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Temporary help employment in recession and recovery

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ABSTRACT

The temporary help industry, although small, plays a significant role in the macro economy, reflecting employers' growing reliance on temporary help agencies to provide flexibility in meeting staffing needs. Drawing on detailed temporary-help order data between 2007 and 2011 from a large, nationally representative staffing company, we provide insights into the characteristics of temporary help work, employers' use of temporary agencies to screen workers for permanent positions, and the industry's role in labor market adjustment over the business cycle. We estimate that the temporary help industry accounted for a large share of gross job losses and job gains over this period, as well as for a sizable share of net separations and hires. Nearly a third of assignments were observed to end prematurely due to worker performance problems (largely soft skills deficiencies) or quits, and hire rates of workers in temp-to-hire contracts were low. Although most temporary help assignments are short-lived, during the recession, companies lengthened temporary help assignments and reduced hiring from their pool of temps, possibly in response to economic uncertainty. Nominal wage growth among new temporary hires was weak over the five-year period and failed to keep pace with inflation.

JEL Classification Codes: J23, J21, J49

Key Words: temporary help employment, business cycle

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1 INTRODUCTION

The temporary help industry accounts for about 2 percent of average daily employment in the U.S. economy but plays an outsized role in workforce adjustment during recessions and recoveries. During the last recession, the largest since the Great Depression of the 1930s, employment in the temporary help industry contracted by 30 percent and accounted for 11 percent of net employment losses economy-wide. Correspondingly, the temporary help industry has accounted for over 13 percent of net employment gains since the official end of the recession in June 2009.

The large role that this small industry plays in the macro economy reflects the fact that, over the past two decades, employers have increasingly relied on temporary help agencies to provide greater flexibility in meeting their staffing needs. During this time, the industry, in turn, has expanded the types of workers it supplies to companies. While primarily providing female clerical workers to companies in the early years of the industry's history, temporary help agencies now supply large numbers of workers in production and other manual occupations and in a wide variety of professional and technical occupations to client companies. In addition to using temporary help agencies for flexible staffing, employers commonly screen potential hires through temporary help agencies, and temporary help jobs are widely viewed as an important port of entry to permanent employment (Booth, Francesconi, and Frank 2002).

Yet relatively little is known about the role that temporary help agencies play in labor market adjustment over the business cycle. In this paper, we draw on detailed data from a large, nationally representative staffing company on its temporary help orders between 2007 and 2011, a time period that spans the year prior to the start of the recession through the initial years of

recovery. Our data yield a number of insights into the characteristics of temporary help work, including the distribution of wages and assignment lengths, number of assignments individuals hold, the likelihood of securing a permanent job with the client company, and the incidence of and reasons for termination prior to assignment completion.

Our research also provides insights into the dynamics of temporary help employment in recession and recovery. In addition to accounting for a large share of net employment losses and gains during the recession and initial recovery period, the temporary help industry likely accounted for a large share of gross hires and separations in the economy. Conservative estimates suggest that from 2007 to 2011 between 11 and 14 percent of new hires and between 10 and 15 percent of separations in the economy occurred in the temporary help industry. During recession years, temporary help separations resulting from voluntary quits and firings for cause fell sharply, consistent with hypotheses that workers had fewer outside options and that the pool of workers available to the temporary help agency had improved.

If we control for individual fixed and random effects and thereby for likely improvements in the quality of temporary help workers during the recession, we see that employers lengthened temporary help assignments in most occupations and reduced their hiring of temp workers into direct-hire positions in all occupations in 2008 and 2009. These findings are consistent with the hypothesis that employers did not convert temporary help into permanent positions because of economic uncertainty. They also are consistent with speculations that employers are moving toward greater use of temporary and other types of contingent workers, though more years of data will be needed to test this hypothesis.

Employers may also use temporary help workers during recessions to reduce hourly wages. Wage rigidity can be a significant impediment to hiring during recessions, and we argue

that it is reasonable to suppose that wages in the temporary help industry—an industry characterized by high turnover and frequent new assignments in which wages may be reset—would be more flexible than wages of permanent employees during recessions. Using models with detailed controls and individual fixed and random effects, we find that nominal wages in most occupational categories rose, but rose more slowly during recession years. Real wages fell—but for nonprofessional occupations, the drop was in line with aggregate data showing real wage declines. Interestingly, real wage declines were greatest for certain professional occupations.

The remainder of the paper is organized as follows: the next section, Section 2, provides background on the temporary help industry and its role in recessions and recoveries, while Section 3 describes the data used in this study. Section 4 presents evidence on the characteristics of temporary help jobs, including the national representativeness of our sample of temporary help assignments and new evidence for workers on the distribution of wages, duration, number, and outcomes of temporary help assignments. Section 5 presents analysis on the role of temporary help employment as a buffer during the recent recession and recovery, and Section 6 examines evidence on nominal and real wage flexibility during the recession. The final section offers conclusions.

2 BACKGROUND ON THE TEMPORARY HELP INDUSTRY AND ITS ROLE IN RECESSION AND RECOVERY

Temporary help agencies place workers into jobs with client organizations. Contracts with the clients are for a fixed term, and during assignments, temporary help workers are legally the employees of temporary help agencies, which cover their wages and any benefits, withhold taxes, and pay the employer contribution to Social Security, unemployment insurance taxes, and

workers' compensation. Although temporary help workers are the legal employees of the agency, they work at the client's worksite, typically under the supervision of the client.¹

In its early years (the late 1940s), the temporary help industry primarily supplied female office workers to businesses (Hatton 2011). Since then, the industry has greatly expanded the type of work covered and, along with that, its share of employment in the economy. As shown in Figure 1, the temporary help industry's share of nonfarm payroll employment almost doubled during the 1990s, from about 1 percent at the start of the decade to 2 percent by its end, accounting for 10 percent of net new jobs during a decade characterized by extraordinary employment growth. Underlying much of the industry's rapid expansion was the supply of temporary help labor to U.S. manufacturing firms. In 1990, the share of staffing services employment in office and administrative support occupations was 42 percent, compared to 28 percent in blue-collar occupations.² By 2000, the relative importance of clerical and blue-collar occupations had reversed, with 47 percent of the staffing industry's employment in blue-collar jobs and just 28 percent in office and administrative jobs (Dey, Houseman, and Polivka 2012).

Temporary help employment was slow to recover from the 2001 recession, reflecting in part the sharp decline in U.S. manufacturing, although the share of manufacturing work performed by temporary help workers has continued to grow. In recent years, the industry has expanded into professional and technical occupations, which now account for about 16 percent of temporary help employment (Dey, Houseman, and Polivka 2012). Commenting on the evolution of the temporary help industry from clerical to manual to professional occupations,

¹ In some areas, temporary help agencies and clients have "joint employer status." For example, temporary help agencies and client organizations have joint legal responsibility for compliance with occupational safety and health regulations.

² Temporary help services make up about three fourths of the employment in the staffing services industry in government statistics. Occupational statistics broken out for the temporary help component of staffing services are not available prior to 2000.

Kelly Services CEO Carl Camden asserted, “There isn’t a profession that isn’t done on a temporary basis, from scientists to dockworkers. Kelly started as the ability of a housewife to make a little extra money. Today you have people around the world who make a living off of temporary work” (quoted in Rothschild 2012). In 2014, the share of nonfarm payroll employment in temporary help jobs rose to 2.1 percent, exceeding the previous peak of 2.0 percent reached in 2000.

In various special surveys and case studies, employers report that they often screen workers for permanent jobs through temporary help agencies, and for many jobs in the economy, temporary help agencies have become an important port of entry into permanent employment (see, for example, Abraham [1990]; Houseman [2001]; Kalleberg, Reynolds, and Marsden [2003]; Houseman, Kalleberg, and Erickcek [2003]; and Ono and Sullivan [2006]). Additionally, in some circumstances, employers may hire workers through these third-party intermediaries in order to lower benefits or other nonwage labor costs.³

Evidence from employer surveys, however, indicates that the most important reason for using temporary help agencies is to increase workforce flexibility. Employers typically use temporary help workers because they have a short-term need for labor—owing, for example, to an absent employee, seasonal demand, or a special project—or because, in an uncertain economic environment, they want to be able to quickly flex up or down their workforce to accommodate fluctuations in demand. Katz and Krueger (1999) suggest that temporary help firms have played an important role in increasing the efficiency of the labor market, by facilitating better firm-worker matches through screening and thus reducing firm hiring and

³ Because the temporary help agency is the employer of record, employers may circumvent ERISA and IRS nondiscrimination rules requiring that retirement and health insurance benefits broadly benefit their employees by hiring workers through temporary help agencies.

adjustment costs (and exerting downward pressure on wages) in times of changing labor demand. In fact, some have argued that in an economy that requires flexibility, many employers have come to view regular employees as “costly sources of rigidity” (DeLong 2009). According to Kelly Services’ Camden, “Companies’ use of temporaries used to be a gap measure. Now the largest corporations have a specific model of how much of their workforce is going to be temporary. It’s a critical path for companies to fill their talent needs” (quoted in Rothschild 2012).

Employers’ use of temporary help to increase workforce flexibility is most visible during recessionary periods, when many businesses are simultaneously affected by large demand shocks. Figure 1 clearly illustrates the growing role that temporary help agencies are playing in the macro economy during recessions and recoveries. The shaded areas delineate the three recessions since 1990. From 1990 to 1991, average nonfarm payroll employment fell by 1.0 percent, while temporary help employment fell by 2.8 percent and accounted for 2.9 percent of net employment losses. Largely reflecting the temporary help industry’s growth in supplying labor to manufacturers, temporary help evidenced much greater cyclical sensitivity during the 2001–2002 and 2008–2009 recessions. From 2000 to 2002, average nonfarm payroll employment fell by 1.1 percent—similar to the drop experienced a decade earlier—but temporary help employment fell by 16.7 percent and accounted for 24.3 percent of the net employment declines. During the recent, more severe recession, as measured between 2007 and 2009, average annual nonfarm payroll employment fell by 4.9 percent while temporary help employment dropped by 29.8 percent, accounting for 11.4 percent of net employment declines during this period. Alternatively, BLS Current Employment Statistics data show that temporary help employment accounted for 89 percent of average annual net job gains from 2009 to 2011,

and between the trough of the business cycle in June 2007 and December 2014, the temporary help industry accounted for 13.1 percent of net employment growth.

Coming out of a recession, the temporary help industry may play a role in tempering wage rigidity, which has long been posited as an impediment to recovery during recessions (Yellen 1984). Although the involuntarily unemployed might work for lower-than-prevailing wages and employers could accordingly reduce wages in response, employers are generally reluctant to cut wages, which can lower employee morale and reduce productivity among existing workers or result in costly labor turnover. And although employers sometimes offer significantly lower wages to newly hired employees, setting up a two-tiered wage system within an organization can contribute to resentment and lower productivity among employees. Employers' extensive hiring through temporary help firms during the initial stages of recovery may better enable firms to effectively offer more than one wage plan, paying lower wages to contract labor hired through an agency (Houseman 2007; Houseman, Kalleberg, and Erickcek 2003; Yellen 1984).

Our detailed data from a staffing firm enable us to gain greater insight into the growing role that the temporary help industry is playing during periods of recession and recovery. We turn now to a description of these data.

3 DATA

We have detailed data from a large, multinational staffing firm on its North American (Canadian and U.S.) operations from 2007 through 2011. These data include information on all orders (temporary work assignments) with private and public sector organizations over the five-year period that spans the year prior to the start of the recession, through the recession, to the

initial years of recovery. These order-level data include information on more than 800 job classifications organized into 13 broader occupational categories, the start and end date of each order, pay and hours for each calendar year in which an individual worked on the order, individual identification number and birth date, location (city, county, state or province, country) of the branch placing each order, detailed classification of outcomes of the order (including information on employee performance), and the type of order (e.g. temporary help, temp-to-hire, or nontemporary placement).

The focus of our analysis is the role of the temporary help industry during the most recent recession and recovery in the United States. To that end, we restrict our data in several ways. First, we exclude orders placed in Canada. In addition, we drop orders in educational occupations, which are primarily substitute teachers (typically one-day assignments). Accordingly, although substitute teachers account for about half of all of the staffing company's orders, they represent a small share of total hours worked because of the short duration of the typical order. Moreover, use of substitute teachers varies little over the business cycle.

