lin, 2015). For a further illustration of how the RIF approach contrasts with an OLS approach, please see the online appendix.

It should also be emphasized that the quantile estimates obtained by the RIF regression are different from those of the standard quantile regression (Hao & Naiman, 2007). A quantile regression obtains the coefficients through the asymmetrically weighted minimization of the residuals. Thus, the associations are estimated across the conditional or residual distribution. For example, a quantile regression would provide us with an estimate of how the impact of firm size varies across the distribution of a specific cell, such as high school graduates. However, researchers are typically more interested in absolute or unconditional effects while controlling for covariates like education, which is what the RIF regression estimates (Dube, 2014). This also makes RIF regression coefficients easier to interpret.

The Re-centered Influence Function for the τ th quantile is:

$$RIF(y; q_\tau) = \frac{\tau - \mathbb{1}\{y \leq q_\tau\}}{f_Y(q_\tau)} + q_\tau \quad (1)$$

where y denotes the observed outcome; $\mathbb{1}\{y \leq q_\tau\}$ is an indicator function, which equals 1 when y is equal or smaller than q_τ and equals 0 otherwise; and $f_Y(q_\tau)$ is the probability density of Y at q_τ , which is approximated by using a kernel function in the analysis. Put differently, we first estimate a series of linear probability models to obtain the influences of the explanatory variables on one's likelihood to be above or below a given quantile. We then divide the coefficients by the local probability density to obtain their marginal effects on wages.

To examine the varying firm-size wage premium, we estimate the models as:

$$RIF(y_{t,i}; q_{\tau,t}) = \alpha_{\tau,t} + \sum_j^J \beta_{j,\tau,t} S_{j,t,i} + \sum_k^K \beta_{k,\tau,t} X_{k,t,i} + \varepsilon_{t,i} \quad (2)$$

where $q_{\tau,t}$ denotes the τ th quantile at period t , i denotes individual, S indicates the size of the firm where worker i was employed, j denotes the firm size categories, X denotes the other controls in the models, which is indexed by k . The coefficients of interest that are associated with firm size are $\beta_{j,\tau,t}$. To detect how the premium changed over time, we estimated a series of year-centered, exponentially weighted equations to obtain “moving average” coefficients. Because the sample size differs by year, we equalized the importance across years by assigning a year-specific inverse probability weight to each observation:

$$W_{i,p} = 1/N_p$$

where W denotes the weight of observation i , and N denotes the total number of observations in year p . To estimate the equation for year q , we further assigned an exponential weight to each observation based on the distance between p and q . That is:

$$W_{i,p,q} = \alpha^{|p-q|} W_{i,p}$$

where α denotes the smoothing factor between 1 and 0. We used 0.7 as the smoothing factor in the following analysis to detect broad trends. Although a smaller smoothing factor would be more responsive to sudden shifts, such shifts are not plausible for the social processes examined in this paper.

RESULTS

Main Results

Table 2 presents the partial coefficients and robust standard errors predicting logged wage at five wage percentiles from the pooled regression models for the years 1989 to 2014. Human capital characteristics performed as expected. Workers with more education earn higher wages in general but these effects vary based on the credential and on their location in the wage distribution. Compared to workers without a high school diploma, those who completed high school have the greatest advantages at the lower end of the distribution, while those with more than a college degree enjoy the greatest wage bump at the higher end. Age, a proxy of experience, has a positive effect on wages, and its effect is strongest in the middle of the distribution. Consistent with previous findings, union status has the strongest effect in the middle of the distribution but reduces wages at the higher end. Part-time status, in contrast, benefits those at the higher end of the distribution but not those at the lower end, suggesting that the effect is contingent on worker skill (Kalleberg, 2011).

|---- Insert Table 2 about Here ----|

To test Hypothesis 1, we first compare the coefficients across firms of different sizes, with those of fewer than 100 workers as the reference group. In order to better facilitate comparisons of the coefficients across the 15 firm-size and wage quantile combinations, we conducted a series of Z-tests and present in the online appendix a matrix where each cell contains the p -value for the difference in coefficients (for a discussion of the procedure, see Paternoster, Brame, Mazerolle, & Piquero, 1998). Consistent with the literature, we see that larger firms tend to pay higher wages even after accounting for human capital and other compositional differences. For example, at the 10th and 25th percentiles of the wage distribution, we see that workers in firms with 100 to 499 employees received a premium of around 10 percent, compared to their counterparts who work for firms with fewer than 100 employees. The premium increases to around 15 percent for this group of workers when they work for firms with 1,000 or more employees. Similar firm-size premiums exist at the higher end of the wage distribution, where those at the 90th percentile gain an advantage of between five and 15 percent by working in a larger firm.

