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Temporary Help Work: Compensating Differentials and Multiple Job-Holding

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ABSTRACT

Temporary Help Work: Compensating Differentials and Multiple Job-Holding

Temporary Help Services (THS) employment has been growing in size, particularly among disadvantaged workers, and in importance in balancing cyclical fluctuations in labor demand. Does THS employment provide some benefits to disadvantaged workers, or divert them from better jobs? We investigate whether THS jobs pay a compensating differential, as would be expected for relatively undesirable jobs. We also address multiple job-holding, exploring whether workers get "stuck" in THS jobs. We find lower quarterly earnings at THS jobs relative to others, but a $1 per hour wage premium. We reconcile these findings by examining hours worked at THS and traditional jobs.

JEL Classification: J3, J4

Keywords: temporary employment, compensating differential, quarterly earnings, wages, multiple jobs

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Until the most recent recession, the Temporary Help Services (THS) industry was growing faster than regular employment, with THS employment more than doubling (from 1.1 to 2.3 million) during the 1990–2008 period (Luo et al., 2010), prompting concern about the disproportionate share of low-skilled and disadvantaged workers among THS employees. Analyses of state administrative data show that as many as 15 to 40 percent of former welfare recipients have gone to work in the temporary help sector since 1996 (Autor and Houseman, 2010; Heinrich et al., 2005). Autor and Houseman and Luo et al. (2010) also point to a marked shift in sectors of employment in which THS workers are taking jobs, from largely clerical and office work to an increasing share in blue-collar occupations and other low-wage jobs that are filled by less-skilled workers. Manufacturers, for example, significantly increased their use of staffing services[1] to fill core production jobs in the 1990s, contributing 9.2 percent to manufacturing employment by 2006, compared to 2.3 percent in 1989 (Dey, Houseman and Polivka, 2011).

This substantial concentration of disadvantaged workers in THS employment has spurred additional research about the implications of THS employment for these workers' wages, access to fringe benefits, job stability, subsequent labor market transitions and longer-term earnings. The disproportionate job loss that the THS sector bears during recessions also adds to these concerns; in the latest recession (2007 to 2009), employment in staffing services fell by 30.0 percent (compared to a 4.9 percent decline in average annual nonfarm payroll employment), although it is also leading net job growth in the nascent recovery (Dey, Houseman and Polivka, 2011). Of key interest in policy debates is whether THS employment provides some benefits to these workers—in the form of flexibility in work hours, a wage premium and/or access to on-the-job training—or by opening a path to more stable employment for workers who might otherwise

be excluded from permanent job opportunities. The primary counterargument is that taking a THS job supplants more productive employment search and reduces the likelihood of obtaining a job in a more stable, higher-paying industry with greater opportunities for advancement. From a now voluminous research base, there does appear to be some consensus that if the next best alternative to a THS job is no employment, then working in a THS job provides potential benefits; however, workers who remain in the THS sector are likely to have long-run earnings that are substantially below those who transition to work in other sectors (Andersson et al., 2005, 2009; Booth et al., 2002; Heinrich et al., 2005, 2009).

The majority of U.S.-based research on this topic has used administrative data that includes information on workers' quarterly earnings, although some have implemented surveys to gather workers' self-reports of hourly wages, hours worked and earnings in THS and non-THS jobs. Benner et al. (2007), for example, conducted a detailed quantitative and qualitative research study of workers' use of labor market intermediaries, including THS firms, and their labor market outcomes in two regional labor markets: Milwaukee, Wisconsin and San Jose, California. Using administrative data supplemented with survey data on earnings, hourly wages and hours worked, they conclude that some of the differences in findings across seminal studies were likely due to differences in data, measurement, and comparison groups.

In this study, we break new ground by drawing on a unique compilation of administrative data that allows us to examine hourly wages and total hours of work, as well as quarterly earnings, in investigating employment and compensation patterns in THS work. A key question we are able to address is: Do THS workers receive a compensating differential—a wage premium—relative to pay at a traditional job? If the answer is affirmative, this would suggest that THS work is, in fact, *less* desirable for workers (e.g., fewer work hours, less stability, etc.),

for which they are compensated with a higher wage. If we do not observe a compensating differential, it is possible that workers realize some benefits from THS employment that they value (e.g., flexibility in work hours, training and experience, etc.).

Determining whether the benefits of THS work outweigh the costs for low-skilled and disadvantaged workers is complicated by the fact that a nontrivial proportion of these workers hold multiple jobs, sometimes in more than one sector. The examination of multiple job-holding among disadvantaged THS and non-THS workers is another important contribution of this work.

In the next section, we briefly review some of the literature on THS employment with attention to what we know about these workers' wages and patterns of employment, earnings and multiple job-holding. We then describe our data and methods of analysis. In the analysis, we explore how employment, quarterly earnings and job duration (in quarters) among the disadvantaged differ for those in THS vs. non-THS work, and whether these patterns are different for those holding multiple jobs. Importantly, we also investigate these patterns for a large subsample of workers who are disproportionately represented in the THS sector and for whom we have data on hourly wages and total hours of work (rather than quarters), allowing us to address our key question about a possible compensating differential for THS work.

Consistent with related research, we find lower quarterly earnings at THS jobs relative to non-THS jobs, even when controlling for worker and job characteristics. This holds for those in multiple jobs as well: having any THS job (whether alone or along with another THS or non-THS job) is correlated with lower quarterly earnings. However, there is considerable heterogeneity among this group of disadvantaged workers; among those in our sample with both types of jobs, approximately 16% had higher average quarterly earnings at their THS job(s) than non-THS job(s). When we examine hourly wages rather than quarterly earnings for a subsample

of our data, we find about a $1 per hour premium for THS work relative to non-THS work (approximately 15% of the typical hourly wage). The difference in results for quarterly earnings compared to hourly wages is explained by the much shorter duration of THS jobs.

Literature Review

A substantial body of research on THS employment has addressed the basic question concerning whether disadvantaged workers benefit from THS work or fare more poorly in terms of longer-term labor market outcomes relative to those who take direct-hire jobs. Autor and Houseman (2008) find that some employers screen THS workers for permanent jobs with promising career trajectories and/or offer skills training, whereas others use THS workers primarily to fill low-skill, short-term staffing needs or as "permatemps," temporary employees who are retained or repeatedly rehired to lower overhead costs to the employer and to offer greater flexibility in scheduling work.[2] A number of high-profile, class-action lawsuits have been brought against employers in the last decade alleging unfair exclusion of temporary workers from benefits extended to other workers, including successful litigation in 2000 against Microsoft (Frauenheim, 2005). Employers have countered that temporary workers sometimes earn better wages than their full-time peers and can often purchase a benefit package from their THS agency, whereas worker advocacy organizations contend that THS workers are frequently paid lower wages, get fewer or more variable work hours, and receive fewer benefits while performing the same jobs as regular employees (Eisenberg, 1999).

Among the most vexing issues in research on THS employment and its implications are the empirical challenges of accounting for the self-selection of workers into job type (THS, direct hire or no job) that make it difficult to disentangle effects of job type from unmeasured

worker characteristics, such as motivation or unobserved employment barriers. Studies by Finegold et al. (2003), Carre (1992) and Segal and Sullivan (1997) suggest a relationship between worker characteristics associated with lower productivity (e.g., fewer formal educational qualifications and less work experience) and selection into THS jobs, and Finegold et al. also reported that low-skilled and disadvantaged workers were more likely to enter THS work after being unemployed or looking for work. Similarly, Heinrich, Mueser, and Troske (2009) found that participation in government programs (welfare, job training, and labor exchange programs) was associated with a substantial increase in temporary-help employment, although their analysis also showed that participants in Temporary Assistance for Needy Families (TANF) or job training programs who took THS jobs were not disadvantaged relative to other program participants.

In light of the association between participation in government programs and entry into THS jobs, one might be concerned that some disadvantaged workers were taking THS jobs in order to meet minimum work requirements (after the 1996 welfare reforms) and yet stay qualified for TANF benefits with low earnings. A related but distinct concern expressed in the literature is that TANF recipients facing time limits would accept THS employment as jobs of "last resort" (Amuedo-Dorantes and Bansak, 2002, Lane et al., 2003). The implications of both of these arguments is that THS workers would be taking jobs with lower pay—either to game the welfare system or because they had no better alternative—and thus, we would not expect to observe a wage premium or compensating differential in THS jobs. Indeed, one would expect THS firms to reduce offered wages in the face of the TANF requirements and corresponding increases in disadvantaged workers seeking THS jobs. At the same time, the little evidence available on welfare recipients' responses to TANF requirements and their relationship to

employment in the THS sector does not lend support to these arguments. In a 2005 study of welfare recipients who had recently worked for a THS firm, Heinrich found that more than three-quarters had learned about THS jobs by contacting firms directly or via word-of-mouth, and 90 percent were looking for full-time, permanent positions. In addition, 74 percent of the TANF recipients were earning a wage that was equal to or more than their desired hourly wage.