In addition to providing temporary workers, large staffing companies like the one represented in our data hire individuals to perform work on a longer-term basis for client organizations. Because our focus is on the use of temporary help workers over the business cycle, we include in our analyses only orders classified as temporary help or temp-to-hire. In the latter type of contract, which accounts for about 4 percent of orders in our sample, the client is explicitly evaluating the temporary agency worker for a permanent position in its organization. The data set used in the analyses we report in this paper includes more than 1.8 million orders.

4 CHARACTERISTICS OF TEMPORARY HELP JOBS

The staffing company that provided our data is generally representative of the temporary help sector in the United States. Figure 2 shows the distribution of temporary help hours by broad occupational category over the five-year period covered by our data. The largest occupational category, by far, is light industry, which accounts for 44.5 percent of hours worked in our data, followed by office occupations (24.7 percent), contact center (8.1 percent), and electronic assembly (6.5 percent). Over two-thirds of the hours are worked in industry and office occupations, while over 80 percent of hours are worked in the top four service lines.

Although data from the Bureau of Labor Statistics' Occupational Employment Statistics program use a different occupational classification system, the distribution of employment by broad occupational category in the OES data is consistent with that in our company data. In 2006, blue-collar occupations made up 49 percent of employment in temporary help services in the OES data (Dey, Houseman, and Polivka 2012). By comparison, in 2007 light industry and electronic assembly, which together compose manual occupations in our company data, accounted for 48 percent of hours in our sample. Office and administrative support occupations accounted for 25 percent of temporary help employment in the OES data in 2006 and for 25 percent of temporary help hours in our data in 2007.⁴ Also, similar to the national data, a small but sizable share of work is in professional and technical occupations. Science, engineering, information technology (IT), accounting and finance, legal, health care, and other professional occupations accounted for 13 percent of temporary help hours in 2007 in our data, compared to 16 percent of temporary help employment in the OES data in 2006.

⁴ For any sample of workers, the hours and employment distributions by occupation generally will be very similar. The two will differ only to the extent that average hours vary across occupations. The OES data provide point-in-time employment figures, whereas our company data show hours worked over the course of a year.

The temporary help industry in the United States is heterogeneous, and we do not claim that our company data are representative of all firms in the industry. To the extent that they describe a typical, large national temporary-help-service firm, however, they allow us to uncover a number of interesting insights about the temporary help sector not possible with published government statistics and administrative data previously analyzed by researchers. Below, we examine wage patterns, benefits issues, assignment length, the incidence of multiple temporary job holding, and outcomes of temporary help assignments.

4.1 Wages and Benefits

Table 1 shows the distribution of hourly wages in our order-level sample for all occupations and by broad occupational category. Hourly wages for temporary help jobs are relatively low. The median hourly wage in our sample is \$10; those in the ninetieth percentile earn \$15. Wages in manual occupations are the lowest and display little range. In light industry, the largest occupational category, the hourly wage at the twenty-fifth percentile of the distribution is \$8.25, and it is just \$11.50 at the ninetieth percentile. An examination of the detailed job codes reveals that the staffing company does not place individuals into the skilled trades, such as welders and machinists, a fact that helps explain the relatively low wages at the high end of the distribution of temporary-help manual occupations. In office occupations, the second largest category, the median hourly wage is \$11 and ranges from \$10 at the twenty-fifth percentile to \$16 at the ninetieth percentile.

Hourly wages in the professional and technical occupations, not surprisingly, are higher and display considerably greater range. In legal, engineering, information technology, accounting and finance, and creative services occupations, those at the ninetieth percentile of the

wage distribution earn \$40 per hour or more. Thus, a small but notable minority of temporary help workers are in relatively highly paid jobs.

Although we do not use our data to assess how temporary help workers' wages compare with the wages these workers would have earned as direct-hire employees, recent research indicates that temporary help wages are often similar to and sometimes higher than wages in comparable direct-hire positions (Autor and Houseman 2010; Hamersma, Heinrich, and Mueser 2014; Heinrich, Mueser, and Troske 2009; Houseman, Kalleberg, and Erickcek 2003). Their benefits, however, are generally lower. Temporary help workers rarely receive health or retirement benefits, and indeed, savings on such benefits can be an important reason for employers' use of staffing agencies. ERISA laws and nondiscrimination clauses in the IRS tax code can make it difficult for an employer to offer generous benefits to one group of employees but not to another.

In addition, the Affordable Care Act (ACA) may provide public and private sector employers with further incentives to use temporary help agencies, given that employers are required to provide full-time employees with health insurance benefits (or pay a penalty), but the IRS rules governing what constitutes a full-time employee exempt temporary help agencies from covering most of their temporary workers (Dillender et al., 2014). In our data, the share of temporary help workers averaging more than 1,500 hours annually with the company is under 4 percent in all broad occupations except information technology (7 percent) and engineering (10 percent). Moreover, because temporary help agencies control the offer of assignments to workers, they can take measures to avoid crossing the full-time threshold in any given year. Indeed, some temporary help agencies have been marketing avoidance of employer mandates in the ACA to prospective clients (Cook 2012).

4.2 Assignment Length and Number of Assignments

Temporary help assignments are, in principal, short-term. Nevertheless, case studies and media reports point to instances in which workers are on assignment for extended periods of time—often more than a year—as temporary help workers (Eisenberg 1999). Our data include start and end dates for each assignment an individual works, permitting us to directly examine the incidence of long-term assignments. We find that although assignments lasting more than a year represent a small share of all temporary help assignments, they are prevalent in certain professional occupations. Moreover, in all occupations these long assignments account for a sizable share of the hours worked in the temporary help industry, and in some occupations, a majority of hours worked occur in assignments that last more than one year.

The left panel of Table 2 shows the distribution of assignment length by broad occupational category. To better observe the assignment length distribution in the upper tail, we limit the sample in Table 2 to those assignments commencing in the years 2007, 2008, and 2009; assignments that are still open at the end of 2011 will have lasted for two or more years. Most assignments in our temporary help firm are short; about 58 percent last under a month, while under 3 percent last between one and two years and only about 1 percent exceed two years in length. The distribution of assignment length varies considerably across occupations, however. At one extreme, more than half of marketing assignments last just one day, and the duration for 95 percent of them is under a month. A typical marketing assignment might involve working in a booth at a special event, which explains the short duration of most assignments in this area. In light industry and office, the two largest occupational categories, more than half of assignments last less than a month, while under 5 percent exceed one year. In contrast, assignments in professional and technical occupations tend to be considerably longer. In the two largest professional occupations, science and engineering, the large majority (more than 85 percent) last

more than one month and assignments of over a year are common; the duration is between one and two years for 13.2 and 14.7 percent of assignments and over two years for 6.1 and 9.5 percent of assignments in science and engineering occupations, respectively.

Such figures on assignment length can be somewhat misleading, however, because, particularly in nonprofessional occupations, the data are skewed by the high fraction of workers who quit their assignment or are fired for performance problems before the assignment is complete. Moreover, by definition, long assignments account for a larger share of the total hours worked than do short assignments. The right panel of Table 2 shows the share of all hours worked from 2007 through 2009 that were in assignments of varying durations: under one month, from one to three months, from three to six months, from six to 12 months, from one to two years, and over two years. Long assignments account for a substantial share of temporary help work overall and in all broad occupational groups. While only 2.7 percent of temporary help assignments during the period lasted between one and two years, these assignments accounted for 18.3 percent of hours worked; similarly, while 1.2 percent of assignments during this period lasted more than two years, they accounted for 13.6 percent of hours worked. In light industrial occupations, more than a quarter of hours worked were in assignments lasting over one year, of which almost 10 percent were accounted for by assignments lasting over two years. In engineering occupations, about two-thirds of hours worked occurred in assignments with over one-year durations, of which more than 40 percent were in assignments with durations exceeding two years.

The total amount of time an individual works for a temporary help agency is determined by the number of assignments as well as their average length. While the typical individual holds only one or two assignments over our period, a significant number hold many. Table 3 shows

the mean and median number of assignments held by individuals in our sample over the five-year period, by broad occupation. Among all individuals in our data, the median number of assignments with this staffing company is two, whereas the mean is 10. The figures broken out by occupation clearly show an inverse relationship between the length of assignment, depicted in Table 2, and number of assignments. At one extreme, marketing assignments are typically short—lasting only a day—but the median individual working in marketing holds 13 assignments, and the mean number of assignments is 49. In contrast, occupations characterized by very long assignment lengths are associated with a small incidence of multiple assignment holding. In science, engineering, IT, and accounting and finance occupations, the median individual holds only one assignment with the staffing company over the five-year period, and in all but IT, the mean number of assignments is less than two.⁵

4.3 Assignment Outcomes

Our data include detailed coding on why the order closed, and these codes provide insights into the problems temporary help agencies have in matching workers and firms and the extent to which client organizations use temporary help agencies to screen workers for permanent jobs. Our data include 107 unique reasons for why the order was closed, although a couple of dozen are used in over 90 percent of cases. We group these codes into several broad categories: the worker was terminated for a performance problem, the individual quit the assignment prior to completing it, the temporary worker was hired by the client at the end of the assignment, the worker was not hired but otherwise satisfactorily completed the assignment, and the assignment ended for miscellaneous other reasons. Among those terminated for performance

⁵ Our data only cover assignments in one staffing company, and it is possible that individuals take assignments with other temporary help agencies.

problems, we further distinguish whether the performance issue was related to “hard” or “soft” skills. Hard skills pertain to the individual’s ability to perform the job tasks, while soft skills include tardiness, unexcused absence, fighting on the job, failing a drug test, and the like. Similarly, in cases where the temporary worker quits before completing the assignment, we distinguish whether the worker left because of dissatisfaction with the job (with duties, pay, benefits, or hours) or because of personal reasons (e.g. family needs, school conflict).

The top panel of Table 4 shows the distribution of reasons an order was closed by broad occupation for assignments commencing between 2007 and 2010.⁶ Among the most striking findings in the table is the high rate at which temporary help workers are terminated for performance problems, particularly in the manual, low-paying occupations. In light industry and electronic assembly, about one in four orders end in termination for a performance problem. Moreover, about two-thirds of terminations for performance problems are the result of soft skills deficiencies—largely absenteeism and tardiness. These findings suggest that soft, not hard, skills are the most important barrier to employment for low-paid, low-skilled workers, which is consistent with recent research suggesting that the importance of soft skills has been undervalued in labor market policy (Heckman and Kautz 2012). In addition, about 13 percent of orders end because the worker has quit before the assignment is completed, with the reasons evenly split between dissatisfaction with the assignment and personal reasons. The temporary help worker quits the assignment before completing it in 15 percent or more of orders in light industry, electronic assembly, contact center, scientific, engineering, and accounting and finance occupations.

⁶ We omit assignments commencing in 2011 because a high share are still open at the end of the year and so the reason the assignment ended is missing.

Together, these data point to a significant challenge that temporary help agencies have in finding good matches between workers and organizations. Overall, more than 30 percent of assignments end either because the temporary worker quits or is fired, and that figure tops 40 percent in three out of the four largest occupational groupings—light industry, contact center, and electronic assembly, which also constitute the lowest-paying occupations. It is possible that the difficulty of recruiting and retaining workers in these positions helps explain companies’ extensive reliance on temporary help agencies to fill them. In other words, as high as these failure rates are, companies may use temporary agencies because they can recruit and retain the low-skilled, low-paid workforce at lower cost. With our data, however, we are unable to determine whether companies could recruit temporary workers on their own in a more effective and less costly manner.

Across all orders, a small share, 6.6 percent, end in a hire by the client company. The extent to which organizations recruit permanent staff from temporary help agencies, however, varies considerably across occupations. In the nonprofessional occupations, assignments in contact centers and electronic assembly are most likely to end in a hire by the client (13 percent). In professional occupations, which are associated with long assignments, a relatively high share of temporary orders end in hires: most notably, 22 percent in science, 20 percent in accounting and finance, and 16 percent in engineering. Among professional occupations, legal is an outlier, with only 4 percent of orders resulting in hires by the client.

