Temporary Help Work: Compensating Differentials and Multiple Job-Holding'

Sarah Hamersma
University of Florida

Carolyn Heinrich
University of Wisconsin – Madison

It is well-established that work in the Temporary Help Services (THS) industry has been growing faster than regular employment. As we and others have noted in prior research, employment in the THS industry—currently close to three percent of average US daily employment (Autor, 2009)—increased five times faster than overall employment between 1979 and 1995, and the industry more than doubled in size between 1992 and 2000 (Pressler, 2002; Segal, 1996). Of particular concern has been the growing and highly disproportionate share of welfare recipients and other low-skilled and disadvantaged workers among THS employees (Autor and Houseman, 2005; Heinrich et. al., 2005). 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 Finegold et al. (2003) also point to a marked shift in sector of employment in which THS workers are taking jobs, from largely clerical and office work to an increasing share in blue-collar occupations, such as production and transportation, laborers, and other low-wage jobs that are filled by less-skilled workers.

It is this disproportionate concentration of disadvantaged workers in THS employment that has spurred additional research and policy debate about the implications of THS employment for these workers' wages, access to fringe benefits, job stability, subsequent labor market transitions and longer-term earnings. Of key interest in this debate is whether THS employment provides some benefits to these disadvantaged workers, contemporaneously in the

form of flexibility in work hours, a wage premium and/or access to on-the-job training, and over time 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 connecting with a better job in a more stable, higher-paying industry with greater opportunities for advancement. Although few would suggest that this debate has been resolved, despite a now voluminous research base, there does appear to be some consensus on two important points: 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; 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 (THS firms being one of five different types of intermediaries they examined) and their labor market outcomes in two regional labor markets, Milwaukee, Wisconsin and San Jose, California (Silicon Valley). Because they use both administrative data on earnings and the survey data which provide measures of hourly wages and hours worked, they are able to explore some of the differences in findings across studies that may be due to differences in data and measures that are used. They conclude that differences across several seminal studies depend on how comparison groups are constructed and whether earnings or hourly wages are modeled.

In this study, we take advantage of access to a unique compilation of administrative data that allows us to examine hourly wages, total hours of work, and quarterly earnings in investigating employment and compensation patterns in THS work. A key question we address is: Do THS workers receive a compensating differential (or 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.). We argue that it is still unclear whether the advantages of THS work outweigh the disadvantages for low-skilled and disadvantaged workers, and this issue 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 the literature on THS employment with particular 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 that follows, we explore how employment and multiple job-holding among the disadvantaged differ for those in THS vs. non-THS work. Are some THS workers "stuck" in a secondary labor market? We look at how quarterly earnings and job duration (in quarters) differ between THS and 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 for which 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 and to consider for what type of THS worker this might apply.

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; when making within-person comparisons over time, we find that a substantial portion of the sample (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 (available for a subsample of our data), we find that there is about a $1 per hour premium for THS work relative to non-THS work (or about 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

As discussed briefly above, a substantial body of research on THS employment has addressed the central question as to whether disadvantaged workers benefit from engaging in work in this sector or fare more poorly in terms of longer-term labor market outcomes relative to those who take end-user (or direct-hire) jobs. As Autor and Houseman (2008) point out, one can find cases supporting both scenarios, where some employers are screening THS workers for permanent jobs with promising career trajectories and/or offering skills training, and others are using THS workers primarily to fill low-skill, short-term staffing needs or as "permatemps," a temporary employee who is retained or repeatedly rehired to lower overhead costs to the

employer and to offer greater flexibility in scheduling work.[1] 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, which agreed to pay $97 million to settle the claims of its temporary employees (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 such as the Center for a Changing Workforce contend that THS workers are frequently paid lower wages and receive fewer benefits while performing the same jobs as regular employees (Eisenberg, 1999).

Research on THS employment and its implications has been largely concerned with the following risks or negative associations with temporary work, particularly for disadvantaged workers: lower wages, fewer or more variable work hours (under-employment), shorter job tenure or involuntary unemployment, and lack of access to benefits (Autor and Houseman, 2010; Andersson, Holzer and Lane, 2002; Blank, 1998; Booth, Francesconi and Frank, 2002; Cohany, 1998; Heinrich et al., 2005; Houseman and Polivka, 1999; Houseman, Kalleberg and Erickcek, 2003; Lane et al., 2003; Nollen, 1996; Pavetti et al., 2000; Pawasarat, 1997; Segal and Sullivan, 1997). Among the most vexing issues in this research 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, and to also distinguish the role of THS firms (e.g., screening, training and placement) from that of THS workers in subsequent employment transitions. 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 an earlier (2005) study, Heinrich et al. concluded that race and place (i.e., nonwhite and living in a metropolitan county) were among the strongest predictors of THS employment for disadvantaged workers.

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 somewhat different 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 of these welfare recipients had learned about THS jobs by contacting firms directly or via word-of-mouth, and that 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 ($0.55 higher on average).