The challenges associated with estimating the effects of THS employment while controlling for selective differences among workers are also exacerbated by the fact that most U.S.-based research relies on employer reports of quarterly earnings (Unemployment Insurance (UI) records) to measure labor market outcomes. Although these data include information on the number and classification of employers and earnings during a quarter for the overwhelming majority of employment in the states, they do not include information on hourly wages, weekly hours, or whether jobs in the same quarter were held simultaneously or sequentially. We argue that if THS employment has many undesirable characteristics in the eyes of workers, we would expect THS workers (holding worker characteristics constant) to be compensated with a higher wage relative to pay at a traditional job. If they do not receive a compensating differential, this might reflect that workers realize some benefits from THS employment that they value. Few studies have looked at wages, wage premia or wage-work hours tradeoffs, however, primarily because of the absence of information on hourly wages and work hours in UI data.

In their study of Michigan welfare-to-work programs that randomly assigned program participants to service providers that placed clients in jobs, Autor and Houseman (2008, 2010) collected notably detailed data on the jobs clients secured through the programs, including their hourly wages, weekly hours, job title, and employer name. They reported that the THS jobs obtained were highly concentrated in low-skilled manufacturing occupations, general laborer

positions, and health care and clerical occupations, while direct-hire jobs were distributed across a wider range of occupational categories. Contrary to many providers' views that favoured direct-hire opportunities, Autor and Houseman's data analysis showed that not only were the average hourly wage ($7.96 vs. $7.47) and weekly hours of work (37 vs. 34) higher at THS than direct-hire jobs, but the entire distribution of wages and hours were also uniformly higher for THS than for direct-hire jobs. Although this may reflect in part the differing occupational distributions of these job types, at least in the short term, a differential in compensation was apparent.

Taking advantage of detailed data linking workers and firms in Portugal, Böheim and Cardoso (2007) compared temporary agency workers with direct-hire workers to assess whether those working for temporary agencies had lower wages initially or in the two years following entry into THS jobs. As THS workers in Portugal are entitled to the same wage paid by the user firm to similar direct-hire workers (or to the wage set by collective bargaining for temporary agency work if it is higher), they expected to find no or very small wage differentials between THS and direct-hire workers. In simple comparisons of average wages, they observed THS workers receiving about 10 percent lower wages than direct-hire workers. However, once they controlled for firm and worker characteristics, including unobservable worker quality with worker fixed effects, the pattern reversed, with young temporary help workers receiving an hourly wage premium of about 1-5 percent.

Moretti (2000) looked at a slightly different class of temporary labor contracts for seasonal workers in the agricultural sector, hypothesizing that the higher risk of unemployment typically experienced by seasonal workers in this sector would be compensated by higher wages (compared to permanent workers). Any differential, he suggested, would approximate the value

of job security to the workers. The same selection problem arises in this study, in that the risk of unemployment associated with job characteristics needs to be isolated from the risk of unemployment due to worker characteristics, such as low productivity or poorer noncognitive skills. Any unmeasured worker characteristics associated with a higher probability of unemployment will, as in Böheim and Cardoso's study, bias downward the estimate of a compensating differential. Moretti employed two-step estimators and distribution-free semiparametric estimators to separate job risk from the risk of unemployment due to unobserved worker characteristics, using data from the 1992-1995 National Agricultural Worker Survey. He found that a worker employed under a temporary labor contract earns a wage approximately 9-12 percent higher than a similar worker in a permanent job (or approximately $0.52-0.61 per hour), a premium that is comparable to the differential observed by Autor and Houseman for THS workers.

We came across very little research, however, that considered multiple job-holding among workers in the temporary help and other sectors and the implications of multiple job-holding for their THS wages, earnings and/or compensating differentials. We conjecture, for example, that for some THS workers who hold a traditional job as well as a temporary job, the THS job may, in fact, be valued for its variable or fewer hours; alternatively, for a THS worker for whom the temporary job is his or her only job, these same job characteristics may make it less desirable, compelling a compensating differential. In their study of the employment and earnings trajectories of persons following their entry into employment or social assistance programs, Heinrich et al. (2009) confirmed that individual selection into THS jobs only vs. THS plus a job in another sector is distinct (i.e., a likelihood ratio test rejected models that combined these employment categories). They found that while the earnings of those working only in

temporary employment were lower than that of workers in other sectors, those holding jobs in multiple sectors had earnings close to the level of workers in most other sectors. With only measures of quarterly earnings, however, they were not able to observe workers' wages at these different types of jobs or to assess whether the differentials in earnings were due to differences in wages or hours worked.

Data and Empirical Approach

In this study, we use uniquely available data on a sample of disadvantaged workers in Wisconsin who were employed with firms that applied for the Work Opportunity Tax Credit (WOTC). The WOTC is a federal employer subsidy available for firms that hire welfare recipients, food stamp recipients, and members of other designated target groups under specific conditions.[3] In our prior research on the WOTC (Hamersma and Heinrich, 2008), we found that many firms that typically hire low-skilled and disadvantaged workers, whether THS or non-THS, commonly include the WOTC application with other employment application forms. Firms collect these forms and submit them to third parties for processing or directly to the state employment service for certification. Upon approval, firms may claim the tax credits the following year, depending on the hours worked and total earnings of the employee.[4]

Although the goal of the WOTC subsidy program is to increase hiring of disadvantaged workers, our research (Hamersma and Heinrich, 2008 and Hamersma, 2008) suggested that most employers, including THS firms, simply assemble the forms for processing and collect the tax credits later, without paying attention to which workers get certified. We also found that THS firms apply in disproportionately large numbers for the credit, but that they also have many certified workers for whom they ultimately receive little or no subsidy due to the workers' short

job tenure with the THS firm.[5] The participation of both THS and non-THS firms in the WOTC program allows us to use a sample of "WOTC-applied" workers to examine THS wage and earnings differentials and to generate findings directly relevant to workers who are more likely to be employed in the THS sector. Specifically, we use workers for whom employers submitted WOTC applications (regardless of whether they were certified or credits were received by the employer) to take advantage of the availability of matched demographic and employment data from other sources (discussed below), and most importantly, the hourly wage data at the WOTC job itself. We further consider the implications of this sample choice where relevant in the analysis and discussion of findings.

A. Empirical Approach

We first calculate simple descriptive statistics of employment, multiple job-holding, and earnings for our sample of workers, with particular attention to THS employment. Specifically, we examine these patterns separately for workers who hold only one non-THS job, multiple (no THS) jobs, one THS job only, multiple (THS-only) jobs, and both THS and non-THS jobs within a quarter. We then undertake multivariate analyses to estimate differences in earnings for workers in THS and non-THS jobs, controlling for worker demographic characteristics. Recognizing the limitations of this approach in controlling for worker selection into job types, we also estimate regressions with individual fixed effects. These same analyses are performed including indicators for multiple job-holding. Next we estimate the (compensating) wage differential between THS and non-THS jobs, controlling for available worker characteristics and occupation categories, and conduct similar analyses accounting for multiple job-holding categories. In reconciling the findings on THS and non-THS wage and earnings differentials, we

also examine the duration of employment in THS and non-THS jobs, as well as transitions of workers from THS into non-THS jobs (and other employment transitions).

B. Details of Data and Study Sample

We obtained all administrative records for WOTC applications submitted by employers of disadvantaged workers in Wisconsin during 10 quarters, from 1999:3 to 2001:4.[6] These records report the occupation of each job and the starting wage (in $1-wide brackets). Moreover, this sample of workers provides our foundation for a much richer data set formed by merging the records of these individual workers (by Social Security Number) to other databases containing substantial information on their demographic characteristics and employment patterns.

Many workers in our sample have records in the state's public assistance system database, called the Client Assistance for Re-employment and Economic Support (CARES) data. For those workers qualifying for WOTC due to participation in public assistance programs, we can link their WOTC record with further information contained in the CARES database. Along with information on welfare and food stamp program participation, the CARES records contain demographic information including education level, number of children under 18, number of children under 6, age, gender, race, and some geographic information. We can access these records for the period 1998:1-2001:4.

To examine employment outcomes, we also link the workers in our sample to the state's Unemployment Insurance (UI) database, containing quarterly earnings records for every job held by each of these individuals over almost 10 years (1995:1-2004:2). Note that quarters with multiple jobs contain a separate earnings record for each job. Across these years, we observe job transitions as well as job types, although within a given *quarter*, it is not possible to determine if multiple jobs were held simultaneously or sequentially. The particular job that was subsidized

via WOTC can be identified in the UI records via an employer identification number, so that starting wages (available only in the WOTC records) can be linked to total earnings at the appropriate job. This linkage is central to our examination of hourly wages and job tenure (in hours rather than quarters) at these jobs, which complements and extends our analysis of quarterly earnings that utilizes all jobs reported for these workers. These records also contain industry codes that are used to identify THS jobs.

Following the full merge, our dataset contains 293,432 person-job-quarter observations. This is based on 11,335 workers who are observed for up to 9.5 years (38 quarters), with a total number of jobs for individuals ranging from a single job to 90 jobs over the sample period. About 16 percent of the person-job-quarters reflect THS jobs. Reconstructing the data into person-jobs (so that multiple quarters at the same job are collapsed into one observation) yields a sample size of 139,107 person-jobs, of which 22 percent are THS.[7] Note that this higher percentage of THS jobs when using person-jobs reflects the typically shorter duration of THS jobs. We can also approach the data by person-quarter (218,895 observations) to analyze multiple job-holding within a quarter. We now begin with a descriptive analysis of employment patterns and THS work in this sample.