Table 2 and the Z-test matrix also indicate that the firm-size wage premium varies significantly across the wage distribution and that the premium is greater for low- and middle-wage workers and smaller

for high-wage workers. For example, at the 10th percentile of the wage distribution, workers in firms with 100 to 499 employees make, on average, about 11 percent more than those in firms with fewer than 100 employees, while the same comparison at the 90th percentile yields a premium of 4.1 percent. Yet, we see a difference between firms with 100 to 999 workers and those with 1,000 or more workers. For the former firms, the wage premium is highest at the lower end of the wage distribution and declines progressively at higher points on the distribution. For the latter firms, the premium increases from the lower end to the 75th percentile and drops at the higher end.

To account for the possibility that our results are due to unobservable human-capital factors, we also ran models with individual-fixed effects with the matched CPS data, the results of which appear in Table 3. We also provide a matrix of the *p*-values of the difference in coefficients for each pairwise combination of firm size and wage quantile in the online appendix. Because we have only a two-year panel and a crude measure of firm size, we expect that most of the variance in wage will be absorbed by the individual-fixed effect term and that the firm-size wage premium will be underestimated. Moreover, the large number of control variables also makes the estimator much less efficient. However, it is still useful to see whether the general pattern holds under this stringent condition. As expected, these models yield more conservative estimates than do our cross-sectional models. Consistent with the results in Table 2, however, we still see that the firm-size wage premium is largest at the lower end and the middle of the wage distribution, while the premium at the higher end is either smaller or not significant. In fact, across all three firm-size categories the premium is significantly greater at the 10th, 25th, and 50th percentiles than at the 90th. Unlike the cross-sectional estimates, the same pattern persists for firms with 1,000 or more employees. Including the lagged dependent variable and removing the fixed effects in the models yielded qualitatively similar findings. These results are available upon request.

|---- Insert Table 3 about Here ----|

Taken together, the results offer partial support for Hypothesis 1. The results in general reveal that the firm-size wage premium is larger for low-wage and middle-wage workers than for high-wage workers; a pattern that is most evident at the beginning of our study period. However, in our cross-sectional analyses, we do see one exception to this pattern by firms with 1,000 or more workers. Specifically, the greatest wage

premiums paid by these firms occur at the 50th and 75th percentiles. That said, these firms are still compressing the wage distribution, especially at the beginning of our study period, but not in the manner we expected. Although showing more conservative estimates, the fixed-effects analyses conform more closely to our prediction in Hypothesis 1.

Temporal Variation

After examining how the firm-size wage premium varies across wage distribution, we investigated how these patterns change over time with a series of year-centered (1989 to 2014) and quantile-specific (10th, 25th, 50th, 75th, and 90th) regression models, which yield a total of 130 sets of estimates. Figure 2 presents the year-centered regression results from the CPS between 1989 and 2014. In total there are 15 graphs, representing each firm-size and wage-quantile combination. The *y*-axis is the logged wage premium (compared to the reference category) and the *x*-axis represents time. In each of the 15 graphs, the dark, shaded line represents the coefficient estimate generated by the RIF regressions for the specific wage quantile for each year. The shading represents the 95-percent confidence interval for that line. The other four lines represent the coefficient estimates for the other wage quantiles in the same firm-size category, which we included to enable comparisons across the wage quantiles in a single graph.

Similar to the results from in Table 2, we see that firm size is positively associated with the firm-size wage premium. That is, those employed by larger firms tend to receive higher wages. Furthermore, the size premiums tend to be larger for low- or middle-wage workers than high-wage workers. However, Figure 2 also shows that the premium for low-wage workers declined sharply between 1989 and 2000. For those at the 10th percentile of the wage distribution, the premium dropped from 13 percent (100–499), 17 percent (500–999), and 18 percent (1000+) in 1989 to 9 percent (100–499), 11 percent (500–999), and 12 percent (1,000+) in 2014. Conversely, the premium for high-wage workers remained stable throughout the period. Workers at the 90th percentile employed by firms with 1,000 or more workers experienced a modest but statistically non-significant wage increase in recent years. As a result, they received a larger firm-size premium than those at the lower end of the wage distribution ($p < 0.001$). To better facilitate comparisons across firm-size categories and to provide some additional insight into how the effects varied over time, we also present a plot of the coefficient estimates and their confidence intervals for the three firm-size

categories for the years 1989-2014, 1990-1994, 2000-2004, and 2010-2014 in the online appendix.

|---- Insert Figure 2 about Here ----|

Taken together, the results in Figure 2 add support for Hypothesis 1 by showing that the firm-size wage premium was generally greater for low- and middle-wage workers at the beginning of the observation period. The main exception is for individuals employed by firms with 1000+ workers and at the 75th percentile in earnings, who receive a premium comparable to those at the 50th percentile. Supporting Hypothesis 2, these results also show that the premium has been converging over time, mostly because premiums have declined for low- and middle-wage workers.