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 (excluding the self-employed, those in informal or illegal employment, and a small number of jobs exempt from UI reporting requirements), they do not include information on hourly wages, weekly hours, or whether jobs were held simultaneously or sequentially. We argue that if THS employment has many undesirable characteristics in the eyes of workers (e.g., fewer work hours, less stability or shorter tenure than desired), 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 (e.g., flexibility in work hours, training and experience, etc.) 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.[2]

In their study of Michigan welfare-to-work programs that randomly assigned program participants to service providers with differing views and utilization of temporary help agencies

in placing 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 production (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 favored 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.

In their analysis of workers' use of labor market intermediaries and labor market outcomes in Milwaukee, Wisconsin and the Silicon Valley (August 2001 to June 2002), Benner et al. (2007) combined administrative data on earnings with survey data they collected on workers' hourly wages and hours worked and gave explicit consideration to differences in calculated outcomes depending on whether earnings or hourly wages were modeled. For workers holding multiple jobs, they used information on wages and earnings only for the primary job. "Raw" comparisons (with no statistical adjustments for worker characteristics) showed that low-income THS workers had lower median wages than workers who did not use this type of intermediary or any intermediary in Milwaukee; in the Silicon Valley, low-income THS workers had higher median wages than workers who did not use any intermediary but lower median wages than those who used another type of intermediary (e.g., headhunter, professional association, etc.). In multivariate analyses that focused specifically on the population in low-

income telephone prefix areas and controlled for worker characteristics and industry, a negative relationship between temporary help agency use and hourly wages (in log values) was estimated, but it was small and not statistically significant.

Taking advantage of detailed data linking workers and firms in Portugal, Böheim and Cardoso (2007) compared temporary agency workers with regular (direct-hire) workers to assess whether those working for temporary agencies had lower wages initially or in the two years following entry into temporary help jobs. As temporary help workers in Portugal are entitled to the same wage paid by the user firm to similar (regular) workers or to the wage set by collective bargaining for temporary agency work (whichever is higher), they expected to find no or very small wage differentials between temporary help and regular workers. In simple comparisons of average wages, they observed substantial differences in wages between temporary help and regular workers (despite the stringent legal requirements), with temporary help workers receiving about 10 percent lower wages. But once they controlled for firm and worker characteristics, including unobservable worker quality with worker fixed effects, the pattern reversed, with young female temporary help workers receiving an hourly wage premium of about 4-5 percent and young males earning a premium of 1-2 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. Of course, 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 (or lead to the wrong sign). 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. His analysis finds that a worker employed under a temporary labor contract earns a wage that is 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.

Many of the seasonal agricultural employers in Moretti's study were exempt from mandated social insurance benefits, which contributed to the greater uncertainty and risks associated with employment in this sector. Averett et al. (2005) used state labor bureau data on workers in the New Jersey manufacturing sector in the 1880s, in an era before unemployment insurance, to estimate the compensating differentials for both low-skilled and more skilled workers facing unemployment risks. During 1883-1886, more than half of all New Jersey manufacturing workers experienced a period of involuntary unemployment. Their expectation was that in well-functioning labor markets without unemployment insurance, employers would offer wage premia to workers facing higher layoff risks, and that these premia may be related to level and transferability of skills. In both ordinary least squares and two-stage least squares regressions (with exogenous first-stage variables), Averett et al. observed compensating differentials for workers with higher layoff risks, with the typical manufacturing worker compensated for about half to three-quarters of the time spent in involuntary unemployment. This differential was, in fact, greater for low-skilled workers, who received a compensating

differential that was equal to about 79 percent of anticipated lost wages, which also implied a negligible compensating differential for more skilled workers. They suggest this result is consistent with the theory of informational capture, whereby firms (via their informational advantage) extract rents from workers with firm-specific skills.

We came across very little research in this review, 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 (i.e., 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). In analyzing the labor market outcomes of those who entered THS jobs, direct-hire jobs, or who combined employment in these sectors, 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 take advantage of access to 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) on their behalf. 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] When an eligible worker is hired, the firm can submit a certification request to the state employment service, and upon approval, the firm may claim a tax credit the following year, depending on the hours worked and total earnings of the employee.[4] The goal of the subsidy program is to increase hiring of disadvantaged workers, and it is provided to both traditional and THS firms who hire these workers. Research by Hamersma and Heinrich (2008) finds that THS firms apply in disproportionately large numbers for the credit, but that they also have many certified workers who ultimately qualify for little or no subsidy due to their short job tenure with the THS firm.[5] Previous work has also examined the effects of the WOTC on work outcomes, both in typical jobs and specifically in THS jobs (Hamersma, 2008; Hamersma and Heinrich, 2008). In this paper, WOTC recipients are simply used as a convenient sample due to their relative homogeneity compared to other samples, as well as the availability of matched data from other sources. We discuss the implications of this sample choice as relevant throughout our discussion.

The administrative records from WOTC applications, combined with data from the Wisconsin public assistance system and Unemployment Insurance (UI) databases, allow us to observe occupations, starting wages and quarterly earnings for a sample of 5,877 workers for up to 38 quarters (nearly 10 years). We describe these study data in greater detail below.