Examining Employment Patterns and THS Work

It is well-established that disadvantaged workers tend to have less stable employment patterns than typical workers. Table 1 demonstrates that this pattern holds in our data set, where the average number of jobs per person was nearly 11 over the 9.5-year study period.

[Insert Table 1 about here]

To study THS employment, we need sufficient observations of both THS and non-THS jobs in our sample. Fortunately, the sample composition and long length of the time series yield a rich sample for this purpose; more than two-thirds of workers had at least one THS job during this time period. In addition, nearly all of these workers (7,654 of the 7,707 with a THS job) also had a non-THS job at some point during this time period. This uniquely situates us to look at person-specific differences in earnings at each type of job in our analysis.[8]

We next examine within-quarter patterns of multiple job holding. It is evident from Table 2 that many disadvantaged workers in our sample hold multiple jobs within a quarter, reflecting both job transitions within a quarter and simultaneous jobs. An important finding in our sample is that those in THS jobs are particularly likely to hold multiple jobs within a quarter.

[Insert Table 2 about here]

To better understand the ways in which people combine work within quarters, we report the distribution of several quarterly work patterns in Table 3. There are multiple jobs occurring in 26.09 percent (17.25 + 7.86 + 1.62) of all person-quarters. Of these multiple-job quarters, over one-third included at least one temp job.

[Insert Table 3 about here]

In summary, these data show, consistent with prior research, a great deal of THS work among disadvantaged workers and a tremendous amount of job mobility both within and across quarters. Second, it is not unusual for workers to hold multiple jobs during a quarter, particularly if they have a THS job; for every person-quarter involving a single THS job, there is another person-quarter that combines a THS job with at least one other job (THS or non-THS). In addition, as almost all THS workers in our sample also had traditional jobs during the time

period we examine, our data do not suggest a distinct "secondary" labor market in the THS industry.

Linking Earnings to THS Work and Multiple Job Holding

A. Earnings at THS and non-THS Jobs

In this section we examine differences in earnings between THS and non-THS jobs. We begin with a simple comparison of means in Table 4, developed by averaging each individual's average earnings at THS jobs and non-THS jobs over the sample period.

[Insert Table 4 about here]

There is a tremendous gap between average total earnings at THS jobs and average total earnings at non-THS jobs, with $8,000 more earned at non-THS jobs. The gap between THS and non-THS shrinks some when expressed as average quarterly earnings, but THS jobs still appear to pay only about half as much as non-THS jobs. This may relate to the types of workers that take THS jobs. The demographic information available for our sample allows us to control for possible selection effects.

We use a linear regression model throughout our analysis, with different groups of covariates depending on the sample being used. Our basic model is:

$$Y_{iqj} = \alpha + \beta_1 THS_{ij} + \beta_2 X_{iqj} + \beta_3 T_q + \varepsilon_{iqj}$$

where Y is measure of earnings, THS is an indicator for a temporary job, X is a vector of control variables, T is a vector of quarter dummy variables, and ε is a random error term. The subscript *i* labels individuals, *q* labels quarters, and *j* labels jobs. Throughout our analysis, our greatest

interest lies in the value of β_1, which represents any difference in earnings that can be attributed to a job being in the THS industry.

Our first approach maximizes our sample size by utilizing only the demographic data that are available for our full sample period: age, gender, and race.[9] We estimate a regression at the person-job-quarter level, modelling job-quarter earnings as a function of a THS indicator, time (year-quarter) indicators, gender, race, and age. The results of this analysis, reported in column 1 of Table 5, suggest that temporary work is associated with nearly $900 less in quarterly job earnings. This corresponds quite closely to the unconditional mean difference reported in Table 4, although the demographic variables do contribute explanatory power to the regression.

[Insert Table 5 about here]

In an alternative model specification (comparable to the model in column 1, Table 5), we interacted year indicators with the THS indicator to explore whether the decrement in earnings associated with THS employment varied over time and with cyclical economic changes. The results (available from the authors) show considerably smaller differences in "boom" years—approximately $700-$800 less in quarterly earnings over the 1998-2000 period—compared to differences in recessionary years (2002-2004) of more than $1,100-$1,400 less in quarterly earnings for workers in THS jobs. We suspect that larger differences in quarterly earnings in recessionary times are due to longer gaps between jobs (or shorter THS job durations), an issue we further explore empirically in the final section.

A richer set of demographic variables—including number of children, education level, and geographic information—is available over a more limited time period (1998 through 2001). Since these may provide additional explanatory power (given potential within-person variation over time), we also estimate our model with these additional variables for this restricted time

period. The second column of Table 5 displays the estimates from this model, which similarly indicate a large negative effect (over $650) of THS employment on quarterly job earnings.[10]

The analysis thus far still does not fully utilize the panel nature of the data available to us. Since about 67 percent of the sample of workers had at least one THS job *and* at least one non-THS job during the sample period, we can do a separate analysis of within-person earnings differences between the two types of jobs. The simplest comparison is to calculate the pay gap between THS and non-THS jobs for those who have had both job types. Comparing average quarterly earnings at each type of job (calculated for each individual), we find that the median gap between THS and non-THS pay is an additional $670/quarter at non-THS jobs.[11] This would suggest that the compensating differential is most likely negative, i.e., *non*-THS jobs pay a premium. However, there is some heterogeneity in the net benefits people see from non-THS work; in fact, about 16% of this sample had higher quarterly earnings at their THS job(s) than at their non-THS job(s). The histogram in Figure 1 suggests a wide and varying distribution of earnings gaps.

[Insert Figure 1 about here]

To more precisely identify the average penalty or premium for THS work, we estimate a regression model with individual fixed effects on this sample of people who held both types of jobs. We expect this analysis to better handle selection into THS work, as the workers have all had both types of jobs and the individual fixed effects can net out time-invariant determinants of earnings. The results, presented in the third column of Table 5, suggest that the average person who has worked in both types of job has experienced a premium of $731 in quarterly earnings at non-THS jobs relative to THS jobs. This result is quite consistent with the previous estimates using the whole sample with covariates (rather than fixed effects).

As before, a more limited sample period also allows us to include additional time-varying covariates (column 4). In the presence of person fixed effects, we do not expect these to add a tremendous amount of explanatory power; in fact, the R-squared of the regression falls slightly due to the shorter sample period. However, the coefficient of interest similarly indicates a per quarter penalty for THS work (of $567).

B. Analysis Explicitly Accounting for Multiple Jobs

To learn more about the role of THS in the context of multiple job-holding, we use a more detailed measure of employment for each quarter that indicates whether that quarter contains: (1) one non-THS job record, (2) more than one record, no THS jobs, (3) more than one job record, with at least one THS job and one non-THS job, (4) one THS job record, or (5) more than one record, all THS jobs. Based on our analysis thus far, we expect to find that quarters involving THS work will be associated with lower earnings. Predicting the effect of being in multiple jobs is more difficult, however, and ultimately, an empirical question. If jobs are held simultaneously, earnings are likely to be higher than a single-job quarter; alternatively, multiple-job quarters may reflect sequential jobs with a gap of non-employment in between, so that earnings for the whole quarter may be lower.

Results using observations at the person-quarter level are presented in Table 6. The four regression specifications used in the analysis are parallel to those in Table 5, but with data utilized at the person-quarter (rather than person-job-quarter) level. The omitted category is a single, non-THS job. The first column regression in Table 6 includes all 218,895 person-quarter earnings observations in the sample period 1995:1-2004:2. The second column adds time-varying covariates but includes only the time period 1998:1-2001:4. The third and fourth

columns limit the sample to workers who have had both THS and non-THS jobs and include individual fixed effects.

[Insert Table 6 about here]

This analysis likewise suggests lower quarterly earnings at THS jobs. The estimated difference in quarterly earnings between a quarter with a single non-THS job (reference category) and one with a single THS job ranges from $695 to $1,068, similar to the range of our earlier estimates. The estimates are similar for those with multiple THS jobs, which show a strong disadvantage relative to a single non-THS job. A person with both THS and non-THS jobs is at less of a disadvantage than one with a single non-THS job, with estimates ranging from approximately $48 to $224. The only group that has higher quarterly earnings than those with a single non-THS job is the group with multiple jobs that are all non-THS.

C. Investigating the Potential Role of Selection

To further explore the potential role of selection in our analysis, and specifically, selective factors related to the WOTC qualification criteria (that could influence the likelihood of WOTC certification or application submission), we estimate these same models including only jobs that *begin* in a quarter after WOTC application submission.[12] In doing so, we ensure that the employment outcomes we examine are not directly limited by the WOTC selection criteria. With sample sizes that are one-third or less of those in Tables 5 and 6, the patterns of results and magnitudes of effects are remarkably consistent, albeit the estimated penalty associated with working in the THS sector (Table 7) or only one THS job (Table 8) is approximately 15 percent higher. In summary, a THS job—even if it is one among others—seems to be associated with lower quarterly earnings relative to single or multiple non-THS jobs.