The figures in Table 4 show the share of assignments ending in a direct-hire position with the client. Because individuals may hold multiple assignments, the probability of ever obtaining a direct-hire job with a client is higher. Over the five-year period studied, almost 14 percent of individuals taking temporary help or temp-to-hire assignments obtained at least one job with a

client. That share was 11.6 percent for those in light industry occupations and 17-19 percent for those in office, contact center, and electronic assembly occupations; those in science occupations had the highest hire rate with clients, 30 percent. The interpretation of the hire rate data in the top panel of Table 4 is complicated by the fact that a sizable, but unknown, share of temporary help workers do not want permanent employment, at least not with the client organization.

As noted, 4 percent of orders are in temp-to-hire contracts. In these cases, the client company is explicitly trying out a worker for hire, and the worker understands that he or she is auditioning for the job. The bottom panel of Table 4 shows the distribution of outcomes of temp-to-hire orders by broad occupation. While the share obtaining jobs with the client is considerably higher in temp-to-hire contracts than in regular temporary contracts, a minority of these assignments ends in a hire.⁷ Overall, 27.6 percent of temp-to-hire contracts result in a hire, and in all occupations, the share is 50 percent or less. The share of temp-to-hire orders ending in termination for performance problems is greater than the share resulting in a hire and exceeds the share terminated for performance problems in regular temporary help contracts. In light industry, 26 percent of orders are terminated because of a performance problem related to soft skills and another 10 percent are terminated owing to lack of hard skills. It is plausible that companies would be more aggressive in terminating workers for performance problems when they are screening them for a possible hire. The data also show that a sizable minority of workers (19.4 percent overall) quit before the assignment ends, either because of dissatisfaction with the job (10.7 percent) or for personal reasons (8.6 percent). In addition, a sizable minority of temp-to-hire assignments (19.4 percent overall) are satisfactorily completed but do not end in a hire.

⁷ In regular temporary help contracts, 6.0 percent of orders result in hires. Although the probability of hire is considerably lower than in temp-to-hire contracts, a majority of temporary help workers hired by client organizations come from regular temporary help contracts.

The prevalence of this phenomenon is high in both nonprofessional and professional occupations.

Although a minority of those in temp-to-hire contracts obtains a job with the client company, it is important to note that turnover among newly hired employees is generally high in the U.S. economy. Temporary help workers spend their probationary period—which often runs 3 months or longer—on the payroll with the temporary help company, and the distribution of tenure with the client company (including the tenure on the payroll of the temporary help company) may not differ substantially from that of new direct-hire employees. To provide a benchmark for the outcomes among workers in temp-to-hire contracts reported in Table 4, we utilize Census Bureau Quarterly Workforce Indicators (QWI), which are derived from the Longitudinal Employer-Household Dynamics (LEHD) linked employer-employee microdata. Published QWI statistics permit the construction of a couple of measures of job stability: 1) the share of workers hired at some point during the quarter who still have earnings from that employer in the following quarter, and 2) the share of newly hired employees who receive earnings from a particular employer for at least one full quarter.⁸ We use these definitions to construct comparable measures for workers in temp-to-hire contracts in our company data. In instances where the individual ends the assignment but is hired by the client company, we assume the employment relationship continues. Because some individuals hired by the client will subsequently quit within one or two quarters, our measures will somewhat overstate the stability of jobs in our temporary help sample.

⁸ Specifically, the first measure of stability includes individuals with no earnings from a particular employer in quarter $t-1$, but with earnings from that employer in quarters t and $t+1$. The second measure includes individuals with no earnings from a particular employer in quarter $t-1$, but with earnings from that employer in quarters t , $t+1$ and $t+2$.

In the national data between 2007 and 2011, 66 percent of newly hired employees had some earnings in the quarter following the quarter of hire and only 44 percent of newly hired employees remained with their employer for at least a full quarter. In our sample of workers in temp-to-hire contracts, the comparable figures are 61 percent and 38 percent, respectively, or 5 to 6 percentage points below the national average during this period. Measures of job stability, however, differ greatly across occupations in our sample. Among those in light industry occupations, for example, 53 percent of those in temp-to-hire contracts are still with the client company in the quarter following the start of their assignment and 30 percent are employed with the client organization for at least a full quarter. These job retention figures are 15 to 25 percentage points below comparable figures for new direct-hires in manufacturing, wholesale trade, and transportation and warehousing—industries where those in light industry occupations are generally placed.⁹

Together these data indicate that client organizations may be quite selective about whom they hire from the ranks of temporary help workers. Case study evidence suggests that managers may feel they can be more selective in their hiring when they work through temporary help agencies because they do not personally have to engage in the unpleasant task of firing the worker on probation (Houseman, Kalleberg, and Erickcek 2003). Managers may also feel that screening through temporary help agencies lowers the odds of being sued by a disgruntled worker who is fired following a probationary period. Nevertheless, we caution that while comparisons to national data provide some context for the modest hiring rates that we observe in our sample of temporary workers on temp-to-hire contracts, we cannot control for unobserved differences in worker and job characteristics in our sample and the national data, and therefore

⁹Note that in some cases those who appear in the LEHD data as new direct-hires will have already been screened through a temporary help agency.

we cannot tell whether the temporary help assignments result in better or worse job matches than would result if organizations directly screened new hires.

5 TEMPORARY HELP EMPLOYMENT AS A BUFFER IN RECESSION AND RECOVERY

As noted earlier, BLS data show that the temporary help industry accounted for a significant share of net job losses as the economy moved into recession, as well as net job gains during the recovery. The temporary help industry has played an increasingly important role in labor market adjustment during recessions and recoveries, in part because of its rapid expansion into the cyclically sensitive manufacturing sector in the 1980s and 1990s (Dey, Houseman, and Polivka 2012). Consistent with this fact, our data show the largest cyclical variations in hours worked occurred in light industrial and electronic assembly occupations, which primarily serve manufacturing clients. Figure 3 displays annual hours for each of the four broad nonprofessional occupational categories and for professional occupations combined over the 2007–2011 period. Hours in all occupations declined in 2008 and 2009, and in most occupations hours began rebounding in 2010. While the relative decline in hours worked was particularly sharp in light industry and electronic assembly (as well as in office), the recovery in 2010 and 2011 was the strongest in these occupations. Indeed, by 2011, hours in light industry and electronic assembly were substantially higher than in 2007. Our data suggest that not only did the temporary help industry account for much of the net job destruction and gains over the recession and recovery, but it also accounted for a high share of the gross hires and separations. BLS uses data from the Job Openings and Labor Turnover Survey (JOLTS) to estimate gross hires and separations for payroll employment for the economy overall and by aggregate industry. According to BLS data, the professional and business services industry, to which temporary help services belong,

accounted for between 17 and 21 percent of gross hires and separations in the economy between 2007 and 2011, although only 12 to 13 percent of workers were employed in this sector.

We use our detailed company-level data, with information on the start and end dates of each order held by an individual from 2007 through 2011, to estimate hire and separation rates. In order to generalize our findings to the temporary help industry overall, we must make some assumptions. The first is that hire and separation rates in our company are generally representative of the industry. The size and national reach of the company, along with the similarity of its occupational distribution to that of the temporary help industry as a whole, suggest this assumption is reasonable. In addition, we must make assumptions about what constitutes hires and separations in the temporary help firm. A temporary help firm may not consider an individual who starts a new assignment a hire if that individual recently was on another assignment for the agency. Similarly, the firm may not count an individual who ends an assignment as separating from the firm if that individual will receive a new assignment within a short time. The questionnaire used for temporary help firms in the JOLTS survey leaves the respondent with considerable discretion in classifying hires and separations.¹⁰

We first compute monthly hires and separations for the firm using conservative assumptions: hires are individuals who commence a new assignment during the month and have not been on another assignment within the previous 30 days; similarly, separations are individuals who terminate an assignment and are not placed into a new assignment during the subsequent 30 days. The hire and separation rates are then computed as the number of hires or separations divided by the number of unique individuals on assignment in the firm during the

¹⁰ For respondents from temporary help firms, the JOLTS survey defines a hire as an addition to the payroll, who “may be a new hire or previously separated rehire, may be permanent, short-term, or seasonal, or may be a recall from layoff.” Separations are defined as quits; layoffs, discharges, and terminations of permanent, short-term or seasonal employees; and retirements, transfers to another location, employee disability, and deaths.

middle week of the month.¹¹ The top panel of Table 5 displays the average monthly hire and separation rates computed using this first assumption (labeled “low”) along with average monthly hire and separation rates for all nonfarm payroll employment from the JOLTS data. In our data, the hire and separation rates in the temporary help firm are on the order of seven to eight times higher than those for the economy overall. If our company is representative of the temporary help industry, our data imply that the temporary help industry accounted for 11 to 14 percent of gross hires and 10 to 15 percent of gross separations during the period, as shown in the bottom panel of Table 5.

Arguably, the hire and separation rates reported in Table 5 do not fully capture the importance of the temporary help industry in filling jobs in the economy. For temporary help workers, the temporary agency is the employer of record, and, consistent with the concept of hires and separations used in the JOLTS survey, we compute hire and separation rates between the temporary help employee and the agency. However, each order commenced and terminated represents a hire and separation with a client company. In the top panel of Table 5, we also display estimates in which we compute hire and separation rates as the number of new orders commenced or terminated during the month divided by the number of unique individuals on assignment during the middle week of the month. These estimates (labeled “high”) suggest monthly hire and separation rates on the order of 11 to 12 times higher in the temporary help industry than in the economy overall. Assuming our data are representative of the temporary help industry, and adjusting national statistics for the “undercount” of hires and separations in

¹¹ We excluded those in educational occupations, who primarily are substitute teachers, from our calculation. We counted the number of unique individuals with orders open during from the 12th to the 18th of the month. Arguably, counting employment levels as the number of unique individuals on assignment during a week, as is done in the JOLTS data, understates true turnover rates, because temporary help orders often last well under a week. We experimented with counting daily employment levels—the number of unique individuals hired on the Wednesday of the week spanning the 12th to the 18th of the month—and this yielded slightly higher separation and hire rates than those reported in Table 7.

temporary help, we find that the temporary help industry accounts for a figure somewhere on the order of 17 to 21 percent of gross hires and 15 to 21 percent of gross separations during the period.¹² Clearly, although the temporary help industry's share of average daily employment is about 2 percent, a much larger share of the hiring and separations in the economy take place in this industry.

5.1 Industry Dynamics in Recession and Recovery

We now turn to our company data to look for insights into how the dynamics within the industry changed over the course of the recession and recovery. Macro forecasters and analysts pay careful attention to trends in the temporary help industry, because employment gains in temporary help, after a short lag, usually translate into broader gains in the private sector. Although the recession officially ended in June 2009 and the temporary help industry began registering solid employment gains by the end of the year, aggregate employment continued to fall until early 2010, and employment growth for the most part was weak thereafter, particularly in mid-2011 and early 2012. Weak employment growth during the period is widely interpreted as being a result of companies' uncertainty over the strength of the recovery and their reluctance to take on permanent employees (International Monetary Fund 2012).

Our data provide evidence of these dynamics over the business cycle. Among the most striking patterns in our data is that the share of temporary help workers dismissed for performance problems related to "soft" skills (e.g., tardiness, absenteeism) fell quite sharply in nonprofessional occupations in 2008 and 2009, during the depth of the recession, and ticked up

¹² We adjusted the national hire and separation numbers by adding in the difference between high and low estimates of hires and separations for the temporary help industry. In other words, we assume that the conservative (low) estimates represent what is reported in the JOLTS data, and we add the difference between high and low estimates to both the numerator (temporary help industry hires/separations) and denominator (national hires/separations) when estimating the share of hires/separations accounted for by the temporary help industry.

in 2010, the initial year of recovery. Similarly, during the recession years, workers in all occupations were generally less likely to quit their assignment before completing it (Appendix Table 1). These patterns likely reflect the fact that a better pool of workers is available for temporary help assignments when unemployment is high. The decline in performance problems and quit rates may also reflect a change in worker behavior; temporary help workers may be more conscientious about their performance on the job when alternative opportunities are scarce, as the “penalty” associated with termination increases in a recession (Yellen 1984). The improvement in the quality of workers in temporary help positions, by itself, would be expected to increase the rate at which these workers were offered permanent positions with the client. However, in the recession years of 2008 and 2009, the incidence of hiring by clients fell in most occupations, and together with the decline in the incidence of performance problems and quit rates, the share of assignments that were satisfactorily completed without a hire rose (Appendix Table 1).