A. Empirical Approach

We begin the data analysis by calculating simple descriptive statistics of the patterns 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 then performed including indicators for multiple job-holding (of the job types described above).

The central contribution of this research is the analysis of worker wages at THS and non-THS jobs, which we carry out next using a subsample of WOTC-certified jobs only. We estimate the (compensating) wage differential between THS and non-THS jobs, controlling for available worker characteristics and occupation categories, and we 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 patterns of employment transitions).

B. Details of Study Sample and Data

We obtained the full set of administrative records for WOTC applications submitted by employers of disadvantaged workers in Wisconsin during 10 quarters, from 1999:3 to 2001:4. These records report the occupation of the job and the starting wage (in $1-wide brackets).

There are 5,877 distinct individuals in the sample, a few of whom have multiple WOTC jobs starting in the 10-quarter period.

Many of these workers have records in the state's public assistance system database, called the Client Assistance for Re-employment and Economic Support (CARES) data, due to their receipt of public assistance. For those workers qualifying for WOTC due to participation in these programs, we can link together 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 for these workers 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 WOTC records to the state's Unemployment Insurance 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 can 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 within that quarter. However, the particular job that was subsidized via WOTC can be identified in the UI records via an employer identification number, so that WOTC starting wages (from 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), which complements and extends our analysis of quarterly earnings. These records also contain industry identifiers that are used to determine whether each job is in the THS sector.

Upon completing the full merge, our dataset contains 150,169 person-job-quarter observations. This is based on 5,877 workers in the WOTC sample 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 71 jobs over the sample period. About 15 percent of the person-job-quarters reflect THS jobs. If we reconstruct the data into person-jobs (so that multiple quarters at the same job are collapsed into one observation), we have a sample size of 71,429 person-jobs, of which 21 percent are THS.[6] Note that this higher percentage of THS jobs when using person-jobs reflects the typically longer duration of non-THS jobs. We can also approach the data by person-quarter (112,759 observations), which is useful for analyzing multiple job-holding within a quarter. We now begin the analysis with a descriptive discussion 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, in which 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 (3,947 of the 3,964 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 the next section).

Although we will not be modeling 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). This partly reflects weak labor force attachment. However, it is also likely due, at least in part, to the fact that some people who secured a (WOTC) job during 1999:3-2001:4 (and are thus in our sample) 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.

We next turn to an examination of 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, some of which reflect job transitions within a quarter and some of which reflect 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 (17.06 + 7.56 + 1.47) of all person-quarters. Of these multiple-job quarters, over one-third included at least one temp job.

[Insert Table 3 about here]

This examination of key features of these data brings to light some notable patterns. First, consistent with prior research, there is 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, our data indicate

that the THS industry does not appear to be a "secondary" labor market; almost all THS workers

in our sample also had traditional jobs during the time period we examine.

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.

<div align="center">[Insert Table 4 about here]</div>

      There is a tremendous gap between average total earnings at THS jobs and average total

earnings at non-THS jobs, on the order of $7,700 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 are also able to examine our sample from

different angles (and utilize various subsamples) to help parse out the sources of the quarterly

earnings differential.

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

$$Y_{iqj} = \alpha + \beta_1 \text{THS}_{iqj} + \beta_2 X_{iqj} + \beta_3 T_q + \varepsilon_{iqj}$$

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.[7] We estimate a regression at the person-job-quarter level, modeling job-quarter earnings as a function of a THS indicator, time (year-quarter) indicators, gender, race, and age. In this case, our covariates would be appropriately labeled X_i, since these variables do not vary across jobs or over time (with the exception of age, which varies in an obviously predictable way). The results of this analysis, reported in column 1 of Table 5, suggest that temporary work is associated with over $800 less in quarterly job earnings. This corresponds quite closely to the unconditional mean difference in quarterly earnings that was reported in Table 4, although the demographic variables do contribute explanatory power to the regression. The results show that men and racial minorities have (statistically) significantly higher earnings on average.

[Insert Table 5 about here]

In an alternative model specification (comparable to the model in column 1 of Table 5), we interacted time (year) indicators with the THS indicator to explore whether the decrement in earnings associated with THS employment varied over time, and in particular, with cyclical economic changes. The results (available from the authors) show considerably smaller differences in "boom" years—for example, approximately $600-$700 less in quarterly earnings over the 1998-2000 period—compared to differences in recessionary years (2002-2004) of more than $1,000-$1,300 less in quarterly earnings for workers in THS jobs. We suspect that the 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, receipt of cash welfare, and geographic information—are available over a more limited time period (1998 through 2001).[8] Since these may provide additional explanatory power (given their 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 $600) of THS employment on quarterly job earnings. The coefficients on the new covariates indicate a return to high school and college education (relative to dropping out) and slightly higher earnings for families with more children.[9]

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 (N = 3,947), we can do a separate analysis of within-person earnings differences between the two types of jobs. This section utilizes this unique subsample.