[Insert Tables 7 and 8 about here]

Finer Measures of Wages and Job Duration

While our results provide consistent evidence on the relationship between THS work and quarterly earnings, our earlier documentation of the high job mobility of disadvantaged workers indicates that measuring job duration in quarters (and earnings by quarter) may be too coarse a measure for fully understanding job outcomes. Because each worker in our sample had at least one WOTC application reporting a starting hourly wage, we can further investigate this issue. That is, we can look directly at a measure of hourly wages to assess the existence of a THS compensating differential.

There are a total of 10,733 person-jobs for which employers applied for the WOTC (and wages are available) in our sample, of which 1,753 are in the THS industry. Table 9 displays characteristics of the all-job sample with demographics (i.e. the 1998-2001 sample) and the same characteristics of this smaller sample of WOTC jobs only. Note that while the same individuals are in both samples, the WOTC sample is a much smaller set of their jobs because it is restricted to "WOTC-applied" jobs and the time period for which WOTC records are available (a 10-quarter period, rather than the 16 quarters available for these workers when we include all jobs in 1998-2001). This reduces the power of the analysis but also heterogeneity in the sample, while allowing us to utilize the wage data in the WOTC records.

There are some key differences between this WOTC-job sample and the larger sample that underscore the importance of adequate controls in our regression analysis. First, the fraction of jobs that are THS in this sample (about 14 percent) is smaller than in the larger sample. This is expected in light of evidence from Hamersma (2011), who shows that firms have a lower likelihood of participating in the WOTC program if their workers have shorter average job duration—a common characteristics of THS jobs. Second, the raw average earnings per quarter

are higher overall in this WOTC-job sample, and are more similar across THS and non-THS workers. While one might expect this to be directly related to the subsidy program itself—that, in principle, would allow firms to pay higher wages—past evidence suggests only about a 10 percent earnings premium (Hamersma, 2008). The larger difference in our sample may reflect higher education levels (particularly among the THS workers).

The wage distributions for the two different job types, reported in Table 10 in $1-wide categories as provided to us by the WOTC administrative office, give a very different impression of the pay gap between THS and non-THS jobs than the analysis of quarterly earnings. The distribution seems to suggest that wages in THS work dominate those in non-THS work. Coding wages as midpoints, we find mean non-THS earnings of $6.85/hour and mean THS earnings of $7.88/hour. Could this apparent premium for THS work reflect the importance of controlling for covariates, especially occupational categories and education? Or is it evidence of a compensating differential?

[Insert Table 10 about here]

We examine this wage differential controlling for all available covariates at the time of job start, as well as indicators for eight occupation categories. This sample includes only WOTC jobs—one observation per person-job—as we have only one wage (the starting wage) for each job. There are 8,755 WOTC person-jobs with wage and covariate data, using only the first quarterly observation at the job and covariates from the starting quarter of the WOTC job. The key coefficients are reported in Table 11; full model results with quarterly and occupational indicators are available upon request. In all columns, the outcome of interest is the wage at the WOTC job.

[Insert Table 11 about here]

The first column of results suggests that THS jobs are associated with an hourly wage *premium o*f more than a dollar, despite our earlier finding of a quarterly earnings *penalty*. Moreover, the premium is very similar to that suggested by the raw data, indicating that controlling for important wage determinants did not affect the estimated dollar wage premium for THS work, which is equivalent to about 15 percent of the average wage.

As before, we can also examine multiple job issues in the context of wages rather than quarterly earnings. This analysis does, however, have some complications, because the existence of multiple jobs is measured at the quarterly level, while the wage is at the job level. Because the analysis must be done at the job level, for persons with multiple WOTC jobs and job types in a quarter, we also distinguish whether each observation is for a THS or non-THS job among them. Having handled this issue, there are basically two options for informative analysis that both have some advantages and disadvantages. One option is to continue to use only one observation per person-job. This has the advantage of maintaining the accuracy of the wage, since the starting wage will almost certainly be accurate for the first quarter of employment. The disadvantage is that there are a disproportionate number of people with multiple jobs in that quarter, since it is a starting quarter of a new job (and thus potentially an ending quarter of a previous job). This limits the generalisability of the results. Another option is to use all quarters in which there is a WOTC job, which often includes some single-job quarters and other multiple-job quarters. This has the advantage of being a more representative sample of person-quarters (and a larger sample more generally) but the disadvantage of requiring the assumption that the starting wage continues to be accurate throughout the tenure of the WOTC job.

Estimates using the first alternative approach are in the second column of Table 11. The direct comparison between a single non-THS job and a single THS job yields nearly the same

estimate as the first column: a THS wage premium of $1.10. A gap also occurs when comparing someone with a non-THS job to someone with multiple THS jobs. Relative to a single non-THS job, a premium of $1.17 for a THS job occurs for a person with both THS and non-THS jobs. In contrast, non-THS jobs worked alongside other (THS or non-THS) jobs do not tend to pay much more than a single non-THS job. Estimates using the second alternative approach (in the last column of Table 11) demonstrate that a larger, perhaps more representative sample produces nearly identical results.[13]

A. Sample Weighting to Address Potential Selection

To verify that our finding of a THS wage premium is not merely an artefact of the limited sample, we also create a weighted version of this sample designed to replicate the descriptive characteristics of the larger sample (for which wages are not available). Details of the propensity-score procedure for generating these weights, and evidence of the procedure's effectiveness in producing adequate weights, are presented in Appendix A. We generate separate sets of weights to help re-create the Table 5 sample (all jobs) and the Table 7 sample (post-WOTC jobs), and then estimate the wage regression using our WOTC-job sample with each set of weights. The results, shown in Table 12, are remarkably similar to those of the unweighted sample, despite weights that substantially change the distribution of covariates. We therefore conclude that the selected nature of the WOTC-job sample does not drive the findings of an approximately $1 hourly earnings premium for THS work.[14]

[Insert Table 12 about here]

Reconciling the Findings on Compensating Differentials and Concluding Discussion

Our findings using quarterly earnings indicate a penalty to THS work, while those using hourly wages suggest a premium. We attempt to resolve this apparent contradiction by examining job duration. Table 13 shows the distribution of job durations by THS status.

[Insert Table 13 about here]

Overall, job durations are very short for this sample, but the short duration of THS jobs is particularly remarkable. The fraction of THS jobs appearing in only one quarterly record (66.50%) is nearly 40 percent higher than the fraction for non-THS jobs (48.53%). The difference in duration is even clearer when we examine the subsample of WOTC jobs, for which we can approximate the hours worked (rather than quarters) by using the starting wage. The average non-THS job lasts 758 hours while the average THS job lasts just 287 hours.[15] The brevity of these THS jobs (and/or their other disadvantages) appears to be compensated with an extra $1.00-1.10 per hour.

If some of these THS jobs are shorter because workers are transitioning from THS to other THS or non-THS jobs, then we might be able to discern these patterns by looking more closely at workers holding multiple jobs within a quarter (which may reflect job transitions or simultaneous jobs). We begin this final analysis by identifying person-quarters in our sample that include multiple job-holding. While we find workers holding as many as eight or nine jobs in a quarter, about 95 percent of the 58,522 person-quarters with multiple jobs involve just two or three jobs. To keep the analysis manageable, we utilize these 55,843 person-quarters in our analysis and further identify the subset of these in which it is clear that the worker experienced a transition from one job (leading up to the observed quarter) to another job (continuing into the following quarter. This occurs in 15,624 (28%) of these observations. A primary question of

interest in this analysis is: what fraction of the transitions in this subsample are transitions from THS to non-THS jobs?

First, we note that 2,734 of the 15,624 person-quarters consisted of workers who were in THS jobs in the quarter prior to the observation quarter. Among these, we find that 23% move into another THS job. Of those (12,890 person-quarters) who began in a non-THS job, about 13% transition to a THS job in the next quarter. Although this is a fairly restricted subsample, we view these analyses as offering an important insight about a group of disadvantaged workers that is typically viewed as more vulnerable. Specifically, it does not appear that a large proportion of this subsample of workers is more likely to stay in THS jobs, although the level of transition to THS is higher for those already in THS.

While we did not explicitly look for "permatemps" in our analyses, we showed that the majority of THS jobs do not last longer than a quarter, and those transitioning to another employer from a THS job are most likely to go to a non-THS job. Nonetheless, workers in THS jobs are clearly working a significantly lower number of hours at a given job. In addition, some of them transition to unemployment or periods with few to no hours of work that largely account for the lower average quarterly earnings of workers in the THS sector. Similar to the seasonal agricultural workers in Moretti's (2000) study, THS workers clearly labor in less stable jobs with fewer work hours.

We also find, consistent with theory and across alternative specifications and sensitivity tests (see Appendix B), that, conditional on worker characteristics, THS workers are compensated with a higher wage relative to pay at traditional jobs. Although the within-worker comparisons of quarterly THS and non-THS earnings suggest that most workers earn more per quarter in non-THS jobs, for a subset of our sample with richer data, we find higher hourly

wages in THS employment, suggesting a compensating differential of about $1.00-$1.10 per hour for THS work. Moretti (2000) describes this compensating differential as the value of job security for workers; we correspondingly interpret it as the wage premium they receive for taking jobs with less stability and/or shorter tenure.