The Inequality Consequences of the (Declining) Firm-Size Wage Premium

Based on the results above, wage inequality was constrained because the firm-size wage premium is generally larger at the lower end and middle of the wage distribution than at its higher end. However, this effect has weakened over time. To examine more fully the extent to which firm-size wage premiums contract wage dispersion and to better illustrate the magnitude of our results, we ran two sets of counterfactual analyses. The purpose of these analyses is to allow us to compare the actual (or observed) wage gap with a counterfactual wage gap derived by manipulating the firm-size wage premium and, therefore, estimate the impact of firm-size wage premium on wage inequality.

In the first set of analyses, we estimate how wage inequality would be affected were there no firm-size wage premiums. To do so, we effectively subtract the firm-size wage premiums and estimate the wage distribution. We calculate the counterfactual wage trend as:

$$\ln(wage)_{\tau,t,CF1} = \ln(wage)_{\tau,t,O} - \sum_j^J \beta_{j,\tau,t} \overline{S_{j,t,l}} \quad (3)$$

with the coefficients obtained from Figure 2, where *CF1* denotes counterfactual wage at the τ th percentile in year t and O denotes the observed wage. We then compare the observed wage gaps between the 90th and 10th percentiles and between the 90th and 50th percentiles to the counterfactual gaps that remove the firm-size wage premium. The difference between the two trends can be interpreted as the extent to which firm-size wage premiums compress inequality. Stated differently, these analyses reveal how much higher wage inequality would be if there were no firm-size wage premium.

|---- Insert Figure 3 about Here ----|

Figure 3, panel A presents the observed and counterfactual trends for the 90th–10th and 90th–50th logged wage gaps. As expected, it shows that the level of wage inequality, in both measures, would have been higher without the equalizing effect of large firms. The difference is most salient for the 90th–50th wage gap in 1989, where the counterfactual inequality is 0.06 logged points (8%) higher than the observed inequality. However, because the decline in the firm-size wage premium has been disproportionately concentrated among low- and middle-wage workers, the role of large firms as an equalizer has weakened in the past three decades, which leads to a convergence of the observed and counterfactual trends.

A second way to demonstrate how much the diminishing firm-size wage premium has increased inequality is to constrain the premiums at their 1989 level and calculate a second set of counterfactuals:

$$\ln(wage)_{\tau,t,CF2} = \alpha_{\tau,t} + \sum_J \beta_{j,\tau,1989} \overline{S}_{j,t} + \sum_K \beta_{k,\tau,t} \overline{X}_{k,t} \quad (4)$$

in which the other coefficients and the compositions of workers are allowed to vary over time. The difference between the observed and the second counterfactual trends could be interpreted as the proportion of inequality growth explained by the reduced firm-size wage premium. In other words, these analyses reveal what the level of inequality would be if there had been no change in the premium.

Panel B of Figure 3 reveals that the observed wage gap between the 90th and the 10th percentiles grew, between 1989 and 2014, from 1.59 to 1.74, a difference of 0.15 logged points. The counterfactual trend also increased about 0.13 points, which indicates the firm-size wage premium could account for around 20 percent of the growth in 90–10 wage inequality. The observed wage gap between the 90th and the 50th percentiles, on the other hand, rose from 0.76 to 0.92, while the counterfactual trend increased to only 0.89. Thus, around 18 percent of the growth in 90–50 wage inequality is driven by the premium. Taken together, the counterfactual analyses show that the firm-size wage premium played a significant role in the rising wage inequality in the United States between 1989 and 2014. They also show that while large firms still compress the wage distribution, they do so to a much lesser degree than in the past. This suggests that although large U.S. firms in our observation period lowered wage inequality, their role as an inequality-

mitigating institution has diminished considerably over time.¹⁰

Robustness Checks

Occupation-Level Firm-Size Wage Premiums. To further test the possibility that large firms may hire different kinds of workers than in the past, we also ran our analyses at the occupation level. To do so, we first found a subset of detailed occupations (77 in sum) in which there were at least 400 observations between 1990 and 1994 and between 2010 and 2014. We ran regressions predicting the log wage by occupation with measures of firm size and all controls except industry (since many occupations are industry-specific) for the two periods, yielding 154 sets of estimates. We then plotted the changes in the coefficients (y -axis) for firm size between the earlier period and the later period against their average logged wage between 1990 and 1994 (x -axis). Doing so allows us to see how the firm-size wage premium changed during the observation period by low-, middle-, and high-wage occupations.