The simplest comparison to make is to calculate the average quarterly pay gap between THS and non-THS jobs for those who have had both types of jobs. 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.[10] This suggests 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 get another sense of 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 handle selection into THS work better than the previous analysis, as the sample members 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 first column of Table 6, suggest that the average person who has worked in both types of job has experienced a premium of $677 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), although it is statistically distinguishable from them due to tight standard errors.

[Insert Table 6 about here]

As before, a more limited sample period also allows us to include additional time-varying covariates. 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

smaller sample period for which these variables are available. However, the coefficient of interest remains similar, indicating a $539 per quarter penalty for THS work.

B. Analysis Explicitly Accounting for Multiple Jobs

We can also learn more about the role of THS in the context of quarters with multiple job-holding by using a more detailed measure of employment. Rather than indicating whether a particular job is THS or not, we create a variable 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. On one hand, if jobs are held simultaneously, earnings are likely to be higher than a single-job quarter. On the other hand, multiple-job quarters may reflect sequential jobs with a gap of non-employment in between, so that earnings for the whole quarter may be unusually low. The relationship between multiple job-holding and earnings, particularly in the presence of THS work, is ultimately an empirical question.

Results using observations at the person-quarter level are presented in Table 7. The four regression specifications used in the analysis are parallel to those in Tables 5 and 6, 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 7 includes 112,759 person-quarter wage observations in the sample period 1995:1-2004:2. The second column adds covariates but

includes only the time period 1998:1-2001:4. The third and fourth columns follow the same pattern but also include individual fixed effects (and thus omit time-invariant variables).

[Insert Table 7 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 and one with a single THS job ranges from $613 to $956, 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 multiple jobs that include both THS and non-THS are at less of a disadvantage than those with a single non-THS job, with estimates ranging from approximately zero to -$158. 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. 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.

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 thus, earnings in earnings per quarter) may be too coarse a measure for fully understanding job outcomes. Our data provide us an opportunity to push the analysis further to investigate this issue. Each worker in our sample had at least one job that was certified for the WOTC subsidy, and the subsidy application has the hourly starting wage for this worker-job. This wage is reported directly by the employer and was coded into $1-wide categories by the administrative office that compiled the data we use. This

means that for a subset of jobs in our sample, we can look directly at a measure of hourly wages to assess the existence of a THS compensating differential.

There are a total of 6,310 WOTC-certified person-jobs in our sample, of which 669 are in the THS industry. Note that because *all* of these jobs are WOTC-certified, we do not risk picking up a "WOTC effect" on wages in our analysis that compares THS and non-THS workers. However, it is important to be clear about the nature of this subsample, which is distinct from the larger sample of jobs used in the analysis above. Table 8 displays characteristics of our earlier 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-certified jobs and the time period for which WOTC records are available (a 10-quarter period, rather than the 38 quarters available for these workers when we include their UI records at all jobs). This reduces the power of the analysis but also reduces the heterogeneity of the sample, while allowing us to utilize the wage data on 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 10 percent) is smaller than in the larger sample.[11] This is expected in light of evidence from Hamersma (forthcoming), who shows that firms have a higher likelihood of participating in the WOTC program if their workers have longer average job duration. As noted in the literature review above, shorter job tenure is a common attribute of THS jobs (relative to traditional/permanent 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 – which

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). Similarly, the THS jobs are less likely to be taken by welfare recipients in the WOTC-job sample than we observed in the larger sample, again creating the potential for outcomes at THS jobs to look better simply due to sample composition. Our inclusion of controls for education and welfare receipt are therefore of key importance in the analysis of this subsample.

The wage distributions for the two different job types are reported in Table 9. This analysis gives 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 $6.70/hour and mean THS earnings of $7.74/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 9 about here]

We examine this wage differential controlling for all available covariates at the time of job start, including those used in the earlier analyses, as well as indicators for eight occupation categories. This sample only includes WOTC jobs, with just one observation per person-job, as we have only one wage (the starting wage) for each job. There are 5,378 WOTC person-jobs with wage data and the needed covariates, using only the first quarterly observation at the job and covariates from the starting quarter of the WOTC job. The main results are reported in Table 10; 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. The first column

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uses a "THS" indicator, while the second column uses the full set of work combinations. The third column uses all quarters in which a WOTC job is occurring, even if it did not begin in that quarter, for a total sample of 11,053 person-quarters. All of these samples are restricted to the period 1998:1-2001:4 (due to availability of the demographic explanatory variables).

[Insert Table 10 about here]

The first column of results suggests that THS jobs are associated with an hourly wage *premium of* almost 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 wage premium for THS work. This dollar premium is equivalent to about 15 percent of the average wage. To verify that this is not merely because of the limited sample, we use the same subsample and covariates to predict quarterly earnings. We find that in this case, quarterly earnings at THS and non-THS jobs are statistically indistinguishable ("temp" has a coefficient of 35.5 with a t-statistic of 0.58; the table of these results is available upon request). In other words, the sample seems to eliminate the quarterly earnings penalty to THS jobs but does not explain the large, statistically significant premium found in hourly wages.