We additionally showed that workers in multiple jobs tend to have lower quarterly earnings than single job-holders if any of their jobs are THS jobs. We suspect that this reflects, at least in part, gaps in employment within a quarter with multiple jobs. Gaining a fuller understanding of how THS work affects labor market outcomes (particularly employment transitions) for a broader sample of disadvantaged workers than was available to us is probably feasible only with data from THS firms that can be linked to state administrative data. And even with such data sources, the depth of investigation would depend on the extent to which these firm data include workers' time between temporary job placements and transitions from a THS assignment to a permanent job with an end-user firm. Still, this analysis has uncovered important findings regarding the extent to which THS workers are compensated for the limited job security and tenure that they tolerate, and it confirms that the differential in earnings is likely not due to THS workers being paid a lower hourly wage rate than their permanent employee counterparts.

Several policy implications of these findings immediately come to mind. First, the typical labor economic analysis that relies on UI quarterly earnings data, without access to information on hourly wages, might suggest to policymakers that an hourly wage subsidy would be appropriate for addressing concerns about THS workers' lower quarterly earnings. However, such a policy response would miss the crux of the problem, which is that job durations are significantly shorter, and would thus have limited impact on improving workers' ability to earn

an adequate living. Although we have acknowledged the limitations of our sample of WOTC-applied jobs, the disadvantaged individuals in this sample are precisely the types of workers of concern in the public discussion of the consequences of temporary work.

Our findings also suggest that policy or program supports to aid workers in their transitions to a non-THS job, or in providing additional financial support for periods between jobs, might be considerably more effective in supporting workers who labor in less stable jobs with fewer work hours. The current Unemployment Insurance (UI) system has well-known deficiencies in providing a temporary means of assistance to low-income workers such as those in the THS sector, due to eligibility restrictions that are based on the length of work history and the level of earnings. This makes it difficult for those with only a recent work history or who work intermittently to be eligible. If high levels of unemployment and underemployment continue to persist as they have since the recession that began in 2007, momentum for policy change to relax the eligibility conditions for these workers might be strong enough to motivate policy action.

Finally, our work points toward the increased importance of understanding how non-wage benefits contribute to the compensation of temporary and non-temporary workers. National statistics show that benefits vary across industries, but even in a typically lower-paying industry like "leisure and hospitality," employers report that over 20 percent of total compensation is in benefits.[16] If we assumed that workers in temporary help jobs received no benefits while those in non-temporary jobs received this standard level, we might conclude that the 15 percent wage differential may just compensate for lack of benefits. However, this assumption about the provision of benefits does not in general hold: many THS firms offer benefits to their workers (Bureau of Labor Statistics, 1995) [17], and some workers in the

traditional sector find it difficult to obtain benefits. The very short job tenure of the workers in this study also suggests that the difference in benefits across THS and non-THS workers in our context is likely smaller; workers who leave their firms in the same quarter they arrived – as over half the workers in our sample do – are less likely to qualify for substantial benefits or to take advantage of them in a short period of time. Thus, we have reason to believe the 15 percent wage premium is not merely compensation for lack of benefits.

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Table 1: Number of jobs held over 9.5 year sample period (1995:1-2004:2)

Jobs	Percent
1-3	8.43
4-6	16.12
7-9	18.51
10-12	16.82
13-15	12.92
16-18	9.28
19-21	6.26
22-24	3.89
25+ (max = 90)	7.87

Sample: 11,335 workers whose employers applied for WOTC on their behalf during 1999:3 to 2001:4.

Table 2: Multiple job-holding within quarters by disadvantaged workers

	For all 218,895 person-quarters	For person-quarters with at least one THS job (N = 38,599)
	Percent	Percent
1 job in quarter	73.26	46,23
2 jobs in quarter	20.99	36.07
3 jobs in quarter	4.52	12.96
4+ jobs in quarter	1.22	4.74

Sample: All employed person-quarters during the sample period 1995:1-2004:2, for workers whose employers applied for WOTC during 1999:3 to 2001:4.

Table 3: Patterns of job-holding within quarters

Employment category	Frequency	Percent
one job, not THS	142,527	65.11
multiple jobs, no THS	37,769	17.25
multiple jobs, both types	17,203	7.86
one THS job	17,846	8.15
multiple jobs, all THS	3,550	1.62
total	218,895	100.00

Sample: All employed person-quarters during the sample period 1995:1-2004:2, for workers whose employers applied for WOTC during 1999:3 to 2001:4.

Table 4: Earnings at THS and non-THS jobs

	Means		Medians	
	Non-THS	THS	Non-THS	THS
Total Earnings at Job	**$ 9,882**	**$ 1,902**	**$ 4,806**	**$ 797**
Quarterly Earnings at Job	**$ 1,550**	**$ 748**	**$ 1,308**	**$ 510**
Number of individuals in averages:	11,282	7,707	11,282	7,707

Sample: For each individual in the sample, we calculated their average total job earnings (total earnings divided by number of jobs) separately for THS and non-THS jobs (and similarly for average quarterly earnings per job). We then averaged the relevant values across individuals to obtain the dollar values reported in the table. A similar process is used for the quarterly (rather than total) earnings measure.

Table 5: Regression of job-quarter earnings on THS work and demographics

VARIABLES	(1) Person-job level all years	(2) Person-job level 1998-2001 with time-varying variables	(3) Person-job level for those w/ both job types using person fixed effects all years	(4) Person-job level for those w/ both job types using person FEs and time-varying vars 1998-2001
THS indicator	-881.17***	-657.59***	-730.79***	-566.91***
	(-56.43)	(-44.62)	(-88.25)	(-52.41)
female	-178.21***	-94.52***		
	(-6.703)	(-3.985)		
black	115.88***	34.39		
	(4.573)	(1.478)		
Hispanic	204.01***	189.56***		
	(4.701)	(4.758)		
other nonwhite race	163.77***	103.97***		
	(6.006)	(4.019)		
age	143.03***	98.09***		
	(16.27)	(12.79)		
age squared	-1.72***	-1.21***		
	(-12.86)	(-10.16)		
total # kids under 18 in HH		26.65***		-22.69***
		(4.592)		(-2.991)
total # kids under 6 in HH		33.31***		3.80
		(3.832)		(0.374)
high school graduate		213.76***		42.12
		(12.37)		(1.644)
some college		369.84***		139.64***
		(10.76)		(2.848)
college graduate		308.89**		35.70
		(2.191)		(0.241)
Observations	293,432	118,322	219,040	90,201
R-squared	0.114	0.070	0.350	0.322

Notes: The first column uses the largest possible sample from these data, utilizing all 293,432 person-job-quarter observations for the period 1995:1-2004:2. The second column adds covariates that are only available in 1998:1-2001:4 (including indicators for 9 geographic/economic regions not included in the table), thus limiting the sample to that time period. The third column uses only those with both THS and non-THS jobs over the sample period, and the fourth column further restricts this to 1998-2001. All regressions include quarterly time indicators and a constant, and the first two columns (those without person fixed-effects) cluster by individual. Numbers in parentheses are t-statistics. Statistical significance: * 0.10 level; ** 0.05 level; *** 0.01 level.

Table 6: Regression of quarterly earnings on detailed measures of job-holding

VARIABLES	(1) Person-quarters all years	(2) Person-quarters w/ time-varying covariates 1998-2001	(3) Person-quarters w/ person fixed-effects	(4) Person-quarters w/ person fixed-effects & time-varying covariates 1998-2001
multiple jobs, no THS	164.88***	216.43***	110.06***	81.74***
	(5.436)	(8.648)	(10.13)	(5.504)
multiple jobs, both types	-223.56***	-47.79**	-215.68***	-187.01***
	(-9.585)	(-2.014)	(-16.73)	(-11.15)
one THS job	-1,068.36***	-784.41***	-841.51***	-695.45***
	(-46.04)	(-31.53)	(-64.48)	(-37.17)
multiple jobs, all THS	-932.62***	-619.41***	-758.28***	-629.72***
	(-30.04)	(-16.78)	(-28.53)	(-18.80)
female	-236.43***	-126.85***		
	(-7.140)	(-4.022)		
black	126.35***	66.29**		
	(3.796)	(2.111)		
Hispanic	247.88***	246.08***		
	(4.570)	(4.429)		
other nonwhite race	146.20***	107.15***		
	(4.402)	(3.157)		
age	208.60***	157.49***		
	(18.43)	(14.97)		
age squared	-2.59***	-2.01***		
	(-15.03)	(-12.28)		
total # kids under 18 in HH		15.96**		-56.71***
		(2.127)		(-6.239)
total # kids under 6 in HH		43.92***		3.42
		(3.790)		(0.280)
high school graduate		327.61***		73.99**
		(13.83)		(2.410)
some college		587.40***		184.49***
		(12.33)		(3.045)
college graduate		558.75***		397.24**
		(2.852)		(2.141)
Observations	218,895	82,811	158,241	60,720
R-squared	0.135	0.097	0.460	0.484

Notes: Sample is of quarters of employment for individuals. Regression specifications correspond with those in the prior table. Numbers in parentheses are t-statistics. Statistical significance: * 0.10 level; ** 0.05 level; *** 0.01 level.