Figure 4 shows a plot of the changes in the wage premium for working firms with 1,000 or more workers in contrast to those with fewer than 100 workers at the occupational level. Estimates for the other firm-size categories are available upon request. The results indicate a consistent pattern whereby the firm-size wage premium for low and middle-wage occupations has declined over time. The firm-size wage premium for higher-wage occupations is more varied but the general pattern shows an increase in the average premium for higher-wage occupations. Because declines in the firm-size wage premiums are also occurring at the occupation level for low and middle-wage occupations, we have greater confidence that our effects are not due to unobserved characteristics of individuals or differential sorting by firms.

|---- Insert Figure 4 about Here ----|

DISCUSSION

Over the past several decades, there has been a general trend of rising wage inequality in the United States. While prior research has offered important insights into the roles played by human capital characteristics, market forces, and institutional changes for this rise, less attention has been given to the

¹⁰ We also tested models to examine how large-firm employment affected wage inequality as measured by the Gini coefficient. The results reveal a negative and significant effect of employment in each of the firm-size categories. We also see that this effect has diminished over time due to the differential declines in firm-size premiums. These analyses are available upon request.

study of how firms affect inequality in the broader labor market. Firms are of great importance to the study of inequality because they make decisions about who to hire, how much to pay, and how many to employ (Baron, 1984). In this study, we complement and extend existing research on inequality by posing an organizational-centered account for its rise. Drawing upon research on changing employment relations, we develop a set of arguments for why declines in the firm-size wage premiums might be more prominent for those at the lower end and middle of the wage distribution than for those at the higher end.

Specifically, we argue that large firms once served as a prominent equalizing institution that compressed wages by paying lower- and middle-wage workers a greater wage premium than their higher-wage counterparts. We found partial support for this claim. In our cross-sectional analysis, for firms with 100 to 999 workers, the results reveal that workers between the 10th and 50th wage percentiles received the largest firm-size wage premiums. The results for firms with 1,000 or more workers did not fully conform to our expectations, however. Between 1990 and 1994, the wage premiums provided by these firms were highest at the 50th and 75th percentiles and lowest at the 10th and 90th. Although these results vary from our predictions, they do suggest that these firms are still compressing wages. Firms with 1,000 or more employees were most actively compressing wages between the 90th and 50th percentiles, rather than between the 90th and 10th percentiles. Although the models are not perfectly comparable, the discrepancy between the cross-sectional and the fixed-effect analyses may suggest that the largest firms were not as selective when hiring low-wage workers. More generally, the results indicate differences between firms with 100 to 999 workers and firms with 1,000 or more workers, which would have been obscured had we only examined the average effect of the firm-size wage premium.

Moreover, the results of our analyses show a relatively steep decline in the firm-size wage premium for those between the 10th and 50th percentiles of the wage distribution. In contrast, our findings indicate that the premium has remained relatively constant for workers at the 90th percentile of earnings who are employed in firms with 100 to 499 and 500 to 999 employees and has increased modestly for comparable workers employed by firms with at least 1,000 workers. Hence, a portion of rising wage inequality in the United States between 1989 and 2014 can be explained by changes in the premiums large firms paid to their low- and middle-wage workers. These results therefore suggest that recent trends in employment relations

could be a fundamental driver of rising inequality.

Our study is not, however, without limitations that point to directions for future research. As we alluded to above, the firm-size wage premium is commonly thought to be a proxy for one or more factors that are difficult to observe with existing data (see Hollister, 2004). That limitation is relevant to our study as we cannot directly test the factors we believe may be responsible for the differential declines in the premium throughout the wage distribution. Notably, we have argued that the decline of ILMs, changes in organizational wage-setting practices, and the use of outsourcing and other nonstandard work arrangements weaken the ability of lower- and middle-wage workers to obtain a larger firm-size wage premium than their higher-wage counterparts; however, we cannot directly observe why the premium has declined and why it has declined more steeply for those at the lower and middle portions of the wage distribution. Although we extensively tested the possibility that our results are due to changes in the way large firms sort workers into jobs or other individual-level unobservable characteristics, we cannot rule out all alternative explanations. In the future, researchers may be able to leverage large-scale, matched employer-employee data to better test the mechanisms proposed in this study.

In addition, while we attempt to control for human-capital and workplace characteristics (such as industry and geography), there are limits to the data available in the CPS and SIPP surveys. For example, although level of education is a reasonable proxy for worker skill, there is obvious variation in the quality and status of educational institutions as well as quality of prior work experience. Our robustness checks with individual-fixed effects and lagged dependent variables help account for some of these unobservable differences, yet we expect that our ability to explain changes in the firm-size wage premium would be enhanced by having more complete measures of human-capital and other supply-side characteristics.

Similarly, one important limitation of our study is that we cannot track firms across time. One implication of this limitation is that we cannot determine whether our results are driven by the same group of large firms changing their wage-setting practices or by the changes in the composition of large firms employing different practices. We do know, for example, that large firms in contemporary periods are more likely to be in retail and other services while in prior decades they were more likely to be in industries such as manufacturing (Davis & Cobb, 2010). Although we attempt to account for these sectoral shifts through

the use of industry control variables, doing so does not fully address the concern that large firms today may be very different than those in earlier periods. Future work can potentially take advantage of large-scale, matched employer-employee data to determine whether adaptation and/or selection processes are driving the changes we observe.