As before, we can also examine multiple job issues in the context of wages rather than quarterly earnings. However, this requires some potentially troubling assumptions regardless of the approach, because the analysis of multiple jobs must be done at the quarterly level, while the wage available is at the job level. Even setting that issue aside, 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

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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 makes the generalizability of the results somewhat

limited. 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 10. 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 $1.00. The same gap occurs when

comparing someone with a non-THS job to someone with multiple THS jobs. If a person has

multiple jobs that include both THS and non-THS, the wage gap falls roughly in half ($0.44).

Considering that many people in this category have exactly two jobs—one THS and one non-

THS—it seems very sensible that these workers would experience only half of the THS

premium. The estimates do not suggest any wage gap for those in single non-THS jobs relative

to those who have additional non-THS jobs but no THS jobs. Estimates using the second

alternative approach are in the last column of Table 10, and demonstrate that a larger, perhaps

more representative sample produces nearly identical results.[12] Results are also broadly similar

if we examine particularly disadvantaged subgroups of the sample, such as welfare recipients,

people with larger families, and high school dropouts. These results, reported in the Appendix,

help demonstrate the robustness of our findings and confirm that using demographic controls (for

welfare receipt, number of children, and education level) in the full WOTC-job regression is sufficient for generating reliable results.

The results of this analysis indicate almost exactly the same premium to THS work as that estimated using a simple THS indicator, when comparing work at a single non-THS job to work at a single THS job. However, caution should be used in generalizing these results to a broader population due to our sample limitations.

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 the issue of job duration. Table 11 shows the distribution of job durations by THS status.

[Insert Table 11 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 (67.33%) is nearly 40 percent higher than the fraction for non-THS jobs (48.52). 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 811 hours while the average THS job lasts just 339 hours. The medians are closer, at 217 and 167, but the top of the distribution is very different (i.e., the 90th percentiles are 1895 and 798 respectively). The brevity of these THS jobs (and/or their other disadvantages) appears to be compensated with an extra $1 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. We showed earlier (in Table 2) that disadvantaged workers in THS jobs are especially likely to hold 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. We find workers holding as many as eight or nine jobs in a quarter, although approximately 95 percent of the 29,415 person-quarters with multiple jobs involve just two or three jobs. To keep the analysis to a manageable scope, we utilize these 28,062 person-quarters (with two or three jobs) in our analysis of employment transitions among multiple job holders.

In further narrowing the focus of this analysis to distinguish transitions from simultaneous multiple job-holding, we identify the subset of these 28,062 person-quarters in which it is clear that the worker experienced a transition from one job (leading up to the observed quarter) to another job that continues into the following quarter. That is, observations in this subsample of 7,844 person-quarters (28% of the 28,062) do not have any job that appears in both adjacent quarters. A primary question of interest in this analysis is: what fraction of these transitions in this subsample are transitions from THS to non-THS jobs?

First, we note that 1,331 of the 7,844 person-quarters consisted of workers who were in THS jobs in the quarter prior to the observation quarter. Among these, we find that more than three-fourths move from a THS job into a non-THS job; just 310 (about 23%) move into another THS job. Of those (6,513 person-quarters) who began in a non-THS job, most (88%) transition to another non-THS job in the next quarter. Although this is a fairly restricted subsample— focusing on those who hold 2-3 jobs within a quarter and transition to another job—we view

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these analyses as offering several important insights about a group of disadvantaged workers who is typically viewed as more vulnerable. It does not appear that a large number of this subsample of workers are more likely to stay in (or get stuck in) THS jobs, although approximately twice the proportion who start in THS jobs compared to those first observed in non-THS jobs transition to another THS job. And more generally, while THS workers are more likely to hold multiple jobs within a quarter, the large majority of these jobs are held simultaneously, and those that do transition to different jobs are most likely to transition to a non-THS job.

In sum, although 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, and this accounts, for the most part, for the lower average 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 the above observations, that THS workers (holding worker characteristics constant) 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 per hour for THS work. Moretti describes this compensating differential as the value of job security for workers, that is, it is 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 (which we cannot observe). Gaining a fuller understanding of how THS work affects labor market outcomes, particularly employment transitions, for a broader sample of disadvantaged workers than we focused on in our analysis of subsamples of multiple job-holders, 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 record 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 (on average) to THS workers being paid a lower hourly wage rate than their permanent employee counterparts or to their getting stuck in lower-paying THS jobs.

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-certified 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 the eligibility conditions that are based on the length of work history and the level of earnings. Individuals with shorter work histories are ineligible for UI, since only individuals who have sufficient earnings during the base period qualify.[13] 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 persist for a significant time following 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.