Table 7: Regression of job-quarter earnings on THS work and demographics, post-WOTC jobs only

VARIABLES	(1) Person-job level all years	(2) Person-job level 1998-2001 with time-varying variables	(3) Person-job level for those w/ both job types using person fixed effects all years	(4) Person-job level for those w/both job types using person FEs and time-varying vars 1998-2001
THS indicator	-1,027.30***	-751.37***	-791.43***	-594.51***
	(-37.06)	(-22.60)	(-46.84)	(-19.79)
female	-145.22***	-47.59		
	(-3.639)	(-0.997)		
black	264.97***	3.43		
	(7.415)	(0.0684)		
Hispanic	337.99***	347.26***		
	(5.085)	(4.093)		
other nonwhite race	265.11***	100.88*		
	(6.002)	(1.817)		
age	126.52***	88.05***		
	(9.808)	(6.585)		
age squared	-1.58***	-1.13***		
	(-7.968)	(-5.281)		
total # kids under 18 in HH		31.16**		-12.46
		(2.424)		(-0.426)
total # kids under 6 in HH		48.71**		-17.20
		(2.515)		(-0.443)
high school graduate		297.81***		135.39
		(8.515)		(1.163)
some college		587.25***		34.23
		(7.308)		(0.182)
college graduate		486.18**		671.74
		(2.535)		(1.206)
Observations	98,930	22,964	75,324	18,228
R-squared	0.073	0.080	0.481	0.522

Notes: Sample is comparable to that in Table 5 but is limited to jobs beginning after the first quarter of WOTC employment. Regression specifications correspond with those in the prior tables. Numbers in parentheses are t-statistics. Statistical significance: * 0.10 level; ** 0.05 level; *** 0.01 level.

Table 8: Regression of quarterly earnings on detailed measures of job-holding, post-WOTC jobs only

VARIABLES	(1) Person-quarters all years	(2) Person-quarters w/ time-varying covariates 1998-2001	(3) Person-quarters w/ person fixed-effects	(4) Person-quarters w/ person fixed-effects & time-varying covariates 1998-2001
multiple jobs, no THS	167.62***	213.41***	65.20***	0.87
	(3.418)	(4.947)	(3.295)	(0.0227)
multiple jobs, both types	-248.11***	-54.73	-294.71***	-308.75***
	(-5.254)	(-1.024)	(-12.21)	(-6.860)
one THS job	-1,253.73***	-953.18***	-896.68***	-783.27***
	(-29.38)	(-16.35)	(-35.35)	(-14.68)
multiple jobs, all THS	-1,130.09***	-812.48***	-888.73***	-939.98***
	(-18.59)	(-8.945)	(-17.28)	(-10.29)
female	-169.55***	-46.31		
	(-3.459)	(-0.733)		
black	321.51***	12.12		
	(6.832)	(0.183)		
Hispanic	410.26***	428.58***		
	(5.114)	(3.910)		
other nonwhite race	269.73***	81.52		
	(5.112)	(1.140)		
age	176.53***	151.21***		
	(10.50)	(8.548)		
age squared	-2.24***	-2.01***		
	(-8.872)	(-7.206)		
total # kids under 18 in HH		28.51*		-28.10
		(1.747)		(-0.810)
total # kids under 6 in HH		28.70		-17.06
		(1.122)		(-0.375)
high school graduate		426.07***		121.73
		(9.176)		(0.859)
some college		851.18***		-54.05
		(8.208)		(-0.235)
college graduate		872.46***		1,421.12*
		(3.168)		(1.824)
Observations	74,935	15,931	55,691	12,306
R-squared	0.064	0.091	0.608	0.693

Notes: Sample is comparable to that in Table 6 but is limited to jobs beginning after the first quarter of WOTC employment. Regression specifications correspond with those in the prior tables. Numbers in parentheses are t-statistics. Statistical significance: * 0.10 level; ** 0.05 level; *** 0.01 level.

Table 9: Descriptive Statistics for 1998-2001 sample and WOTC sample

	1998-2001 SAMPLE		WOTC JOBS ONLY	
	non-THS	THS	non-THS	THS
Number of Person-Jobs	64,220	18,516	10,733	1,753
Fraction Of Sample:	77.62	22.38	85.96	14.04
Quarterly Earnings	1002	629	1175	941
Total Earnings At Job	3748	1319	5586	2125
GENDER (proportion):				
Female	80.44	74.66	80.68	65.77
REGION (proportions):				
Milwaukee	52.90	63.34	54.95	57.26
Dane Co.	19.39	18.12	19.30	10.62
elsewhere	27.71	18.54	25.75	32.12
EDUCATION				
< High school	50.05	48.22	49.10	40.79
High school	41.59	41.93	42.11	47.20
More than high school	7.99	9.43	8.35	11.32
College degree	0.38	0.42	0.44	0.69
PROGRAM				
Ever received welfare	31.24	33.73	31.53	24.47

Notes: The 1998-2001 sample uses jobs starting in that period, similarly to the samples used in earlier tables with the same time restriction. As before, we use this sample because we have demographic and program participation information that is unavailable for the surrounding years. The WOTC sample contains only jobs for which employers applied for WOTC between 1999:3 and 2001:4. Sample sizes vary slightly depending on a small number of missing values.

[†]We estimated the models presented in Tables 5-8 and 11 including the indicator "ever received welfare" and found no substantive differences in results. For parsimony and because of the limited timeframe these data are available, we do not report these results.

Table 10: Wage distributions for WOTC jobs: THS and non-THS

Hourly wage	THS	Non-THS
< min. wage	0	2.80
$5.15 - $5.99	5.34	23.67
$6.00 - $6.99	24.76	39.47
$7.00 - $7.99	25.52	15.82
$8.00 - $8.99	25.38	11.44
$9.00 +	19.00	6.78

Sample: 10,733 person-jobs for which WOTC was applied (with wage data available), of which 1,753 are THS.

Table 11: Regression examining THS and non-THS wage differentials

VARIABLES	(1) Person-job level, first Q of all WOTC jobs	(2) Person-job level, first Q of all WOTC jobs	(3) Person-job level, all Qs of all WOTC jobs
THS	1.05***		
	(24.08)		
multiple jobs, no THS		0.09***	0.05*
		(3.208)	(1.782)
multiple jobs, both types, this one THS		1.17***	1.09***
		(17.61)	(17.37)
one job, THS		1.10***	1.15***
		(16.92)	(17.34)
multiple jobs, THS only		1.02***	1.00***
		(11.38)	(11.40)
multiple jobs, both types, this one non-THS		0.22***	0.19***
		(5.126)	(4.752)
female	-0.08**	-0.08**	-0.09**
	(-2.101)	(-2.196)	(-2.043)
black	0.05	0.05	0.08*
	(1.564)	(1.497)	(1.774)
Hispanic	-0.02	-0.03	-0.03
	(-0.395)	(-0.451)	(-0.438)
other nonwhite race	0.07*	0.07*	0.08
	(1.679)	(1.717)	(1.620)
age	0.08***	0.08***	0.09***
	(8.563)	(8.224)	(7.876)
age squared	-0.001***	-0.001***	-0.001***
	(-7.243)	(-6.904)	(-7.003)
total # kids under 18 in HH	-0.02***	-0.02***	-0.02**
	(-2.873)	(-2.732)	(-2.120)
total # kids under 6 in HH	0.06***	0.06***	0.08***
	(4.271)	(4.285)	(4.608)
high school graduate	0.15***	0.14***	0.15***
	(5.526)	(5.253)	(4.471)
some college	0.28***	0.27***	0.26***
	(5.358)	(5.211)	(4.225)
college graduate	0.25	0.23	0.47**
	(1.125)	(1.011)	(2.164)
Observations	8755	8755	16,988
R-squared	0.268	0.271	0.258

Notes: Regressions also include 8 indicators for economic regions within Wisconsin (plus one omitted), 8 indicators for occupational categories (plus one omitted), and year-quarter indicators. Standard errors cluster by person. Time period is 1998-2001. Numbers in parentheses are t-statistics. Statistical significance: * 0.10 level; ** 0.05 level; *** 0.01 level.