We can also neither directly observe firms' employment practices nor account for other potential benefits of large-firm employment such as employer-provided health insurance, retirement benefits, or better working conditions. Since job benefits tend to be greater among high-wage workers, it is possible that including these other forms of remuneration would reveal even stronger results. With the availability of new datasets, future researchers should be able to control for additional workplace characteristics and employment practices, which would shed additional light on the dynamics we explore in this study.

We also recognize that declines in the firm-size wage premium among low- and middle-wage workers may be a proximal mechanism affecting wage inequality through which other, distal factors—such as globalization, technology, financialization, and union declines—operate. Still, the findings suggest changes in large firms' wage-setting practices play an important mediating role in how these other factors get translated into employment outcomes. Moreover, even if other factors are ultimately driving rising wage inequality, our results suggest that these factors are affecting large firms more than small ones, which has important implications for our understanding of how changes in the market and institutional environment are affecting employment relations. Future work could explore more fully the factors causing the firm-size wage premiums to decline more rapidly for low- and middle-wage workers.

Despite these limitations, our study contributes to studies of inequality and organizational studies in several ways. Recently, several scholars have argued that the reasons for the dramatic rise in wage inequality over the past several decades can be traced to changes in corporate employment (Davis, 2016; Kochan & Riordan, 2016; Shin, 2009; Song et al., 2015). Yet, empirical inquiry into rising wage inequality has largely neglected the role of firms (Cobb, 2016). We see this as a particularly significant oversight given the importance accorded to the role of firms in earlier studies of stratification (e.g., Kalleberg & Van Buren, 1996; Stolzenberg, 1978). In particular, the neo-structuralist stratification perspective argued that through their decisions regarding the allocation of jobs, how to reward workers for their labor, and where

they place their boundaries, organizations play a key role in how income is stratified (Baron & Bielby, 1980). Following this tradition and borrowing insights from research on how firm size affects stratification outcomes (e.g., Hollister, 2004; Villemez & Bridges, 1988), and research on organizational wage-setting (e.g., Cappelli, 2001; Doeringer & Piore, 1971; Nickerson & Zenger, 2008), we developed a set of arguments to explain how changes in the firm-size wage premium may differ across the wage distribution and link these differential changes to rising wage inequality.

Recent work has also explored the relationship between large-firm employment and societal rates of income inequality (e.g., Cobb & Stevens, 2016); however, this work implicitly assumes that the wage-setting practices of large firms have held relatively constant. To test this assumption, we leveraged insights from work on changing employment relationships (e.g., Cappelli, 2001; Lin, 2016) to develop a set of arguments for how changes in the employment relationship have played out in terms of firm-size wage premiums. Our findings suggest that large firms have become less willing to compress the overall wage distribution by providing their lower- and middle-wage employees a larger wage premium than that received by their higher-wage counterparts. Our study also builds on recent research on firm size and wage inequality by showing that the relationship between large-firm employment and wage inequality as documented in these studies has likely weakened over time. In so doing, we help place organizations at the center of the debate on rising wage inequality. Although changes in the firm-size wage premium, and employment practices more broadly, are not the sole determinant of wage inequality, they play an important yet under-studied role. Accounting for the ways in which these practices influence inequality has the potential to enrich our understanding of the dynamics that affect wage differentials.

In particular, a number of researchers have argued that the recent rise in wage inequality in the United States can be traced to the degeneration of social norms and institutions that minimized wage disparities. For example, both Levy and Temin (2011) and Piketty (2014) suggest that changing norms about extreme pay for executives and financial professionals, rather than market forces alone, play an important but underappreciated role in rising wage inequality. What we suggest in our study is that the norms about the role large firms played in providing premium wages for low- and middle-wage workers has diminished considerably. As previous commentators have noted, over the last several decades as global

competition, technological advancement, and shareholder pressures have become the dominant concerns for corporate executives, the view of the firm as a social institution has given way to viewing firms as something more akin to a bundle of contracts (e.g., Davis, 2009). Although we only observe the outcome of these changes, we speculate that the root causes of these developments may be due to the shifting conception of firm from one that serves both economic and social functions, such as providing decent pay and upward mobility to millions of workers to one whose sole purpose is to maximize shareholder value. We hope that future work may be able to more clearly connect changing norms about the role of firms in society to rising wage inequality.

Our study also advances the inquiries into the firm-size wage premium. Prior work on the premium has concentrated primarily on attempting to account for its existence (e.g., Brown & Medoff, 1989; Idson & Oi, 1999) and/or account for its decline (e.g., Even & Macpherson, 2012; Hollister, 2004). In this study, we took a different approach and examined whether previously documented declines in the premium are concentrated among lower- and middle-wage workers. As in prior research that has found that the union wage premium (Fortin, Lemieux, & Firpo, 2011), the financial wage premium (Lin, 2015), and the motherhood penalty (Budig & Hodges, 2014) vary across the wage distribution, we find strong evidence to support our claims. This is, to our knowledge, the first study to examine the distributional consequences of changes in firm-size wage premiums. Our study, therefore, points to the importance of examining not only the causes of the effect but also the consequences of its decline.