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

1-3 jobs	8.03%
4-6 jobs	16.49%
7-9 jobs	18.70%
10-12 jobs	16.95%
13-15 jobs	13.39%
16-18 jobs	9.05%
19-21 jobs	6.55%
22-24 jobs	3.71%
25+ jobs (max = 90)	7.13%

Sample: 5,877 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 112,759 person-quarters	For person-quarters with at least one THS job (N = 19,268)
1 job in quarter	73.91	47.17
2 jobs in quarter	20.56	35.36
3 jobs in quarter	4.33	12.69
4+ jobs in quarter	1.20	4.79

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	74,256	65.85
multiple jobs, no THS	19,235	17.06
multiple jobs, both types	8,526	7.56
one THS job	9,088	8.06
multiple jobs, all THS	1,654	1.47
total	112,759	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	Non-	THS
Total Earnings at Job	**$ 9,521**	**$ 1,863**	**$ 4,717**	**$ 715**
Quarterly Earnings at Job	**$ 1,493**	**$ 716**	**$ 1,265**	**$ 471**
Number of individuals in averages:	n=5,860	n=3,964	n=5,860	n=3,964

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 basic demographics

VARIABLES	(1) Person-job level all years	(2) Person-job level 1998-2001 with time-varying variables
THS indicator	-815.31***	-620.94***
	(-64.68)	(-41.36)
female	-144.09***	-51.50***
	(-12.11)	(-2.947)
black	140.43***	89.11***
	(13.51)	(5.422)
Hispanic	183.40***	176.46***
	(8.610)	(6.160)
other nonwhite race	156.62***	96.84***
	(11.66)	(5.108)
age	134.24***	100.62***
	(38.85)	(21.50)
age squared	-1.70***	-1.32***
	(-31.32)	(-17.72)
total # kids under 18 in HH		12.16***
		(2.853)
total # kids under 6 in HH		44.21***
		(7.051)
high school graduate		210.57***
		(17.30)
some college		361.66***
		(15.81)
college graduate		235.97**
		(2.435)
any welfare receipt (98-01)		-139.04***
		(-11.16)
Constant	-1,000.31***	-535.01***
	(-14.57)	(-7.204)
Observations	150,169	63,842
R-squared	0.109	0.065

Sample: The first column uses the largest possible sample from these data, utilizing all 150,169 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. This regression also includes quarterly time indicators, from 1995:1 – 2004:2 for the first column and 1998:1-2001:4 for the second column.

Table 6: Regression of job-quarter earnings on THS work, with individual fixed effects

VARIABLES	(1) Person-job level for those w/ both job types using person fixed effects all years	(2) Person-job level for those w/ both job types using person FEs and time-varying vars 1998-2001
THS indicator	-677.00***	-538.52***
	(-59.75)	(-36.91)
total # kids under 18 in HH		-24.96**
		(-2.498)
total # kids under 6 in HH		-5.74
		(-0.434)
high school graduate		53.50
		(1.619)
some college		157.48**
		(2.392)
college graduate		-61.18
		(-0.291)
Constant	862.27***	1,055.75***
	(19.76)	(22.68)
Observations	111,161	48,201
R-squared	0.353	0.321

Sample: The first column uses the 111,161 person-job observations for the 3,947 individuals in the sample who held at least one THS job *and* at least one non-THS job during the period 1995:1-2004:2. The second column is limited to the period 1998:1 – 2001:4. t-statistics are in parentheses.

Table 7: 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	247.59***	272.54***	163.71***	112.81***
	(16.11)	(14.01)	(13.50)	(7.138)
multiple jobs, both types	-148.09***	-10.20	-158.21***	-154.65***
	(-6.798)	(-0.396)	(-9.086)	(-7.134)
one THS job	-956.09***	-677.84***	-765.87***	-612.66***
	(-45.20)	(-24.43)	(-43.83)	(-25.40)
multiple jobs, all THS	-855.65***	-568.75***	-696.19***	-588.31***
	(-18.19)	(-10.45)	(-18.77)	(-13.06)
female	-172.28***	-26.55		
	(-11.52)	(-1.153)		
black	160.80***	138.20***		
	(12.18)	(6.289)		
Hispanic	232.17***	231.62***		
	(8.565)	(6.085)		
other nonwhite race	132.41***	95.49***		
	(7.872)	(3.812)		
age	196.03***	155.68***		
	(45.85)	(25.55)		
age squared	-2.54***	-2.10***		
	(-38.02)	(-21.66)		
total # kids under 18 in HH		-3.10		-44.82***
		(-0.559)		(-4.488)
total # kids under 6 in HH		61.79***		-23.59*
		(7.498)		(-1.735)
high school graduate		318.57***		79.51**
		(19.62)		(2.491)
some college		537.07***		78.06
		(17.56)		(1.132)
college graduate		518.89***		252.47
		(3.842)		(1.049)
any welfare receipt (98-01)		-214.01***		
		(-12.92)		
Constant	-1,732.93***	-1,136.01***	963.85***	1,453.97***
	(-20.69)	(-12.01)	(22.54)	(31.45)
Observations	112,759	45,157	112,759	45,157
R-squared	0.126	0.088	0.549	0.574