Given evidence pointing to better-quality job candidates when unemployment is high, one might expect that the incidence of hiring in temp-to-hire contracts would increase during recession years. Instead, our data show that the rate at which temp-to-hire contracts were converted to permanent jobs with client organizations was lower in 2008 and 2009 than in 2007 (Appendix Table 2). Although possible, it is doubtful that the rate at which workers turned down job offers from client firms increased during the recession years. Instead, given economic conditions and widespread uncertainty about the future, the economic outlook for some of these firms may have declined during the course of the probationary period, making them less inclined to take on permanent staff. Alternatively, given high unemployment, employers may have become more selective about whom they hired during the recession. This explanation has been

offered for the broader phenomenon of high vacancy rates in recent years (see, for example, Cappelli 2012).

While hiring rates and total hours worked fell in 2008 and 2009 in all occupations, the median length of assignments rose in most occupations (Table 6).¹³ A growth in assignment length could be further evidence that firms were responding to the uncertain economic environment—and fears of a double dip recession—with greater reliance on temporary help. However, the assignment length statistics conflate firm demand for temporary workers with the changing composition of the workforce; the fact that fewer temporary help workers were dismissed for performance problems or quit without completing the assignment would in and of itself lead to a rise in assignment length. In addition, changes over time in the composition of jobs within these broad occupational categories could be affecting assignment length.

To control for the effects of worker and job composition on assignment length, we model assignment length as a function of the year in which the assignment started, along with a set of order-level and person-level controls:

$$L_{oi} = \beta_1 X_{oi} + \beta_2 X_o + \beta_3 Y_{ot} + \beta_5 S_o + \mu_o,$$

where L_{oi} is the logarithm of assignment length for order o held by individual i , X_i is a vector of individual characteristics that include age and its square and total temporary assignments worked by individual i the during the five-year period and the square of total temporary assignments; X_o is a vector of order-level controls that include the starting hourly wage, order type (temporary versus temp-to-perm), and indicator variables for detailed occupation of the job being filled; Y_t is

¹³ We omit assignments starting in 2011 because the problem of incomplete assignments is greater, and longer assignments are more likely to be censored.

a vector of indicator variables for the year in which the assignment started; and S_o is a vector of state indicator variables.¹⁴ We cluster the standard errors on the individual.

For orders starting in the years 2007, 2008, and 2009, our data include information not only on actual end date of the assignment but also on the expected end date at the time the order was placed. Actual assignment length may be less than expected, typically because the individual assigned to the order quits or is fired prior to its completion. On the other hand, actual assignment length may exceed the expected length if the employer extends the order after placing it. In the models reported in Table 7, we limit the sample to the years 2007–2009 and estimate models in which the dependent variable is alternately the log of actual and expected assignment length. Limiting the sample to orders commencing in these three years facilitates comparison of the determinants of actual and expected job length and minimizes problems of censored spells. In less than 1 percent of the cases, no assignment close date had been recorded as of the end of 2011. In these instances, we top-code assignment length at 720 days, although deleting these orders from our sample has no substantive effect on our estimates.¹⁵

The top panel of Table 7 reports the coefficient estimates on the start year indicator variables from OLS models, which are estimated separately for the four largest occupational categories: light industry, office, contact center, and electronic assembly. The coefficient estimates in the OLS models suggest that, controlling for order and individual level covariates, actual assignment durations were significantly longer in 2008 and 2009 compared to 2007 in all occupational categories. Estimates for expected assignment length display the same time

¹⁴ We also experimented with including indicator variables for county in lieu of state, but these had little effect on our estimates, and inclusion of county-level dummies complicated the running of multilevel models, discussed below.

¹⁵ We do not report estimates for these models for professional and technical occupations because incomplete assignments are a significant problem.

patterns, except in light industry. In that occupational group, estimates show that expected assignment length was about 2.3 log points lower in 2008 and 12.1 log points lower in 2009 relative to 2007. The discrepancy in the time pattern of estimates for expected versus realized assignment lengths for light industry, which also displayed the greatest decline in total hours during those recession years, suggests that employers extended temporary assignments in lieu of hiring permanent employees in the face of uncertainty and a weak recovery.

One might be concerned, however, that in spite of the detailed controls included in these models, they inadequately capture changes in the composition of the temporary help workforce over the business cycle. To address this concern, we estimate the effects of start year on assignment length using multilevel models that control for both individual random and fixed effects. In the models we estimate, L_{ti} is the outcome (e.g., assignment length) at measurement occasion t (a temporary work assignment, $t = 1, \dots, T_i$) for individual i ($i = 1, \dots, n$), where time is measured by the start date of a new work assignment. In other words, the number of observations for a given individual in our sample is equal to the number of temporary work assignments (orders) he or she had between 2007 and 2009. This modeling approach allows both the number of measurement occasions and their timing to vary across individuals (i.e., they do not need to be balanced in the sample).

At level one of the multilevel model, we model assignment length over time, across changes in the economy that are captured with time indicators (i.e., dummies for years linked to the order start date). We also add other order/time-varying covariates, as described above (e.g., detailed job information, starting wage, order type):

$$L_{ti} = \pi_{0i} + \pi_{1i}X_{Jti} + \pi_{2i}X_{0ti} + \pi_{3i}Y_{0t} + \pi_{4i}S_0 + r_{ti}.$$

At level two, the intercept from the level-one model is specified as random and a function of individual worker characteristics that do not vary by order or time (e.g., total number of assignments with temp agency, state of residence):

$$\pi_{0i} = \beta_{00} + \beta_{01}X_{i(1)} + u_{0i}.$$

These level-one and level-two models are estimated simultaneously with unstructured errors. (See Singer and Willett [2003] and Gordon and Heinrich [2004] for a more thorough discussion of multilevel models and their interpretation.)

The coefficient estimates on the year start variables in our multilevel models, reported in the bottom panel of Table 7, are generally somewhat lower in magnitude compared to those from regression models that do not control for individual fixed and random effects, but in most cases the two sets of estimates display similar time patterns. In particular, multilevel models indicate that relative to 2007, actual assignment length in light industry fell slightly in 2008 (a 1.7 log point drop) and was somewhat higher (1.3 log points) in 2009. Especially notable is the fact that the estimates for actual assignment length do not display the strong negative time patterns of those for expected assignment length in light industry occupations, suggesting that, particularly in 2009, manufacturing employers responded to the very weak and uncertain economic conditions by extending contracts for temporary agency workers.¹⁶

We also estimated comparable OLS and multilevel models showing the effects of start year on realized assignment length on a larger sample that included orders commencing between 2007 and 2010 (Appendix Table 3). In these models, assignment length for orders that had not

¹⁶ This interpretation is consistent with underlying data for light industry showing that the 7.4 percentage decline in the share of assignments between 2007 and 2009 that ended before the expected stop date was accompanied by a 5.3 percentage point increase in those lasting longer than expected, with most of the increase in actual versus expected occurring between 2008 and 2009. Of the 5.3 percentage point increase, 3.8 percentage points were in assignments lasting a week or more longer than planned.

ended as of 2011 were top-coded at 360 days. Coefficient estimates on the indicator for 2010 are positive and statistically significant in OLS and multilevel models for all four occupational categories. Coefficient estimates on the other-year indicator variables are similar to those reported in Table 7.¹⁷ Taken together, the results from these models indicate that, controlling for workforce and assignment composition, temporary work assignment durations significantly increased during the recession, or increased relative to the planned durations, in the four largest occupational categories.

6 WAGES OF TEMPORARY HELP WORKERS IN RECESSION AND RECOVERY

In light of the potential role wage rigidity plays in impeding recovery from recessions, we study the responsiveness of temporary help wages to economic conditions during the recession and initial years of recovery. As noted above, despite the fact that the temporary help industry only accounts for about 2 percent of average daily employment in the economy, it accounts for a large share of new hires. Moreover, temporary help is a particularly useful industry for studying the responsiveness of wages to economic conditions, for several reasons. First, we might expect that wages of new hires would be more responsive to economic conditions than those of incumbent workers. Temporary help assignments are relatively short-lived, and most temporary help workers hold multiple assignments. Each assignment represents a new job on which a new wage is set. As in our examination of assignment length, we model the dynamics of wages during the downturn and recovery period, controlling for individual fixed and random effects.

¹⁷ We also experimented with including detailed assignment outcome measures (e.g., terminated for tardiness, completed assignment, hired, etc.) as controls. Adding these controls had no substantive effect on multilevel model estimates.

In addition, we expect that temporary help workers' wages might be more responsive to economic conditions than wages of direct-hire workers, and, if so, estimates of their wage responsiveness to economic conditions would represent upper-bound estimates for the general population. Particularly during periods of weak demand, individuals who otherwise would be unemployed use temporary help employment as a stopgap measure to earn income and to audition for jobs. Individuals may be less concerned about accepting a relatively low wage rate, as that wage is less likely to affect their subsequent trajectory of earnings than a starting wage in a permanent position. Finally, the diversity of occupations represented in the temporary help sector allows us to examine the wage dynamics of new hires across a broad spectrum of jobs.

We begin by constructing wage indexes that serve as summary measures of year-to-year changes in wages across all occupations in our sample and by broad occupation. In constructing these measures, we exploit data on hourly wages by branch and detailed job to control for locality and job characteristics. Specifically, for each branch (b), for each year (t), and for each detailed job (j), we compute the average hourly wage paid in orders commencing in the indicated year.¹⁸ To generate a summary measure for each broad occupation or across all occupations, we compute a weighted average of the year-to-year change in the logarithm of the branch-detailed job hourly wage ($w_{b,j,t}$), where the weights (ω) are the sum of hours in the branch-detailed job in adjacent years:¹⁹

$$\ln\left(\frac{W_t}{W_{t-1}}\right) = \sum_{b,j} \omega_{b,j,t} \left[\ln\left(\frac{w_{b,j,t}}{w_{b,j,t-1}}\right) \right].$$

¹⁸ Although some orders span multiple years, we base the average hourly wage by detailed job and branch only on wage payments in orders commencing in the indicated year, so as to most effectively capture the effects of economic conditions prevailing at the time the wage is set.

¹⁹ This Törnqvist-type formula is commonly used to compute indexes in government statistics.

We compute measures of changes in both nominal wages and wages adjusted for inflation. For the latter, we deflate hourly wages by the appropriate metropolitan-level Consumer Price Index published by BLS.²⁰ For presentation purposes, we convert these wage change measures into indexes with 2007 as the base year.

Figure 4 displays nominal and real (CPI-adjusted) wage indexes for all occupations and for the two largest categories, light industry and office. While *nominal* wages rose over the period, growth was slow during the recession years. The pace of nominal wage growth increased between 2009 and 2010, as the economy started to pull out of recession, but slowed again between 2010 and 2011, possibly reflecting modest job growth and fears at the time of a double-dip recession. Moreover, nominal wage growth failed to keep pace with inflation between 2007 and 2008 and again between 2010 and 2011, causing sharp declines in real wages. These patterns of nominal and real wage growth are found in almost all of the occupations. Real wages were lower in 2011 than in 2007 in all but three broad occupations (Table 8). Notably, the real-wage declines were often as large or larger in the professional and technical occupations as in the low-wage blue-collar, clerical, call-center, and marketing occupations. These results are consistent with analyses of real wage changes by Rothstein (2012), who used the Current Population Survey's Outgoing Rotation Groups and found steady or falling mean real wages from late 2009 through 2011. Focusing specifically on starting wages and adjusting for observable characteristics, Rothstein estimated declines in real starting wages of between 1 and 3 percent over the period beginning in 2007–2008 and ending in 2010–2011.

²⁰ BLS does not publish CPIs for all metropolitan areas, but it does publish regional measures by size of city. In cases where a metropolitan measure was not published, we used a regional measure according to the size of the city in which the branch was located.