Table 12: Wage regression results using weighted version of WOTC-job sample

VARIABLES	(1) Person- job level, first Q of all WOTC jobs	(2) Person-job level, first Q of all WOTC jobs	(3) Person-job level, all Qs of all WOTC jobs
Panel A: weights designed to replicate original Table 5 column 1 sample (all jobs)			
THS indicator	1.06***		
	(22.29)		
multiple jobs, no THS		0.09***	0.05*
		(3.02)	(1.89)
multiple jobs, both types, this one THS		1.15***	1.11***
		(15.90)	(16.50)
one THS job		1.15***	1.17***
		(15.90)	(16.59)
multiple jobs, all THS		1.04***	1.03***
		(10.64)	(11.20)
multiple jobs, both types, this one non-THS		0.20***	0.18***
		(4.79)	(4.43)
Observations	8755	8755	16,988
R-squared	0.273	0.275	0.267
Panel B: weights designed to replicate original Table 7 column 1 sample (post-WOTC jobs)			
THS indicator	1.06***		
	(21.49)		
multiple jobs, no THS		0.08***	0.01
		(2.78)	(0.46)
multiple jobs, both types, this one THS		1.17***	1.08***
		(15.49)	(15.00)
one THS job		1.17***	1.17***
		(15.43)	(16.26)
multiple jobs, all THS		1.01***	1.01***
		(10.31)	(10.43)
multiple jobs, both types, this one non-THS		0.23***	0.17***
		(4.96)	(3.93)
Observations	8754	8754	16,984
R-squared	0.277	0.280	0.268

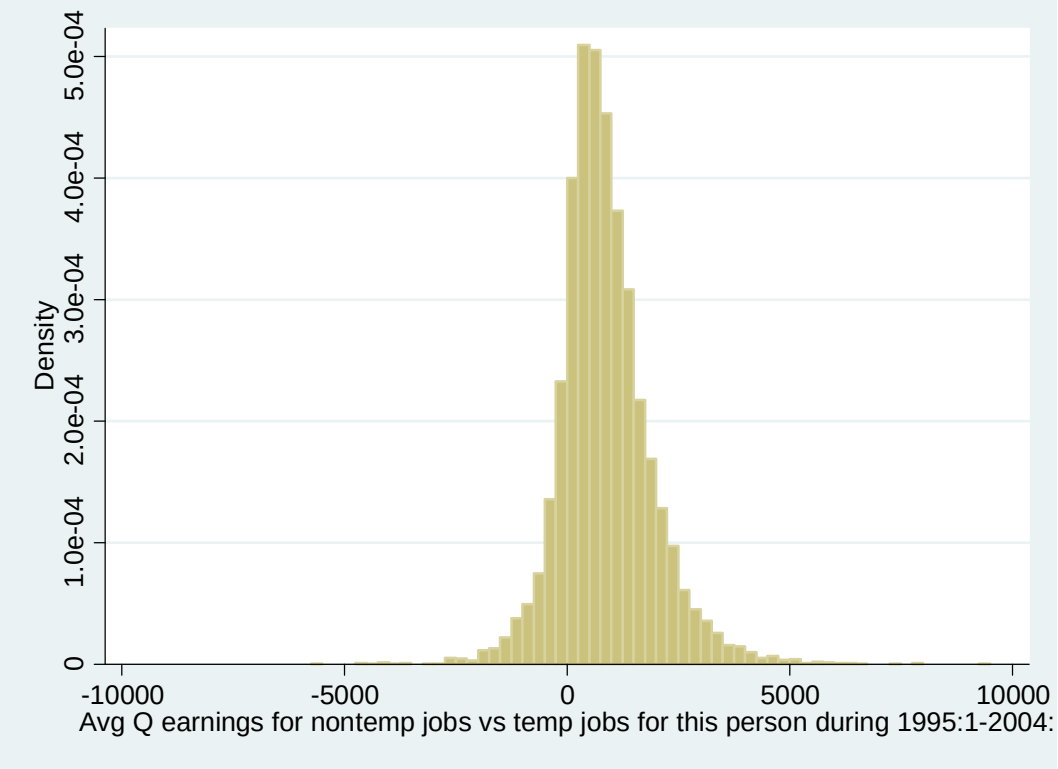
Notes: Regressions correspond to those in prior table. Coefficients for controls are suppressed. Numbers in parentheses are t-statistics. Statistical significance: * 0.10 level; ** 0.05 level; *** 0.01 level. The sample sizes are slightly smaller in the lower panel reflecting zero weights for a small number of WOTC job quarters.

Table 13: Job duration in THS and non-THS jobs

	Non-THS	THS
Quarters at Job	Percent	Percent
1	48.53	66.50
2	27.84	23.54
3	9.46	5.94
4	4.63	2.13
5	2.67	0.97
6+	6.88	0.92

Sample: This sample contains all person-jobs in the dataset, of which 108,866 are non-THS and 30,241 are THS. Entries are percentages, such that columns add up to 100.

Figure 1: Distribution of average earnings gap between THS and non-THS work



Sample: See description of sample for Table 6, column 3.

Endnotes

[1] Temporary help services accounted for 77 percent of staffing services in 2010. (The other two categories in staffing services are professional employer organizations and employment agencies).

[2] See http://www.cfcw.org/permatemps.html.

[3] See Bartik (2001) for a full description of the WOTC and similar prior programs.

[4] The tax credit is a percent of total earnings of the worker (applying to earnings up to $6000). The percent of the credit depends upon hours worked in the following way: 0-119 hours provides no credit, 120-399 hours provides a 25% credit, and 400+ hours provides a 40% credit. The effects of this structure on firm participation are discussed in detail in Hamersma (2011). For our purposes, the important finding is that firms are more likely to participate when they have longer average worker tenure, but there is no evidence that firms adjust tenure in response to the credit on the margins where it would be expected (i.e. the 120-hour and 400-hour thresholds).

[5] Hamersma and Heinrich (2008) evaluate two key issues. First, they use a sample of WOTC recipients to compare some basic THS and non-THS outcomes. The current work is a substantially expanded treatment of this issue, with the addition of examining hourly wages and handling multiple jobs in each quarter, and utilizing a much longer sample period. Second, Hamersma and Heinrich (2008) use a sample of THS workers and compare those who are WOTC-certified to those who are WOTC-eligible (but not certified) to estimate the effect of the WOTC subsidy on worker outcomes within the THS industry. To avoid redundancy, we do not examine the effects of the WOTC in the current paper.

[6] We include all possible applicant records, including those that were not ultimately certified for the subsidy. This allows for a larger sample size than that restricted to certified applicants. Analyses limited to certified applicants are very similar and are available from the authors upon request.

[7] If a person has multiple spells with the same employer (i.e. quarters of employment with a given employer are not successive) we code these as distinct person-jobs.

[8] Although we do not model non-employment, it may be helpful to note that the median person in our sample has earnings records for about half of the 38 quarters possible (25% percentile = 13, median = 19, 75% percentile = 26), reflecting, in part, weak labor force attachment. However, it is also likely due to the fact that some people who secured a (WOTC) job during 1999:3-2001:4 were not yet in the labor force in the earliest quarters of the UI data, which go back to 1995:1. This is particularly relevant because some WOTC eligibility groups include age restrictions, making our sample rather young; for example, food stamp recipients were only eligible if they were between the ages of 18 and 24 during this period. Non-employed person quarters (regardless of the reason) are not included in our analysis.

[9] Note that even though these variables are available only in 1998-2001 via CARES, they are easily imputed to the rest of the period.

[10] The geographic variables used were a set of indicators for 9 economic regions of Wisconsin, defined by Shields and Deller (1996). Coefficients for these indicators are not included in the table for brevity, but are available upon request.

[11] The mean gap is $782.

[12] We also experiment with selectively dropping only the quarter of the WOTC job start and then a varying number of adjacent quarters. Appendix B reports details of this analysis.

[13] One could argue that a regression using log(wage) rather than wage itself is more appropriate. We find very similar results using this approach: the predicted THS gap is 14 percent and is statistically significant at the 99% level. When we estimate the multiple-job versions of the log(wage) model, the findings are also remarkably similar to those using wage levels. Model fit is also similar. Detailed tables are available upon request.

[14] The regressions in Tables 11 and 12 include time-varying covariates, and therefore omit about a third of WOTC jobs with incomplete data on those measures. We also ran corresponding regressions that omit these controls, allowing a substantially larger sample, yielding results that were substantively identical and are available upon request.

[15] The medians are closer, at 192 and 121, but the top of the distribution is very different (i.e., the 90th percentiles are 1803 and 705 respectively).

[16] Employer Costs for Employee Compensation, March 2004-September 2011, available from Bureau of Labor Statistics at: ftp://ftp.bls.gov/pub/special.requests/ocwc/ect/ececqrtn.pdf

[17] Many temporary help services firms offer employee benefits packages that may include paid holidays, paid vacations, and health insurance. In a 1995 BLS survey, holiday and vacation plans were available to approximately three-fourths of the workers and health insurance to about one-half. However, few temporary workers actually receive these benefits, either because they fail to meet minimum qualification requirements or, as in the case of insurance plans, they choose not to participate. Most firms reported that less than 10 percent of their temporary workers participated in a company-sponsored health insurance program.

APPENDIX A: Description and Testing of Matching and Reweighting Procedure

Appendix A provides additional information about the matching procedure that was used to create two reweighted WOTC samples (used in Table 12). The purpose of the reweighting procedure was to generate a set of weights that, when applied to the WOTC sample, would allow it to be representative of the main samples (either the full set of jobs, used in Tables 5-6, or the post-WOTC jobs, used in Tables 7-8). Weighting the WOTC sample in this fashion allows us to generate estimates of the wage effects of THS employment in a way that avoids the selection bias inherent in our use of the WOTC sample (which is the only sample that contains wage information).

We generated two alternative sets of weights: one set for replicating the samples in Tables 5 and 6, and another that handles Tables 7 and 8. The construction of these weights and their effectiveness in replicating both sample descriptive statistics and quarterly-earnings regression results are below.