Table 8: Descriptive Statistics for 1998-2001 Sample and WOTC Sample

	1998-2001		WOTC JOBS	
	non-THS	THS	non-THS	THS
Number of Person-Jobs	33,432	9,079	5,641	669
Fraction Of Sample:	78.64	21.36	89.40	10.60
Quarterly Earnings	974	608	1171	1103
Total Earnings At Job	3677	1305	5717	2694
GENDER (proportion):				
Female	82.99	79.25	81.62	69.51
REGION (proportions):				
Milwaukee	60.35	69.23	63.12	62.13
Dane Co.	17.35	16.27	17.36	11.69
elsewhere	22.30	14.50	19.52	26.18
EDUCATION (proportions):				
< High school	52.27	50.59	51.04	41.28
High school	40.82	41.58	41.45	48.93
More than high school	6.56	7.49	7.17	9.25
College degree	0.35	0.34	0.35	0.53
PROGRAM PARTICIPATION:				
Ever received welfare (98-01)	37.58	40.75	37.25	28.85
Ever received food stamps (98-01)	71.02	73.60	69.30	72.65

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 certified by WOTC between 1999:3 and 2001:4. Sample sizes vary slightly depending on a small number of missing values.

Table 9: Wage distributions for WOTC jobs: THS and non-THS

	THS	Non-THS
< min. wage	0	3.32
$5.15 - $5.99	6.81	28.61
$6.00 - $6.99	26.63	38.06
$7.00 - $7.99	27.23	14.57
$8.00 - $8.99	23.15	9.95
$9.00 +	16.19	5.48

Sample: 6,260 WOTC-certified person-jobs with wage data available, of which 661 are THS.

Table 10: Regression examining THS and non-THS wage differentials

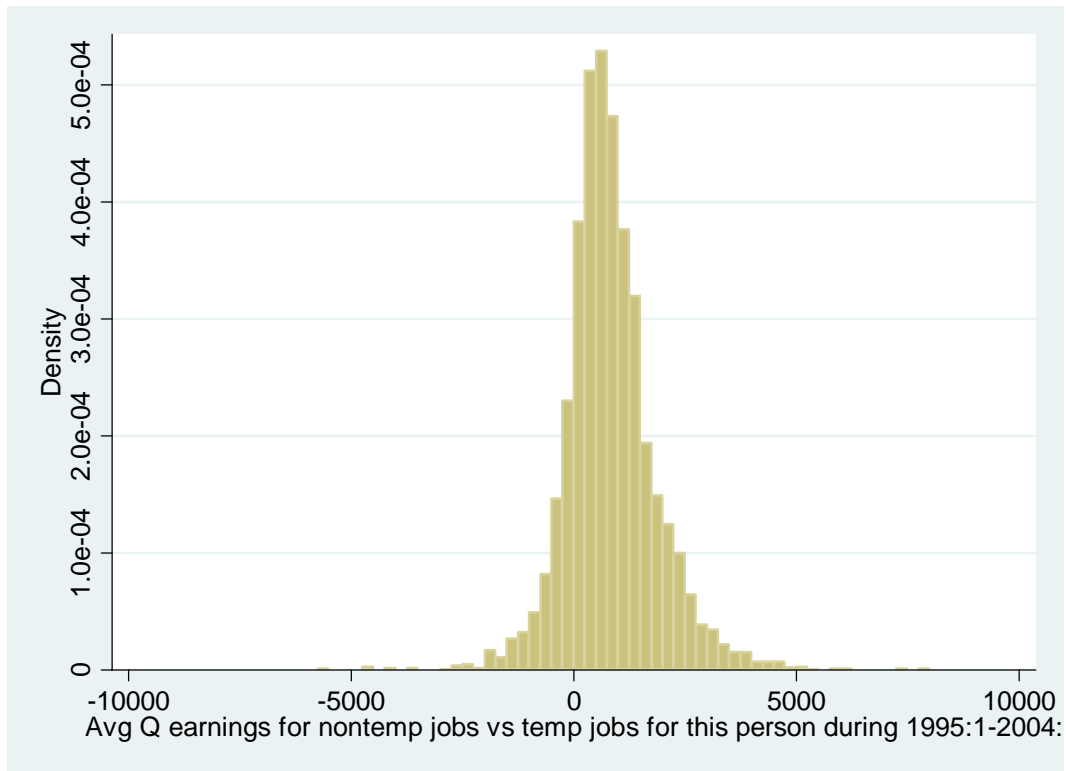| VARIABLES	(1) Person-job-level, first Q of WOTC job	(2) Person-quarter-level, first Q of WOTC job	(3) Person-quarter-level, all Qs of WOTC job
THS	0.97***		
	(18.24)		
multiple jobs, no THS		0.05	0.01
		(1.319)	(0.265)
multiple jobs, both types		0.44***	0.41***
		(9.423)	(11.20)
one job, THS		1.00***	1.07***
		(12.54)	(18.23)
multiple jobs, THS only		0.98***	0.96***
		(7.906)	(9.502)
female	-0.12**	-0.11**	-0.12***
	(-2.424)	(-2.304)	(-3.631)
black	0.10**	0.10**	0.10***
	(2.311)	(2.124)	(2.975)
Hispanic	-0.01	-0.02	-0.04
	(-0.170)	(-0.304)	(-0.754)
other nonwhite race	0.09*	0.09*	0.07**
	(1.697)	(1.707)	(2.058)
age	0.07***	0.06***	0.08***
	(5.268)	(4.867)	(10.08)
age squared	-0.00***	-0.00***	-0.00***
	(-4.465)	(-4.107)	(-9.446)
total # kids under 18 in HH	-0.03***	-0.03**	-0.02***
	(-2.721)	(-2.480)	(-2.669)
total # kids under 6 in HH	0.09***	0.08***	0.09***
	(4.733)	(4.520)	(7.316)
high school graduate	0.11***	0.10***	0.10***
	(3.238)	(3.047)	(4.265)
some college	0.21***	0.21***	0.20***
	(3.244)	(3.178)	(4.507)
college graduate	-0.01	-0.11	0.40**
	(-0.0461)	(-0.418)	(2.206)
any welfare receipt (98-01)	-0.04	-0.06	-0.01
	(-1.235)	(-1.593)	(-0.531)
Constant	6.99***	6.99***	6.47***
	(34.42)	(34.19)	(47.76)
Observations	5,378	5,378	11,053
R-squared	0.223	0.214	0.212