Although these wage indexes control for locality and detailed job, they do not control for possible changes in the average quality of individuals holding the jobs over time. Because evidence presented above suggests that the pool of individuals taking temporary help jobs improved, particularly during the recession years, the wage indexes in Table 8 may overstate year-to-year changes in some periods and understate them in others. To control for changes in worker composition, we model the logarithm of nominal and CPI-adjusted wages as a function of the year in which the assignment started, along with a rich set of order-level and person-level controls, as was done in models predicting assignment length.²¹

In Table 9 we report coefficient estimates on the order-start-year variables from multilevel models that control for individual fixed and random effects.²² The coefficients on start year display the same patterns as those shown in the wage indexes in Table 11, suggesting that any improvement in the composition of the workforce had little impact on wage trends for specific jobs in specific local labor markets. To better illustrate the similarity of these patterns, we convert the coefficient estimates in Table 9 into wage indexes implied by the estimates, and in Figure 5, we plot the 2011 real wage index from the multilevel models against the 2011 real wage index shown in Table 8. These two wage indexes are close in all occupational categories and do not differ in any systematic way.

²¹ The set of person-level and order-level control variables is the same as those used in the models predicting assignment length, except that we include the logarithm of assignment length in lieu of the logarithm of starting wage as a control variable in the wage models.

²² We also estimated regression models with standard errors clustered on the individual. The coefficient estimates were closely comparable to those from the multilevel models, and we only report the latter in Table 9.

7 CONCLUSION

Drawing on unique data from a nationally representative temporary help firm, we provide insights into the characteristics of temporary help jobs and the role temporary help employment played during the recent tumultuous economic period. Although wages in professional and technical occupations, whose share in the temporary help industry has grown in the last decade, are relatively high, temporary help employment is still concentrated in low-wage occupations. Furthermore, in our data, although the majority of temporary help assignments are short-lived, lasting less than one month, assignments lasting more than six months account for most of the work in the temporary help industry. Assignments lasting a year or more account for a majority of the hours worked in scientific, engineering, and information technology occupations.

Our data also yield insights into the outcomes of temporary help assignments. Nearly a third of assignments end prematurely because the worker is terminated for performance problems or quits before completing the assignment. That figure exceeds 40 percent in three of the four largest occupational categories: light industry, contact center, and electronic assembly. Termination for tardiness, unexcused absences, and other “soft skill” problems are especially high among low-paid temps. In close to 7 percent of assignments, temporary help workers take a job with the client; hire rates are 20 percent or more in science and finance and accounting occupations. More striking, however, are the low hire rates of workers in temp-to-hire contracts. About a quarter of workers in these contracts transition to a permanent job with the client, and the hire rate is 50 percent or less in all professional and technical occupations. This low rate suggests that employers may be highly selective when screening workers through temporary help agencies.

Despite its relatively small size, the temporary help industry plays an important role in adjusting labor during recession and recovery. To the extent that our data represent the industry fairly well, they suggest that the temporary help industry accounted for a sizable share not only of net employment changes but also of gross hires and separations during the downturn and initial recovery years. In addition, our data reveal significant changes in the composition of the temporary help workforce and in employer behavior over the time period studied. As the economy entered a deep recession, the quality of the temporary workforce improved, as evidenced by a decline in terminations for performance problems and quits in all occupations. At the same time, employers generally lengthened assignments and reduced hiring from the pool of temporary workers, in spite of an improvement in the quality of workers and even in cases where the employer was explicitly using temporary help agencies to screen workers for permanent jobs. These findings may indicate that, given high unemployment and a weak and uncertain recovery, employers were wary of hiring employees and became especially selective in making job offers to temporary help workers.

Finally, we present new evidence in the paper on the responsiveness of wages to economic conditions. In almost all occupations, nominal wage growth was weak during the recession and, over the five-year period, failed to keep pace with inflation. Interestingly, real wage growth in professional and technical occupations was about the same or below wage growth in nonprofessional occupations. The double dip, or second downturn, in real wage growth between 2010 and 2011 suggests that concerns about the slow economic recovery and its implications for long-term economic and social well-being in the United States (Oreopoulos, von Wachter, and Heisz 2012; Rothstein 2012) may well be warranted.

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Table 1 Distribution of Wages by Broad Occupation

	25th percentile	50th percentile	75th percentile	90th percentile	Mean
<i>Nonprofessional occupations</i>					
Light industrial	8.25	9.09	10.08	11.50	9.53
Office	10.00	11.00	13.00	16.18	12.19
Contact center	10.00	11.00	12.72	14.02	11.45
Electronic assembly	8.68	9.84	11.25	13.97	10.38
Marketing	10.00	11.00	12.00	13.00	11.22
<i>Professional occupations</i>					
Scientific	14.58	17.60	23.00	30.25	20.91
Engineering	18.02	23.76	31.00	43.64	27.15
Information technology	13.00	19.00	30.00	45.41	24.21
Accounting/finance	13.75	17.01	22.14	30.00	19.62
Legal	23.00	30.00	34.13	40.00	29.98
Health care	13.00	17.00	29.02	40.00	23.90
Creative services	12.50	19.00	30.00	41.52	26.20
Professional (other)	10.50	11.00	11.00	15.00	12.59
All occupations	9.00	10.00	12.00	15.00	11.40

SOURCE: Authors' calculations.

Table 2 Distribution of Assignment Length by Broad Occupation (percent)

	Orders commencing 2007–2010 by job length						Share of hours worked 2007–2010 by job length					
	< 1 month	1–3 months	3–6 months	6–12 months	1–2 years	> 2 years	< 1 month	1–3 months	3–6 months	6–12 months	1–2 years	> 2 years
<i>Nonprofessional occupations</i>												
Light industrial	59.9	20.8	11.2	5.4	2.1	0.7	8.6	18.6	24.3	22.8	16.1	9.6
Office	53.3	21.6	13.4	7.2	3.2	1.3	5.7	15.1	21.7	22.8	19.0	15.7
Contact center	35.8	28.1	22.2	10.3	3.0	0.6	4.5	16.5	31.1	27.5	14.9	5.4
Electronic assembly	36.9	23.9	17.6	13.5	6.1	2.1	3.3	11.1	19.3	30.1	24.9	11.4
Marketing	94.9	3.6	0.9	0.4	0.2	0.1	40.1	23.0	11.5	9.3	6.9	9.1
<i>Professional & technical occupations</i>												
Scientific	13.3	20.1	24.6	22.8	13.2	6.1	0.9	5.5	15.6	27.5	27.2	23.3
Engineering	12.2	19.7	21.7	22.4	14.7	9.4	0.6	3.8	9.8	20.0	25.2	40.6
Information technology	28.3	20.0	19.1	17.0	10.1	5.6	1.6	6.1	13.3	23.1	24.9	31.0
Accounting/finance	23.2	27.4	26.2	15.1	6.4	1.7	2.3	12.3	25.0	27.4	21.6	11.4
Legal	35.9	27.9	14.7	10.6	8.4	2.6	4.5	13.5	15.5	19.4	21.4	25.8
Health care	45.2	23.3	16.8	9.8	3.5	1.4	4.7	14.5	24.5	28.6	15.5	12.2
Creative services	38.4	25.2	16.4	9.8	6.4	3.8	3.8	11.5	16.8	20.4	23.8	23.6
Professional (other)	55.5	33.0	7.8	2.2	1.0	0.5	17.6	26.6	17.6	14.6	12.7	10.8
Total	57.79	20.39	11.86	6.29	2.66	1.01	6.7	15.7	22.3	23.4	18.3	13.6

SOURCE: Authors' calculations..

Table 3 Mean and Median Number of Temporary Help Assignments Held by Individuals in Sample

	mean	median
<i>Nonprofessional occupations</i>		
Light industrial	5.2	2
Office	8.7	3
Contact center	3.0	1
Electronic assembly	2.5	2
Marketing	49.1	13
<i>Professional & technical occupations</i>		
Scientific	1.8	1
Engineering	1.9	1
Information technology	4.3	1
Accounting/finance	1.9	1
Legal	16.3	3
Health care	5.6	2
Creative services	4.3	2
Professional (other)	9.8	5
Total	10.2	2

SOURCE: Authors' calculations.

Table 4 Distribution of Assignment Outcomes by Broad Occupation (percent)

	All Assignments						
	Performance problem		Quit		Hired	Completed assignment	Other
	Hard skills	Soft skills	Work-related reason	Personal reason			
Nonprofessional occupations							
Light industrial	6.8	18.6	7.7	8.2	6.2	49.3	3.3
Office	5.3	6.4	6.6	5.2	8.0	64.0	4.4
Contact center	9.4	18.0	11.1	10.1	13.2	32.2	6.0
Electronic assembly	7.7	18.1	9.5	10.8	12.8	35.9	5.3
Marketing	0.6	1.2	0.9	1.0	0.4	95.2	0.8
Professional and technical occupations							
Scientific	5.0	5.5	10.5	9.4	22.1	32.4	15.0
Engineering	4.3	4.1	8.9	6.1	16.2	43.9	16.5
IT	4.9	5.2	8.3	5.6	11.2	51.0	13.9
Accounting/finance	7.9	5.5	9.7	6.8	20.4	41.2	8.5
Legal	3.6	2.2	5.0	5.1	3.7	76.1	4.3
Health care	5.0	7.3	6.4	6.5	9.4	57.3	8.1
Creative services	4.2	3.3	6.1	3.9	9.8	61.3	11.5
Professional (other)	2.0	1.3	2.1	2.5	1.8	70.1	20.3
Total	5.7	12.4	6.8	6.6	6.9	56.8	4.8
Temp-to-Hire Assignments							
	Performance problem		Quit		Hired	Completed assignment	Other
	Hard skills	Soft skills	Work-related reason	Personal reason			
Nonprofessional occupations							
Light industrial	10.3	26.2	10.9	9.1	21.7	18.1	3.6
Office	10.3	9.5	10.2	6.6	34.1	26.0	3.3
Contact center	10.9	22	11.9	11.1	28.6	13.0	2.5
Electronic assembly	9.3	16.7	8.9	8.4	29.2	24.5	3.0
Marketing	10.6	16.3	10.3	7.8	30	20.3	4.7
Professional and technical occupations							
Scientific	6.7	6.8	9.7	8.9	50.3	14.0	3.6
Engineering	9.5	6.1	7.8	6.6	39.9	24.6	5.7
Information technology	8.7	11.4	11.3	7.8	40.8	14.5	5.6
Accounting/finance	9.2	6.6	10.5	4.8	41.8	23.1	4.1
Legal	6.3	3.5	6.9	10.9	46.6	23.0	2.9
Health care	11.4	13.8	9.5	9.5	25	25.8	5.0
Creative services	7.1	11.9	16.7	0	35.7	21.4	7.1
Professional (other)	7.8	6.2	8.3	4.1	46.0	25.1	2.5
Total	10.2	20.0	10.7	8.7	27.6	19.4	3.4

NOTE: The sample includes orders commencing from 2007 through 2010.

SOURCE: Authors' calculations.

Table 5 Hire and Separations, Economy-Wide and in the Temporary Help Industry

<i>A: National and Estimated Temporary Help Industry Hire and Separation Rates</i>					
	2007	2008	2009	2010	2011
<i>Average Monthly Hire Rates</i>					
National	3.8	3.3	2.9	3.1	3.2
Temporary help—low	28.5	25.3	23.8	25.1	23.3
Temporary help—high	45.2	40.4	37.0	37.9	34.7
<i>Average Monthly Separation Rates</i>					
National	3.7	3.5	3.2	3.1	3.0
Temporary help—low	28.3	27.2	24.2	23.8	23.4
Temporary help—high	45.0	42.3	37.4	36.5	34.7
<i>B: Estimated Share of Hires and Separations Accounted for by Temporary Help Industry</i>					
<i>Hires</i>					
Low estimate	0.14	0.13	0.11	0.13	0.13
High estimate	0.21	0.19	0.17	0.18	0.18
<i>Separations</i>					
Low estimate	0.15	0.13	0.10	0.13	0.14
High estimate	0.21	0.19	0.15	0.18	0.19

SOURCE: Authors' calculations from temporary help firm data and the Job Openings and Labor Turnover Survey, BLS.