To replicate the sample in Tables 5 and 6, our goal was to construct a set of weights so that the distribution of characteristics for the WOTC sample would be the same as the total sample (including the WOTC sample). We used a propensity score method to accomplish this. However, there was one complication: We couldn't match on calendar quarter (since the WOTC sample included only a subset of the quarters in the full sample). We therefore used the model in column 1 in Table 5 to estimate calendar quarter coefficients to "adjust" the earnings for the quarter—that is, we subtracted out the quarter effect from the earnings. All the earnings measures in the matching used this adjusted earnings, normalized to the third quarter of 2000. We then combined the sample of all job-quarters and the sample of WOTC job-quarters (i.e., each WOTC job-quarter appearing twice in this overall sample), and then used the relevant variables in a logit to predict the WOTC sample. The variables we were concerned with matching were those in column 1, Table 5, the four dummy variables identifying the five combinations of types of jobs held in a quarter (see column 1 of Table 6), a dummy indicating whether the quarter is the first quarter of a job, and the dependent variable (earnings in the job during the quarter). Matching on these measures is designed to assure that the weighting is appropriate both for replicating the job-quarter-based analyses (Table 5), and the quarter-person-based analyses (Table 6).

The propensity score was constructed as a predicted value from the logit predicting the WOTC sample membership. We constructed the weights based on matching by propensity score within strata, using strata of width 0.1 in the log odds of the propensity score. A linear model was augmented with squares and interaction terms to improve sample match. For the final specification, the means and standard deviations of the variables for the weighted WOTC sample corresponded quite closely to the total sample of job-quarters, as seen in Table A1. Importantly, the same statistics for the true (unweighted) WOTC sample are substantially different from the full sample, indicating that our weighting procedure alleviates potentially important bias.

Similarly, the exercise of re-creating Tables 5 and 6 with the weighted sample reveals similar results to the full sample, as shown in Table A3 (top two panels).

For the samples used in Tables 7 and 8, the matching approach is the same as that described above. Adjustment of quarterly earnings in a job for calendar quarter uses the quarter coefficients estimated from the specification in column 1 of Table 7. Here the WOTC job-quarter sample is distinct from the post-WOTC job quarter sample. Again, the resulting weights for the WOTC sample produce descriptive statistics that correspond quite closely to the post-WOTC sample (Table A2) and regression results (Table A3, bottom two panels) reveal that the weighting scheme does well in re-creating the relationships of the original sample.

Table A1: Descriptive Statistics for Verifying Adequacy of Weights (Table 5/6 sample)

	(1)	(2)	(3)
VARIABLES	Unweighted full sample	Unweighted WOTC sample	Weighted WOTC sample
quarterly earnings at job (adjusted for quarter)	1310.60 (1769.59)	1580.67 (1820.99)	1329.42 (1734.66)
age	26.58 (8.18)	27.39 (8.85)	26.69 (8.22)
THS indicator	0.156	0.097	0.158
multiple jobs, no THS	0.280	0.241	0.284
multiple jobs, both types	0.146	0.101	0.149
one THS job	0.061	0.047	0.061
multiple jobs, all THS	0.026	0.014	0.027
same job last quarter	0.526	0.614	0.524
female	0.798	0.787	0.795
black	0.395	0.402	0.392
Hispanic	0.050	0.052	0.050
other race	0.177	0.206	0.175
Observations	293,432	28,526	28,526

Notes: Each cell contains the sample mean of the variable and (for continuous variables) the standard deviation in parentheses.

Table A2: Descriptive Statistics for Verifying Adequacy of Weights (Table 7/8 sample)

VARIABLES	(1) Unweighted full sample	(2) Unweighted WOTC sample	(3) Weighted WOTC sample
quarterly earnings at job (adjusted for quarter)	1206.22 (1962.43)	1479.55 (1820.53)	1322.21 (1963.79)
age	27.79 (7.70)	27.39 (8.85)	28.31 (7.91)
THS indicator	0.152	0.097	0.159
multiple jobs, no THS	0.277	0.241	0.273
multiple jobs, both types	0.137	0.101	0.140
one THS job	0.064	0.047	0.066
multiple jobs, all THS	0.024	0.014	0.025
same job last quarter	0.543	0.614	0.551
female	0.800	0.787	0.801
black	0.409	0.402	0.411
Hispanic	0.055	0.052	0.056
other race	0.188	0.206	0.181
Observations	98,930	28,526	28,512

Notes: Each cell contains the sample mean of the variable, and (for continuous variables) the standard deviation in parentheses.

Table A3: Verifying Adequacy of Weights using Quarterly Regressions

VARIABLES		(1) Unweighted full sample	(2) Unweighted WOTC sample	(3) Weighted WOTC sample
Table 5 replication:				
THS indicator		-881.17***	-595.88***	-745.50***
	N	293,432	28,526	28,526
Table 6 replication:				
multiple jobs, no THS		164.88***	266.73***	240.26***
multiple jobs, both types		-223.56***	73.82	-16.44
one THS job		-1,068.36***	-630.44***	-886.68***
multiple jobs, all THS		-932.62***	-519.86***	-732.20***
	N	218,895	23,008	23,008
Table 7 replication:				
THS indicator		-1,027.30***	-595.88***	-985.49***
	N	98,930	28,526	28,512
Table 8 replication:				
multiple jobs, no THS		177.40***	266.73***	28.10
multiple jobs, both types		-247.20***	73.82	-253.56***
one THS job		-1,253.50***	-630.44***	-1,226.97***
multiple jobs, all THS		-1,124.13***	-519.86***	-1,115.13***
	N	74,928	23,008	22,994

Notes: Each replication refers to column 1 of the relevant table. Since Tables 6 and 8 use person-quarters (and not person-job-quarters) the 5-employment-category specification is used. Numbers in parentheses are t-statistics. Statistical significance: * 0.10 level; ** 0.05 level; *** 0.01 level.

Appendix B: Robustness Checks

Appendix B contains alternative versions of key regressions. Table B1 presents results parallel to Tables 5 and 6 in which different quarters (during and surrounding WOTC application) are removed from the sample to help avoid potential selection issues. Table B2 presents results parallel to Table 11 that restrict the sample to particular subgroups of interest to assess potential THS-effect heterogeneity. Both tables demonstrate a fundamental robustness of the main results.

Table B1: Testing Exclusion of Potentially Sensitive Time Periods : Quarterly Earnings

	(1) Person-job level all years	(2) Person-job level 1998-2001 with time-varying variables	(3) Person-job level for those w/ both job types using person FEs all years	(4) Person-job level for those w/ both job types using person FEs & time-varying variables 1998-2001
Drop first quarter of WOTC job				
THS	-956.22***	-736.15***	-770.67***	-604.58***
multiple jobs, no THS	174.61***	210.33***	121.92***	86.53***
multiple jobs, both types	-267.30***	-92.62***	-220.86***	-196.39***
one job, THS	-1,132.22***	-862.72***	-874.00***	-740.86***
multiple jobs, THS only	-1,020.95***	-712.54***	-787.58***	-648.62***
Observations	187,136	64,829	134,395	47,351
Dropping the first WOTC quarter as well as the adjacent quarters				
THS	-989.37***	-761.10***	-784.56***	-609.51***
multiple jobs, no THS	161.81***	188.45***	120.78***	75.32***
multiple jobs, both types	-305.66***	-134.31***	-228.38***	-210.32***
one job, THS	-1,170.31***	-895.79***	-884.16***	-742.35***
multiple jobs, THS only	-1,049.34***	-727.95***	-790.26***	-631.70***
Observations	172,400	53,606	124,173	39,412
Dropping the first WOTC quarter as well as two quarters on each side				
THS	-1,005.89***	-761.76***	-784.59***	-599.75***
multiple jobs, no THS	158.25***	187.05***	125.96***	85.71***
multiple jobs, both types	-324.76***	-149.62***	-222.42***	-207.26***
one job, THS	-1,187.32***	-888.71***	-880.09***	-716.37***
multiple jobs, THS only	-1,073.37***	-724.10***	-797.61***	-611.37***
Observations	15,8891	44,178	114,730	32,646

Numbers in parentheses are t-statistics. Statistical significance: * 0.10 level; ** 0.05 level; *** 0.01 level.

Table B2: Summary of Alternative-Subsample Findings: Hourly Wages

	Person-job-level first Q of WOTC job	Person-quarter-level first Q of WOTC job	Person-quarter-level all Qs of WOTC job
Welfare recipients			
THS	1.22***		
multiple jobs, no THS		0.07	0.02
multiple jobs, both types, this one THS		1.23***	1.08***
one job, THS		1.31***	1.33***
multiple jobs, THS only		1.23***	1.19***
multiple jobs, both types, this one non-THS		0.15**	0.16**
Observations	3205	3205	6052
High-school dropouts			
THS	0.97***		
multiple jobs, no THS		0.12***	0.07**
multiple jobs, both types, this one THS		1.14***	1.09***
one job, THS		0.95***	0.99***
multiple jobs, THS only		0.96***	0.87***
multiple jobs, both types, this one non-THS		0.16***	0.18***
Observations	4283	4283	8016
Individuals with 2 or more children			
THS	1.05***		
multiple jobs, no THS		0.09***	0.03
multiple jobs, both types, this one THS		1.14***	1.05***
one job, THS		1.12***	1.18***
multiple jobs, THS only		1.07***	1.10***
multiple jobs, both types, this one non-THS		0.26***	0.21***
Observations	5456	5456	10,666

Numbers in parentheses are t-statistics. Statistical significance: * 0.10 level; ** 0.05 level; *** 0.01 level.