Notes: Numbers in parentheses are t-statistics. 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.

Table 11: Job duration in THS and non-THS jobs

Quarters at Job	Non-THS	THS
1	48.52	67.33
2	27.95	23.01
3	9.43	5.64
4	4.60	2.06
5	2.72	1.02
6+	6.78	0.94

Sample: This sample contains all person-jobs in the dataset, of which 56,400 are non-THS and 15,029 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 1.

APPENDIX

Summary of Alternative-Sample Findings (versions of Table 10)

Sample of welfare recipients only

	Person-job-level first Q of WOTC job	Person-quarter-level first Q of WOTC job	Person-quarter-level all Qs of WOTC job
THS	1.05***		
	(11.57)		
multiple jobs, no THS		0.003	-0.05
		(0.0604)	(-1.096)
multiple jobs, both types		0.26***	0.24***
		(3.626)	(4.112)
one job, THS		1.11***	1.19***
		(8.483)	(11.88)
multiple jobs, THS only		0.94***	0.88***
		(4.637)	(5.269)
Observations	2195	2195	4332

Sample of people with at least 2 children

	Person-job-level first Q of WOTC job	Person-quarter-level first Q of WOTC job	Person-quarter-level all Qs of WOTC job
temp	1.05***		
	(15.14)		
multiple jobs, no THS		0.06	0.00
		(1.306)	(0.0595)
multiple jobs, both types		0.45***	0.39***
		(7.646)	(8.355)
one job, THS		1.05***	1.12***
		(10.25)	(14.83)
multiple jobs, THS only		1.34***	1.29***
		(7.778)	(9.151)
Observations	3426	3426	6985

Sample of high-school dropouts

	Person-job-level first Q of WOTC job	Person-quarter-level first Q of WOTC job	Person-quarter-level all Qs of WOTC job
THS	0.88***		
	(11.34)		
multiple jobs, no THS		0.05	0.01
		(0.993)	(0.406)
multiple jobs, both types		0.40***	0.40***
		(6.422)	(8.003)
one job, THS		0.80***	0.86***
		(6.711)	(9.620)
multiple jobs, THS only		0.90***	0.68***
		(4.909)	(4.616)
Observations	2703	2703	5293

Endnotes

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

[2] Farber (1999) used data from Displaced Worker Supplements and Current Population Surveys (CPS) that were matched with the Contingent and Alternative Employment Arrangements Supplements (CAEAS) of the February CPS to examine the extent to which workers who lose jobs find work in alternative employment arrangements, including THS firms. However, wage rates were not among the job details analyzed in his study, and there are some limitations to accurately identifying the employment arrangement classifications, particularly THS firms, with these matched data.

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

[4] The WOTC 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 (2010). 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 compares 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] If a person has multiple spells at the same employer (i.e. there are either unemployed quarters between spells at the employer or other jobs between spells) we code these as distinct person-jobs. Also note that only a small fraction of these 71,429 person-jobs are subsidized as part of the WOTC program; our goal is not to evaluate WOTC *per se*, but to evaluate the work histories of persons who are somewhat homogeneous based on their common certification for WOTC during a particular period of time.

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

[8] Some of the members of the sample were qualified for WOTC due to welfare receipt, while others were qualified via food stamp receipt or other disadvantages targeted by the program.

[9] 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.

[10] The mean gap is $782.

[11] We thank an anonymous referee for pointing out this feature of the sample.

[12] 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.

[13] The base period is the first four of the last five completed quarters before the quarter when the UI claim is filed. The base period can exclude as much as six months of recent employment.