Table 6 Median Job Length by Year and Broad Occupation (in days)

	2007	2008	2009	2010
<i>Nonprofessional occupations</i>				
Light industrial	18	18	18	23
Office	24	26	26	30
Contact center	54	56	60	57
Electronic assembly	49	57	80	91
Marketing	1	1	1	1
<i>Professional & technical occupations</i>				
Scientific	144	148	155	168
Engineering	161	161	166	173
Information technology	94	102	91	87
Accounting/finance	82	89	100	96
Legal	52	52	54	47
Health care	39	38	43	46
Creative services	82	55	34	110
Professional (other)	26	29	24	24
Total	19	20	20	24

SOURCE: Authors' calculations.

Table 7 The Effect of Start Year on Assignment Length

	Dependent variable: ln(actual assignment length)				Dependent variable: ln(expected assignment length)			
	Light industrial	Office	Contact center	Electronic assembly	Light industrial	Office	Contact center	Electronic assembly
<i>Order start year</i>								
<i>OLS models</i>								
2008	0.0206*** (0.0060)	0.0861*** (0.0079)	0.0592*** (0.0121)	0.0463* (0.0214)	-0.0229*** (0.0066)	0.0814*** (0.0084)	0.0030 (0.0094)	0.0869*** (0.0176)
2009	0.0537*** (0.0073)	0.1180*** (0.0100)	0.1605*** (0.0146)	0.2208*** (0.0258)	-0.1209*** (0.0084)	0.0624*** (0.0108)	0.0543*** (0.0124)	0.1457*** (0.0221)
<i>Multilevel models</i>								
2008	-0.0166** (0.0053)	0.0616*** (0.0070)	0.0450*** (0.0117)	0.0427* (0.0210)	-0.0389*** (0.0052)	0.0684*** (0.0069)	-0.0116 (0.0082)	0.0835*** (0.0166)
2009	0.0125* (0.0061)	0.0722*** (0.0083)	0.1404*** (0.0137)	0.1966*** (0.0245)	-0.1228*** (0.0059)	0.0358*** (0.0083)	0.0405*** (0.0097)	0.1267*** (0.0194)
N	534,133	285,189	72,611	28,488	534,133	285,189	72,611	28,488

NOTE: Coefficient estimates on start year dummy variables from OLS regression or multilevel models that include individual and order level controls (see text). The sample includes orders commencing in the years 2007, 2008 and 2009. Standard errors are reported in parentheses, and are clustered on individuals in OLS models. * signifies significance at the 0.05 level, ** at the 0.01 level, and *** at the 0.001 level.

Table 8 Indexes of Nominal and Real Wages, by Broad Occupation

	Nominal wage indexes					Real wage indexes				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
<i>Nonprofessional occupations</i>										
Light industry	100	101.9	103.0	105.5	105.9	100	98.3	99.8	100.3	97.4
Office	100	101.8	102.5	105.4	106.9	100	98.0	99.1	100.2	98.5
Contact center	100	101.9	102.4	103.9	104.9	100	98.1	99.1	99.0	96.8
Electronic assembly	100	101.5	102.2	104.5	104.2	100	97.7	98.7	99.3	95.9
Marketing	100	102.9	103.1	109.2	111.0	100	99.0	99.7	104.0	102.5
<i>Professional occupations</i>										
Scientific	100	101.4	103.4	107.9	109.0	100	97.7	100.0	102.6	100.5
Engineering	100	101.9	103.4	106.2	105.1	100	98.3	100.1	101.2	97.0
Information technology	100	97.7	96.5	100.8	102.2	100	93.9	92.7	95.4	93.9
Accounting/finance	100	103.1	104.5	106.9	105.0	100	99.5	101.1	101.9	97.1
Legal	100	101.9	100.3	101.0	98.9	100	98.3	96.8	95.9	91.0
Health care	100	103.9	104.1	106.0	104.6	100	100.1	100.7	100.9	96.4
Creative services	100	99.5	102.9	105.1	110.3	100	95.7	98.9	99.3	101.3
Other professional	100	96.6	96.2	97.3	98.6	100	92.9	93.0	92.5	90.8
All occupations	100	101.7	102.6	105.1	105.7	100	98.0	99.22	100.0	97.2

SOURCE: Authors' calculations.

Table 9 The Effect of Order Start Year on Initial Nominal and Real Wages

Table 9 The Effect of Order Start Year on Initial Nominal and Real Wages														
	Nonprofessional occupations							Professional and technical occupations						
	Light industry	Office	Contact center	Electronic assembly	Marketing	Science	Engineering	IT	Accounting & finance	Legal	Health care	Creative services	Other professional	
Order start year														
Dependent variable: ln(starting wage)														
2008	0.0213*** (0.0004)	0.0202*** (0.0007)	0.0152*** (0.0013)	0.0149*** (0.0020)	0.0187*** (0.0008)	0.0244*** (0.0045)	0.0377*** (0.0063)	-0.0118 (0.0078)	0.0258*** (0.0060)	0.0147** (0.0054)	0.0291*** (0.0065)	0.0459 (0.0276)	-0.0278*** (0.0007)	
2009	0.0351*** (0.0005)	0.0248*** (0.0008)	0.0157*** (0.0015)	0.0296*** (0.0023)	0.0262*** (0.0010)	0.0416*** (0.0051)	0.0460*** (0.0073)	-0.0183* (0.0085)	0.0497*** (0.0071)	* (0.0055)	0.0326*** (0.0074)	0.1275*** (0.0278)	-0.0338*** (0.0009)	
2010	0.0577*** (0.0005)	0.0438*** (0.0009)	0.0243*** (0.0014)	0.0577*** (0.0021)	0.0679*** (0.0010)	0.0738*** (0.0050)	0.0585*** (0.0070)	* (0.0081)	0.0329*** (0.0069)	* (0.0055)	0.0650*** (0.0075)	0.1363*** (0.0278)	-0.0264*** (0.0010)	
2011	0.0658*** (0.0005)	0.0523*** (0.0010)	0.0281*** (0.0015)	0.0509*** (0.0022)	0.0702*** (0.0011)	0.0788*** (0.0054)	0.0624*** (0.0077)	0.0052 (0.0090)	0.0190** (0.0074)	-0.0055 (0.0058)	0.0242** (0.0079)	0.0879** (0.0294)	-0.0271*** (0.0011)	
Dependent variable: ln(CPI-adjusted starting wage)														
2008	-0.0176*** (0.0004)	-0.0177*** (0.0007)	-0.0225*** (0.0013)	-0.0231*** (0.0020)	-0.0196*** (0.0008)	-0.0122** (0.0045)	0.0018 (0.0063)	-0.0488** (0.0078)	-0.0108 (0.0060)	* (0.0054)	-0.0072 (0.0065)	0.0095 (0.0276)	-0.0660*** (0.0007)	
2009	0.0006 (0.0005)	-0.0093*** (0.0008)	-0.0173*** (0.0015)	-0.0051* (0.0023)	-0.0076*** (0.0010)	0.0084 (0.0051)	0.0143* (0.0073)	-0.0534** (0.0085)	0.0174* (0.0072)	* (0.0055)	0.0005 (0.0074)	0.0919*** (0.0278)	-0.0675*** (0.0009)	
2010	0.0050*** (0.0005)	-0.0068*** (0.0009)	-0.0245*** (0.0015)	0.0073*** (0.0021)	0.0179*** (0.0010)	0.0233*** (0.0050)	0.0104 (0.0070)	-0.0738** (0.0081)	-0.0152* (0.0069)	* (0.0055)	0.0158* (0.0075)	0.0851** (0.0279)	-0.0771*** (0.0010)	
2011	-0.0190*** (0.0005)	-0.0301*** (0.0010)	-0.0524*** (0.0015)	-0.0327*** (0.0022)	-0.0115*** (0.0011)	-0.0028 (0.0054)	-0.0168* (0.0077)	-0.0727** (0.0090)	-0.0597*** (0.0074)	* (0.0058)	-0.0553*** (0.0079)	0.0074 (0.0294)	-0.1093*** (0.0011)	
Number of observations														
	875,730	399,032	109,740	53,183	178,259	21,959	15,765	13,946	14,316	15,270	12,939	2,268	85,735	
Number of individuals														
	492,139	206,845	87,844	43,174	59,004	17,905	12,981	10,464	11,961	7,146	7,836	1,857	31,512	

NOTE: Coefficient estimates on start-year dummy variables from multilevel models that include individual- and order-level controls (see text). The sample includes orders commencing from 2007 through 2011. Standard errors are reported in parentheses. * signifies significance at the 0.05 level, ** at the 0.01 level, and *** at the 0.001 level.

Appendix Table 1 Assignment Outcome by Broad Occupation and Year (percent)

Appendix Table 1. Assignment outcomes by broad occupation and year (percent)									
Performance problem					Quit assignment		Completed assignment	Other	N
Hired	Hard skills	Soft skills	Work-related reason	Personal reason					
<i>Nonprofessional occupations</i>									
Light industry									
2007	6.3	6.9	20.4	8.5	8.8	46.0	3.1	230,893	
2008	5.0	6.3	18.6	7.3	8.1	51.9	2.9	185,737	
2009	5.7	6.2	15.7	6.5	7.6	55.2	3.1	136,999	
2010	7.7	7.7	18.3	8.0	8.1	46.3	4.0	178,466	
Office									
2007	8.4	5.4	7.2	7.1	5.7	62.8	3.4	132,607	
2008	7.6	5.3	6.6	6.4	5.4	64.4	4.3	99,439	
2009	7.7	5.1	5.3	6.0	4.6	66.8	4.6	62,556	
2010	8.3	5.3	5.5	6.6	4.7	63.0	6.6	63,907	
Contact center									
2007	13.9	9	20.5	11.5	11.5	28.4	5.2	33,051	
2008	12.6	8.8	18.4	10.9	10.1	34.1	5.1	24,982	
2009	12.3	9.4	15.4	10.3	8.8	37.4	6.5	16,612	
2010	13.5	10.6	15.7	11.3	9.1	31.7	8	20,554	
Electronic assembly									
2007	13.1	7.6	18.6	10.0	10.5	35.4	5.0	13,937	
2008	9.2	7.3	18.1	9.8	11.3	40.3	3.9	10,430	
2009	14.5	7.2	14.5	7.7	10.7	39.7	5.8	6,852	
2010	14.3	8.4	19.3	9.6	10.8	31.0	6.6	13,330	
Marketing									
2007	0.4	0.6	1.5	1	1.2	94.5	0.9	53,965	
2008	0.4	0.5	1.3	0.8	0.9	95.3	0.7	45,012	
2009	0.3	0.6	1.1	0.7	0.9	95.8	0.7	28,009	
2010	0.4	0.7	0.9	0.8	0.9	95.5	0.9	29,736	
<i>Professional and technical occupations</i>									
Scientific									
2007	23.09	5.05	5.84	11.56	10.96	32.86	10.6	6,695	
2008	21.34	4.84	6.23	9.53	9.28	33.48	15.3	5,140	
2009	20.48	5.39	4.76	9.68	6.98	36.82	15.9	3,637	
2010	22.9	4.94	4.83	10.78	8.94	27.28	20.3	4,655	
Engineering									
2007	15.0	4.6	4.2	9.1	7.5	44.5	15.1	4,176	
2008	15.3	4.2	4.4	7.7	6.1	46.0	16.4	3,957	
2009	14.4	3.6	3.3	8.3	4.9	49.8	15.8	2,497	
2010	19.7	4.5	4.4	10.4	5.5	37.1	18.5	3,836	

Appendix Table 1 (Continued)