Finally, although contemporary organizational research commonly attends to concerns of the inner workings of organizations and/or the ways in which firms' environments affect their strategy, structure, routines, and performance, less frequently analyzed are the ways in which firms affect their environments. Importantly, however, because most economic activity in developed economies occurs through corporate organizations, understanding a host of higher-order outcomes can be potentially enhanced considerably by attending to the ways in which corporate decision-making affects field-, institutional, and societal-level outcomes. Despite calls from a number of researchers (e.g., Barley, 2010; Hinings & Greenwood, 2002; Pfeffer, 2010; Walsh, Weber, & Margolis, 2003), to date there have been relatively few attempts to more fully examine empirically the societal consequences of organizational actions. As such, we contribute to

organizational scholarship by linking together insights from studies on changing employment relationships and the firm-size wage premium to the study of wage inequality and by demonstrating empirically how changes to firm-size wage premiums have affected the wage distribution. The research presented here suggests an important role for organizational scholarship in the study of critical social issues like rising wage inequality.

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Table 1. Descriptive Statistics for Selected Variables

	Firm Size				Total
	<100 Workers	100-499	500-999	1000+	
Logged Wage	2.482	2.654	2.712	2.767	2.630
(S.D.)	(0.676)	(0.644)	(0.648)	(0.677)	(0.682)
<u>Human Capital</u>					
(Less than High School)					
High School	0.350	0.332	0.313	0.305	0.328
Some College	0.266	0.274	0.282	0.292	0.278
College	0.165	0.195	0.213	0.229	0.197
Advanced Degree	0.066	0.085	0.099	0.102	0.084
Age	41.393	41.711	41.758	41.722	41.588
(S.D.)	(10.829)	(10.684)	(10.599)	(10.667)	(10.733)
<u>Employment</u>					
Union	0.011	0.024	0.027	0.031	0.022
Part-Time	0.180	0.094	0.098	0.109	0.135
<u>Race & Ethnicity</u>					
(White)					
Black	0.088	0.112	0.124	0.124	0.108
Hispanic	0.160	0.123	0.106	0.097	0.127
Asian	0.043	0.043	0.045	0.049	0.045
Other	0.013	0.013	0.013	0.014	0.013
<u>Industry</u>					
(Agriculture)					
Mining	0.005	0.009	0.010	0.009	0.008
Construction	0.122	0.065	0.041	0.020	0.070
Manufacturing	0.119	0.254	0.241	0.225	0.187
Transportation	0.035	0.040	0.038	0.050	0.042
Utilities	0.009	0.017	0.022	0.047	0.025
Wholesale	0.045	0.048	0.041	0.033	0.041
Retail	0.173	0.100	0.105	0.205	0.169
Finance and Real Estate	0.061	0.070	0.081	0.105	0.080
Business Service	0.079	0.080	0.071	0.068	0.075
Personal Service	0.076	0.026	0.025	0.031	0.048
Entertainment	0.022	0.024	0.022	0.021	0.022
Health	0.092	0.137	0.189	0.119	0.115
Professional Service	0.126	0.116	0.105	0.063	0.100

Table 2. Partial Coefficients and Robust Standard Errors Predicting Logged Wage by Wage Percentiles

	Model 1 10th	Model 2 25th	Model 3 50th	Model 4 75th	Model 5 90th
<u>Firm Size</u>					
(<100 Workers)					
100-499	0.109*** (0.003)	0.096*** (0.002)	0.092*** (0.002)	0.070*** (0.002)	0.041*** (0.003)
500-999	0.134*** (0.004)	0.136*** (0.003)	0.137*** (0.003)	0.119*** (0.004)	0.071*** (0.005)
1000+	0.142*** (0.002)	0.154*** (0.002)	0.189*** (0.002)	0.206*** (0.002)	0.156*** (0.003)
<u>Human Capital</u>					
(Less than High School)					
High School	0.328*** (0.005)	0.306*** (0.003)	0.200*** (0.002)	0.101*** (0.002)	0.039*** (0.002)
Some College	0.445*** (0.005)	0.469*** (0.003)	0.385*** (0.003)	0.255*** (0.002)	0.144*** (0.003)
College	0.522*** (0.005)	0.612*** (0.003)	0.660*** (0.003)	0.654*** (0.003)	0.612*** (0.004)
Advanced Degree	0.515*** (0.005)	0.639*** (0.004)	0.784*** (0.003)	0.978*** (0.004)	1.253*** (0.007)
Age	0.019*** (0.001)	0.028*** (0.001)	0.042*** (0.001)	0.045*** (0.001)	0.035*** (0.001)
Age Squared	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)	-0.000*** (0.000)
Union	0.087*** (0.005)	0.116*** (0.004)	0.142*** (0.005)	0.091*** (0.006)	-0.064*** (0.008)
Part-Time	-0.315*** (0.004)	-0.258*** (0.003)	-0.108*** (0.002)	0.023*** (0.002)	0.120*** (0.003)
N	1419475	1419475	1419475	1419475	1419475
R-Square	0.107	0.201	0.257	0.241	0.162

Note: The models also include year fixed-effects, industry fixed-effects, racial status, the interaction terms between nine Census regions and metropolitan status, and the interaction terms between gender, marital, and parental status. Estimates are available upon request.