	Performance problem			Quit assignment		Completed assignment	Other	N
	Hired	Hard skills	Soft skills	Work-related reason	Personal reason			
Information technology								
2007	12.5	5.0	5.4	7.1	5.2	51.4	13.5	3,401
2008	11.0	5.1	7.1	7.5	5.9	48.5	14.8	2,999
2009	8.6	4.0	3.9	9.0	5.6	57.6	11.4	2,476
2010	11.8	5.1	4.4	9.7	5.7	48.3	15.1	3,585
Accounting/finance								
2007	21.2	8.4	6.6	10.7	7.3	40.4	5.5	4,056
2008	18.8	8.2	5.0	8.5	7.2	42.6	9.8	3,407
2009	21.3	7.0	4.6	8.7	6.2	42.7	9.6	2,356
2010	20.5	7.8	5.3	10.8	6.1	39.2	10.3	2,777
Legal								
2007	5.2	4.1	3	7.5	7.4	69.9	3.0	2,869
2008	5	4.5	2.7	4.7	5.9	72.2	5	2,359
2009	2.8	5.0	2.5	4.1	4.2	79.1	2.4	3,024
2010	2.6	1.8	1.0	4.1	3.7	80.7	6.3	4,062
Health care								
2007	10.0	5.1	9.7	7.0	7.8	55.9	4.6	3,221
2008	10.2	4.9	7.2	6.9	7.0	55.5	8.3	2,996
2009	8.3	4.2	5.6	5.3	4.7	61.7	10.2	2,382
2010	9.0	6.0	5.8	6.1	5.8	57.0	10.5	2,269
Creative services								
2007	11.8	6.5	6.3	11.4	8.7	49.0	6.3	508
2008	10.8	4.9	2.7	5.4	2.9	64.7	8.6	408
2009	7.6	2.4	2.5	3.6	1.8	68.9	13.2	553
2010	9.4	3.5	1.7	4.4	2.4	62.3	16.4	575
Other professional								
2007	1.7	2.0	1.5	2.3	2.7	71.4	18.4	22,522
2008	1.0	1.0	0.8	1.4	1.4	71.0	23.4	21,589
2009	1.5	3.3	1.3	2.0	3.0	60.6	28.4	13,217
2010	3.3	2.5	1.6	2.7	3.2	75.5	11.2	14,477

NOTE: Table displays outcomes of temporary help assignments by broad occupation and year for all assignments. Figures for the year 2011 are omitted because a significant share of assignments commencing in 2011 were still open at the end of the year and so were missing coding for the orders outcomes.

Appendix Table 2 Assignment Outcome by Broad Occupation and Year, Temp-to-Hire Contracts

	Performance problem			Removed self				<i>N</i>	
	Hired	Hard skills	Soft skills	Work-related reason	Personal reason	Completed assignment	Other		
<i>Nonprofessional occupations</i>									
Light industry									
2007	23.1	9.1	28.5	11.3	9.5	14.6	3.9	12,992	
2008	18.9	9.2	26.3	11.0	9.4	21.4	3.8	10,186	
2009	22.6	12.7	23.3	9.2	7.7	22.6	2.0	4,048	
2010	23.1	13.3	23.2	10.9	8.7	17.2	3.5	6,109	
Office									
2007	35.2	10.4	10.5	10.5	6.7	24.4	2.4	5,936	
2008	32.3	10.3	9.4	9.9	7.0	27.3	3.8	4,042	
2009	34.4	9.7	7.8	9.2	5.8	28.5	4.6	1,883	
2010	34.6	10.5	8.3	11.0	6.1	25.8	3.7	1,831	
Contact center									
2007	27.1	10.7	23.8	12.1	13.0	11.4	2.0	3,938	
2008	26.1	11.4	22.9	11.9	9.9	15.9	2.0	2,808	
2009	32.4	11.5	17.9	12.9	9.9	11.3	4.1	926	
2010	35.8	10.4	17.4	10.8	8.7	13.1	3.9	1,283	
Electronic assembly									
2007	32.5	7.6	15.8	11.7	6.6	23.7	2.1	486	
2008	26.9	9.0	11.7	11.0	10.0	28.9	2.5	401	
2009	29.5	12.4	12.1	10.6	9.1	19.2	7.1	339	
2010	28.4	9.3	20.7	6.1	8.5	24.9	2.3	970	
Marketing									
2007	29.9	10.8	16.6	8.9	10.8	19.8	3.2	157	
2008	29.2	9.7	16.7	9.7	6.9	19.4	8.3	72	
2009	35.1	5.4	21.6	13.5	2.7	18.9	2.7	37	
2010	27.8	14.8	11.1	13.0	3.7	24.1	5.6	54	
<i>Professional and technical occupations</i>									
Scientific									
2007	53.1	6.6	5.7	11.0	9.6	12.9	1.2	895	
2008	48.1	6.0	7.5	6.8	9.9	15.7	6.0	617	
2009	46.7	8.3	6.3	10.7	9.2	14.3	4.5	336	
2010	50.1	6.9	8.8	10.3	5.3	13.8	4.8	377	
Engineering									
2007	45.3	6.7	4.7	8.7	8.0	21.3	5.3	150	
2008	42.4	10.4	5.6	4.9	4.9	27.1	4.9	144	
2009	33.3	9.1	7.1	8.1	10.1	25.3	7.1	99	
2010	36.0	11.8	7.4	9.6	4.4	25.0	5.9	136	

Appendix Table 2 (Continued)

	Performance problem				Removed self			<i>N</i>
	Hired	Hard skills	Soft skills	Work-related reason	Personal reason	Completed assignment	Other	
Information technology								
2007	42.6	12.5	11.1	9.7	8.8	13.9	1.4	216
2008	42.8	7.0	17.4	11.0	4.5	12.4	5.0	201
2009	33.7	7.9	5.0	8.9	10.9	15.8	17.8	101
2010	40.2	6.1	8.5	15.2	8.5	17.1	4.3	164
Accounting/finance								
2007	38.1	8.5	7.1	14.1	4.4	25.0	2.9	481
2008	43.1	10.6	6.0	7.5	6.0	24.4	2.3	348
2009	43.0	7.5	8.1	7.0	3.8	21.0	9.7	186
2010	47.2	10.1	5.0	10.1	4.5	18.1	5.0	199
Legal								
2007	53.1	3.1	4.7	1.6	6.3	29.7	1.6	64
2008	43.2	6.8	2.3	6.8	20.5	18.2	2.3	44
2009	38.9	5.6	5.6	0.0	11.1	27.8	11.1	18
2010	43.8	10.4	2.1	16.7	8.3	16.7	2.1	48
Health care								
2007	25.3	9.3	18.0	8.7	13.3	23.3	2.0	150
2008	20.1	13.6	14.1	13.0	9.2	23.4	6.5	184
2009	35.1	9.1	11.7	7.8	3.9	27.3	5.2	77
2010	26.0	12.3	6.9	4.1	8.2	35.6	6.9	73
Creative services								
2007	33.3	0.0	20.0	20.0	0.0	13.3	13.3	15
2008	23.1	15.4	7.7	23.1	0.0	30.8	0.0	13
2009	40.0	10.0	10.0	10.0	0.0	20.0	10.0	10
2010	75.0	0.0	0.0	0.0	0.0	25.0	0.0	4
Other professional								
2007	45.8	6.0	6.6	9.6	4.8	22.9	4.2	166
2008	33.7	13.0	7.6	4.4	3.3	33.7	4.4	92
2009	60.0	7.7	3.1	9.2	1.5	18.5	0.0	65
2010	48.2	6.3	6.3	8.9	5.4	25.0	0.0	112

NOTE: Table displays outcomes of temporary help assignments by broad occupation and year for all assignments. Figures for the year 2011 are omitted because a significant share of assignments commencing in 2011 were still open at the end of the year and so were missing coding for the orders outcomes.

Appendix Table 3 The Effect of Start Year on Assignment Length

	OLS models				Multilevel models			
	Light industrial	Office	Contact center	Electronic assembly	Light industrial	Office	Contact center	Electronic assembly
ordstart_2008	0.0191** (0.0060)	0.0806*** (0.0078)	0.0481*** (0.0120)	0.0511* (0.0208)	-0.0178*** (0.0053)	0.0561*** (0.0069)	0.0350** (0.0117)	0.0473* (0.0204)
ordstart_2009	0.0476*** (0.0073)	0.1115*** (0.0098)	0.1385*** (0.0144)	0.2035*** (0.0239)	0.0072 (0.0059)	0.0688*** (0.0081)	0.1193*** (0.0136)	0.1793*** (0.0235)
ordstart_2010	0.0571*** (0.0064)	0.1025*** (0.0097)	0.0429** (0.0141)	0.1444*** (0.0212)	0.0315*** (0.0056)	0.0622*** (0.0082)	0.0374** (0.0131)	0.1403*** (0.0199)
<i>N</i>	706,091	347,153	92,890	41,108	706,091	347,153	92,890	41,108
<i>R</i> -sq	0.1354	0.2459	0.1135	0.1689				

NOTE: Coefficient estimates on start-year dummy variables from OLS regression or multilevel models that include individual- and order-level controls (see text). The sample includes orders commencing between 2007 and 2010. Standard errors are reported in parentheses and are clustered on individuals in OLS models. * signifies significance at the 0.05 level, ** at the 0.01 level, and *** at the 0.001 level.

Figure 1 Temporary Help Employment as a Percent of Nonfarm Payroll Employment

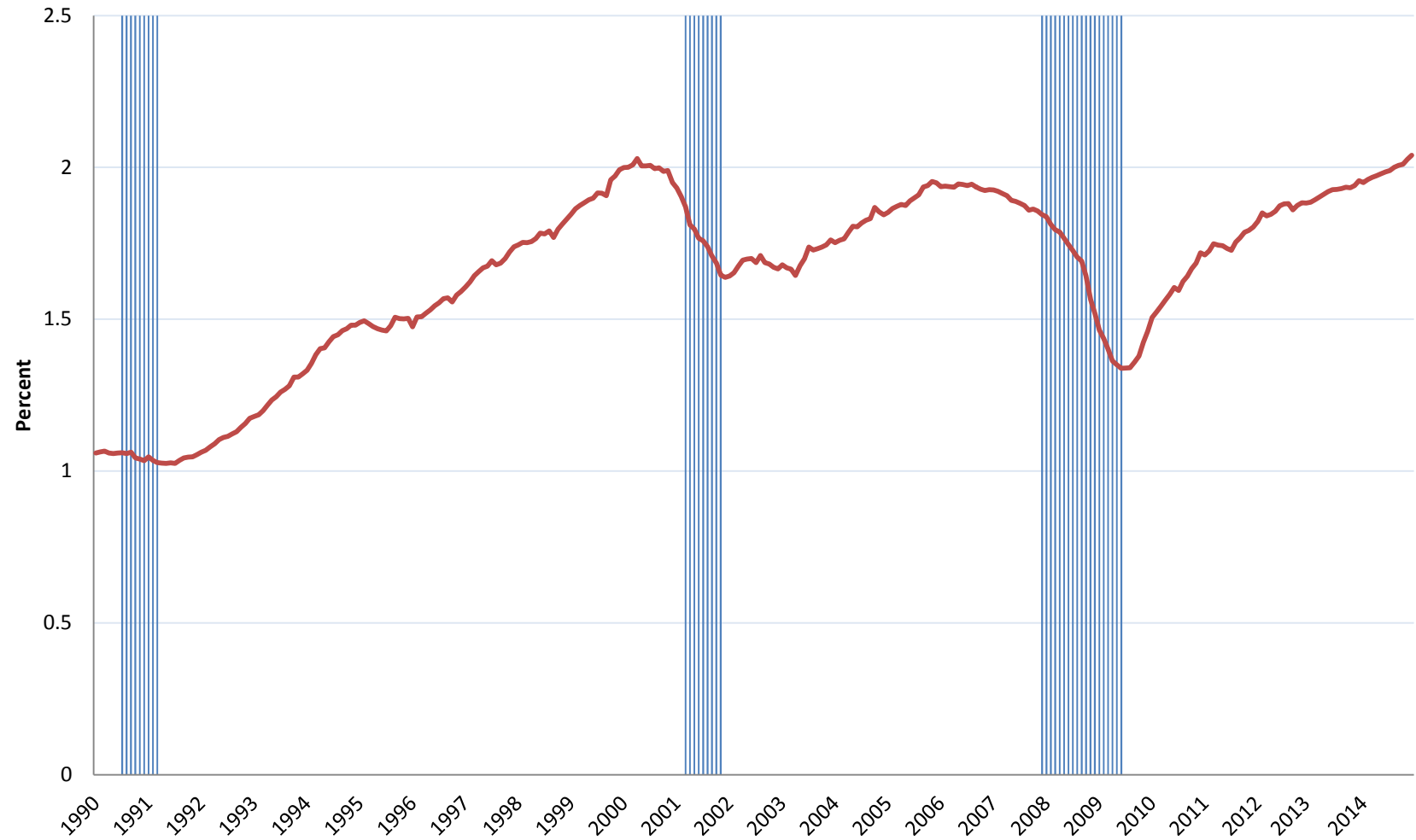


Figure 2 Distribution of Hours by Broad Occupations (percent)

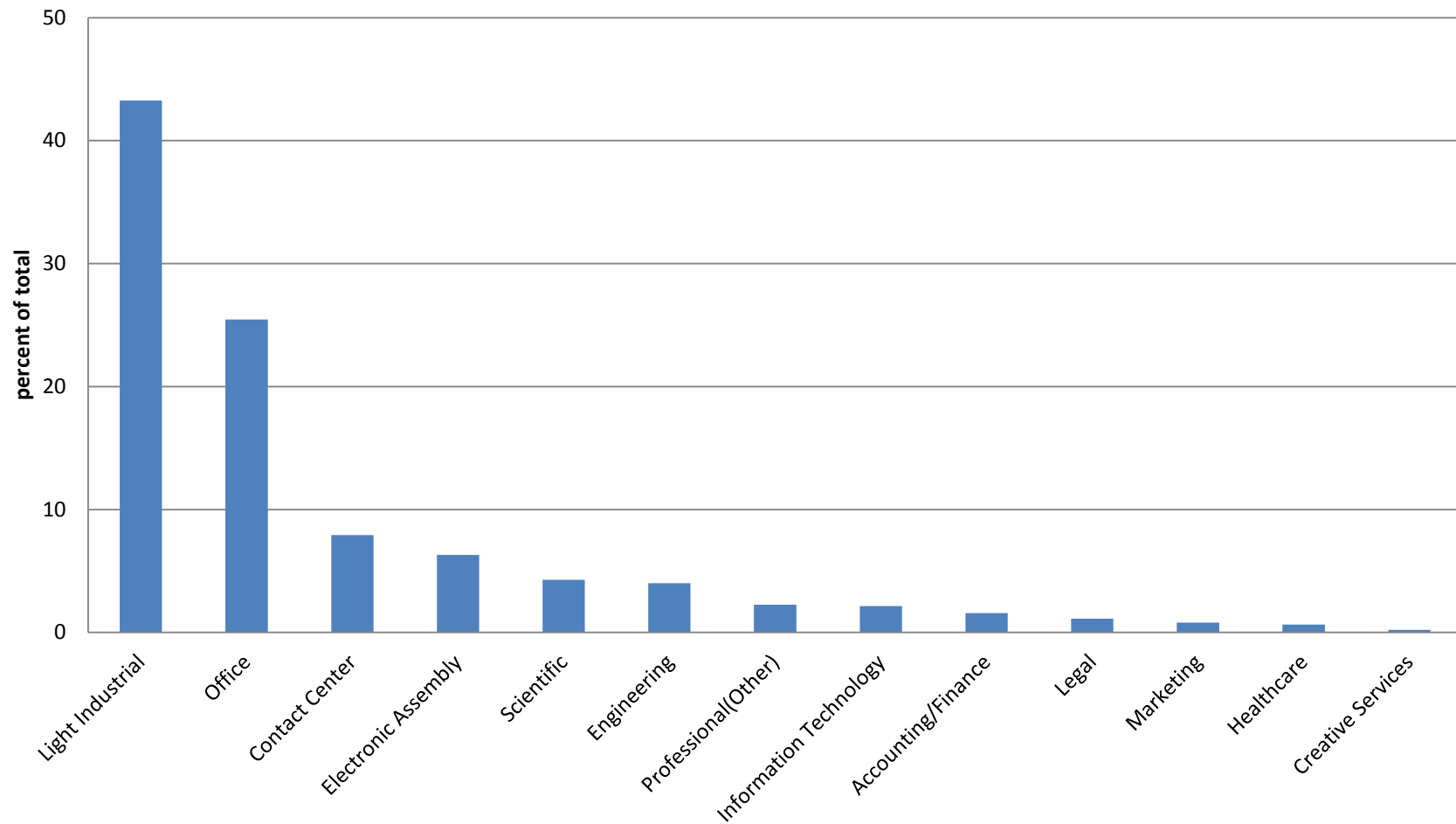


Figure 3 Annual Hours Worked, by Occupation

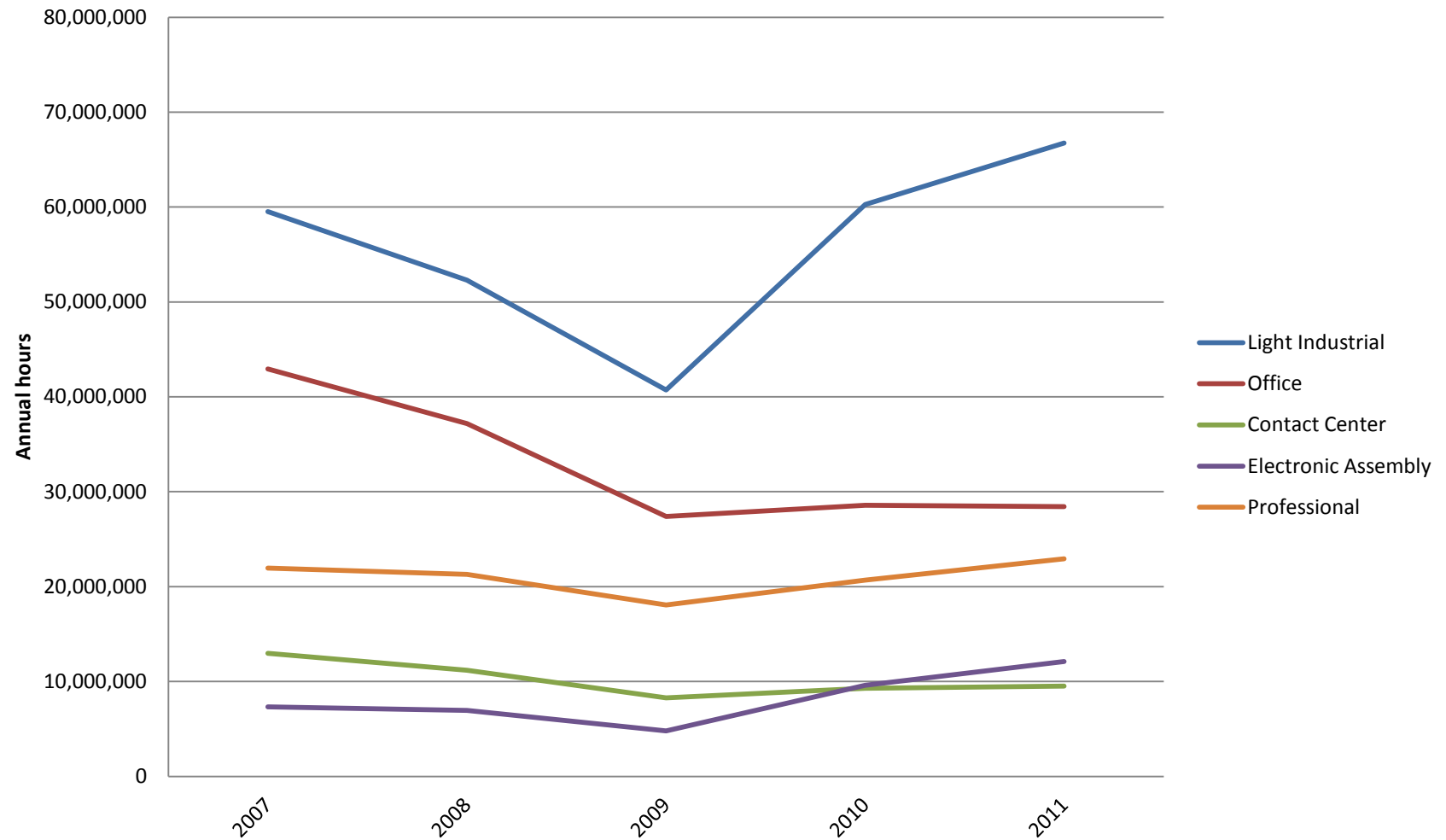


Figure 4 Indexes of Nominal and Real Wages, All Occupations, Light Industry, Office

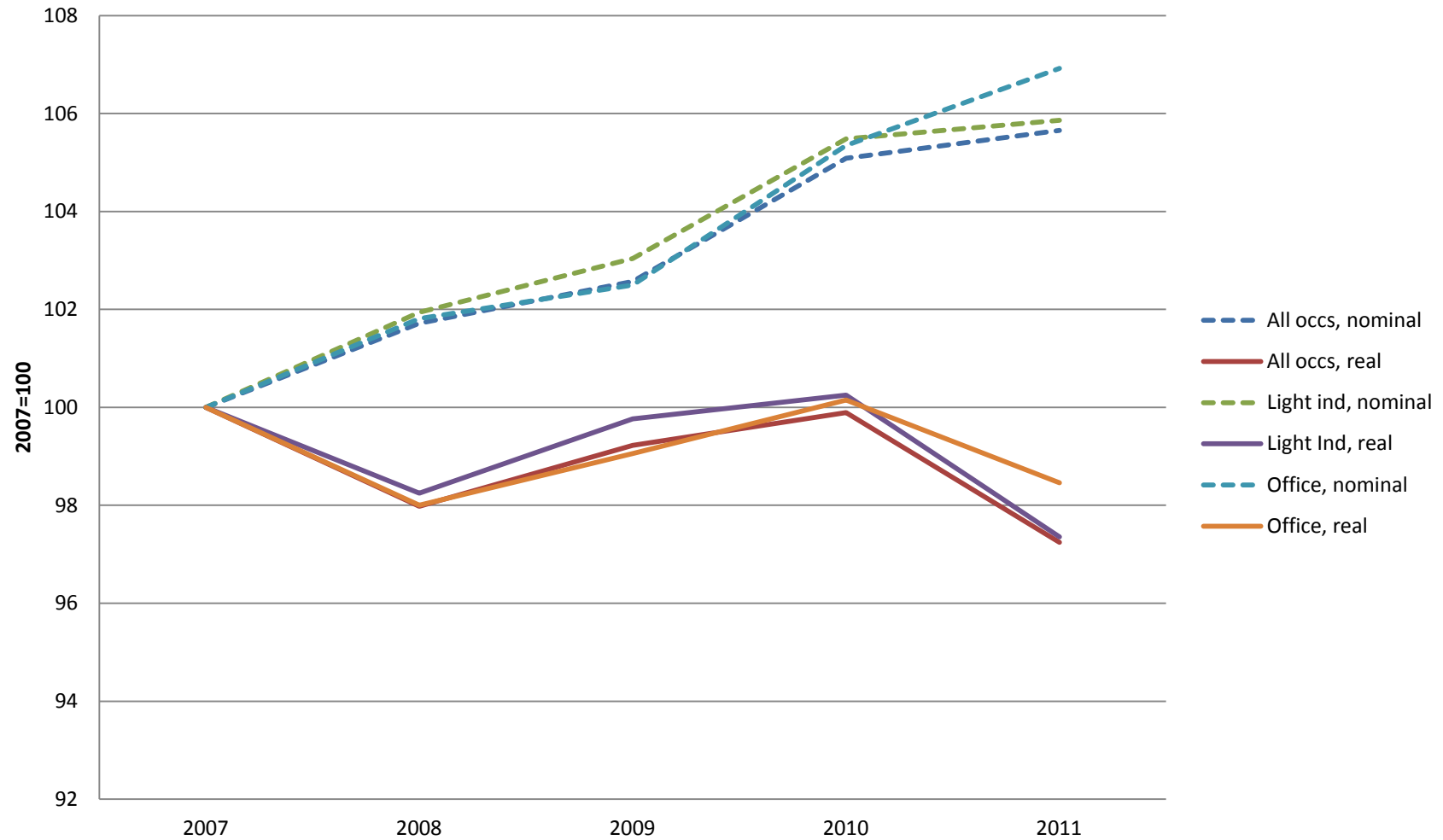


Figure 5 Comparison of 2011 Wage Indexes (2007=100)