Table 4. Partial Coefficients and Robust Standard Errors Predicting Logged Wage by Wage Percentile, Individual-Fixed Effects Estimates

	Model 6 10th	Model 7 25th	Model 8 50th	Model 9 75th	Model 10 90th
<u>Firm Size</u>					
(<100 Workers)					
100-499	0.058*** (0.009)	0.052*** (0.006)	0.038*** (0.002)	0.021*** (0.005)	0.012 (0.007)
500-999	0.074*** (0.011)	0.054*** (0.008)	0.043*** (0.007)	0.026*** (0.007)	0.009 (0.010)
1000+	0.082*** (0.009)	0.073*** (0.006)	0.063*** (0.005)	0.055*** (0.005)	0.039*** (0.007)
N	459458	459458	459458	459458	459458
R-Square	0.703	0.764	0.797	0.797	0.773

Note: All models also include education, part-time and union status, year fixed effects and the interaction terms between gender, marital, and parental status. Estimates are available upon request.

Figure 1. Distribution of Workers across Four Firm-Size Categories



Figure 2. Logged Wage Difference from Firms with <100 Employees, 1989-2014

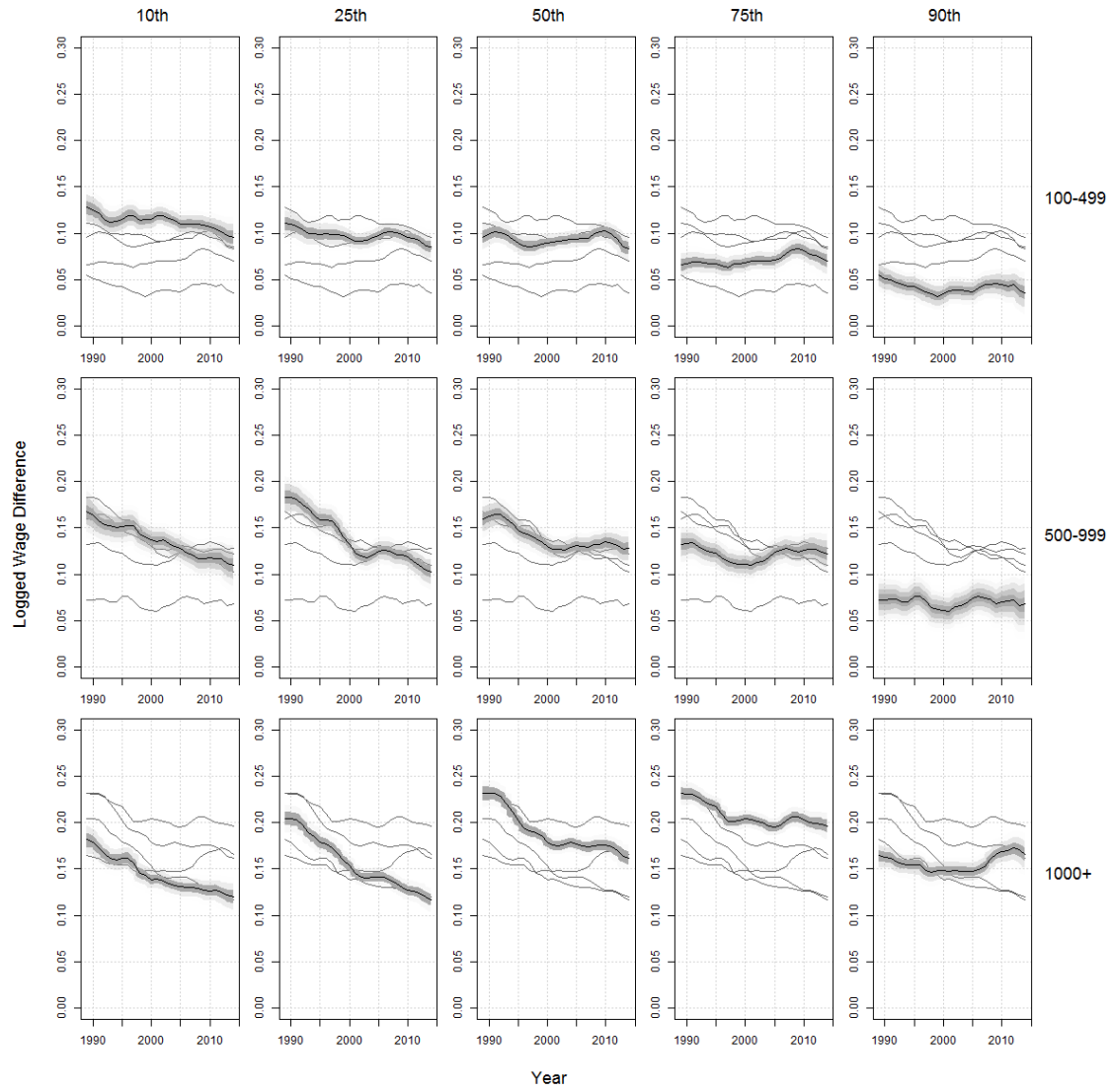


Figure 3. The Inequality Consequences of Firm-Size Wage Premium

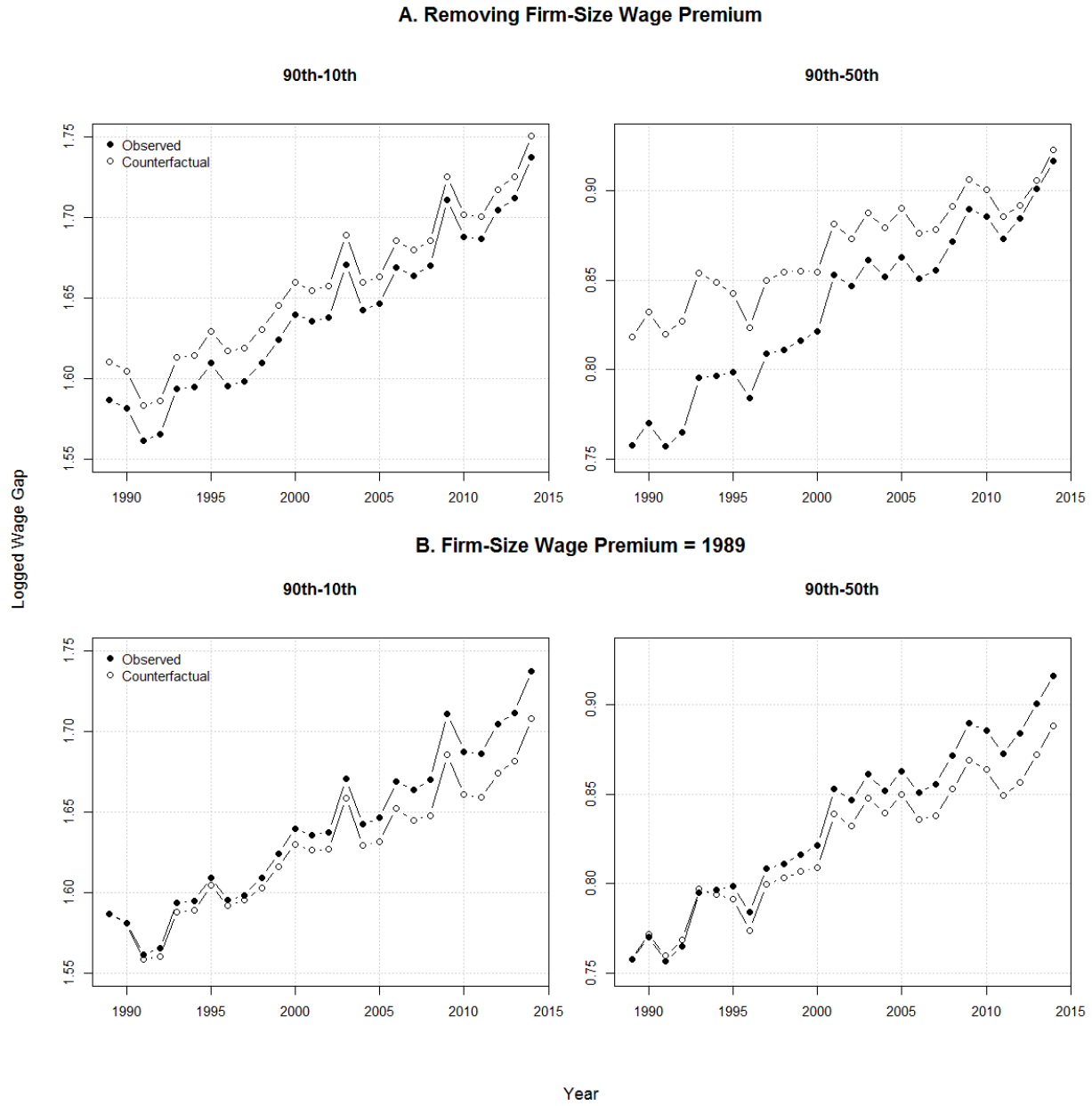


Figure 4. Change in the Logged Wage Difference from Firms with <100 Employees between 1990-1994 and 2010-2014

