

# The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015

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**Abstract:** To monitor trends in alternative work arrangements, we conducted a version of the Contingent Worker Survey as part of the RAND American Life Panel (ALP) in late 2015. The findings point to a significant rise in the incidence of alternative work arrangements in the U.S. economy from 2005 to 2015. The percentage of workers engaged in alternative work arrangements – defined as temporary help agency workers, on-call workers, contract workers, and independent contractors or freelancers – rose from 10.1 percent in February 2005 to 15.8 percent in late 2015. The percentage of workers hired out through contract companies showed the sharpest rise increasing from 0.6 percent in 2005 to 3.1 percent in 2015. Workers who provide services through online intermediaries, such as Uber or Task Rabbit, accounted for 0.5 percent of all workers in 2015. About twice as many workers selling goods or services directly to customers reported finding customers through offline intermediaries than through online intermediaries.

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## **I. Introduction**

Monitoring changes in the pace and nature of work relationships is crucial to understanding the forces affecting the U.S. economy and the quality of life of American workers. Yet the Bureau of Labor Statistics (BLS) has been unable to conduct the Contingent Work Survey (henceforth, the CWS), its main survey instrument for tracking alternative (or nonstandard) work relationships in the United States since 2005. To fill this void, we conducted the RAND-Princeton Contingent Worker Survey (RPCWS), a version of the CWS, as part of the RAND American Life Panel (ALP) in October and November of 2015. This paper provides an initial analysis of the data from the RPCWS. Our findings point to a substantial rise in the incidence of alternative work arrangements for U.S. workers from 2005 to 2015, with a particularly sharp increase in the share of workers being hired through contract firms.

In the absence of more recent data from the CWS, prior evidence has shown mixed signs of a major change in the nature of U.S. employment relationships over the last decade. Bernhardt (2014), for example, concludes “it has been hard to find evidence of a strong, unambiguous shift toward nonstandard or contingent forms of work—especially in contrast to the dramatic increase in wage inequality.” The General Accounting Office (2015) analyzes data from the General Social Survey and CWS and finds that an expansive definition of alternative work arrangements, which includes part-time employees, increased from 35.3 to 40.4 percent of employment from 2006 to 2010.

A comparison of our survey results from the 2015 RPCWS to the 2005 BLS CWS indicates that the percentage of workers engaged in alternative work arrangements – defined as temporary help agency workers, on-call workers, contract company workers, and independent contractors or freelancers – rose from 10.1 percent in February 2005 to 15.8 percent in late 2015. This increase

is particularly noteworthy given that the BLS CWS showed hardly any change in the percent of workers engaged in alternative work arrangements from 1995 to 2005. We further find that about 0.5 percent of workers indicate that they are working through an online intermediary, such as Uber or Task Rabbit, consistent with estimates derived by Harris and Krueger (2015) and Farrell and Greig (2016a). Thus, the online gig workforce is relatively small compared to other forms of alternative work arrangements, although it is growing very rapidly (see Farrell and Greig 2016b).

In the remainder of this paper we describe the survey we conducted through the RAND ALP in greater detail and document the changing nature of work relationships by demographic group and other characteristics of workers and jobs. We also analyze the wages, weekly earnings, and work hours of those who are employed in alternative work arrangements in comparison to those in traditional employment relationships, as well as the reported preferences for type of work (e.g., regularly scheduled hours, permanent job) of those engaged in alternative work arrangements.

## **II. The Rand-Princeton Contingent Work Survey**

In the summer of 2015 we contracted with the RAND Institute to implement a standalone survey of alternative work arrangements to individuals in its American Life Panel on our behalf. The core of the questionnaire was based on the BLS's CWS. The BLS's CWS only collects information about alternative work arrangements for each individual's *main* job, and we sought to follow this practice. The CWS also imposes a hierarchical skip logic (e.g., if a worker is on a temporary help or on-call job, she is not asked whether she is a freelancer) that we did not follow (i.e., we asked workers on temporary help and on-call jobs if they were independent contractors

or freelancers) to gather more complete information on work arrangements. Nevertheless, we impose the BLS's classification hierarchy in our analysis below to make the results as comparable as possible.<sup>2</sup> We augmented the survey to include questions on whether workers sold services or goods directly to customers, and, if so, whether they worked through an intermediary, such as Avon or Uber. A copy of the questionnaire is posted online and can be downloaded from <https://alpdata.rand.org/index.php?page=data&p=showsurvey&syid=441>.

The survey was conducted online between October 19, 2015 and November 4, 2015. A total of 6,028 subjects were invited to fill out the questionnaire, and a total of 3,844 completed the questionnaire, for a response rate of 63.8 percent. The ALP sample was recruited using a compilation of methods, including a group recruited for the University of Michigan Internet panel, a random digit dial sample, and a snowball sample.<sup>3</sup> RAND developed and provided a set of survey weights to align the sample to the Current Population Survey (CPS) according to age, gender, race/ethnicity, education and household income groups.<sup>4</sup> We further adjusted the weights to account for the fact that self-employed workers were over-represented in the ALP respondents.

One possible concern is that the BLS CWS was conducted in February of each year, while our RPCWS was conducted in October and November. However, we have examined

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<sup>2</sup> One area where we deviated from the BLS CWS is that our question about day labor did not preface the question by saying, "Some people get work by waiting at a place where employers pick up people to work for a day." Instead, we simply asked the second part of the question, "Were you a DAY LABORER last week?" Consequently, our question was probably overly inclusive relative to the BLS CWS. To maintain comparability, we exclude day laborers from the group of on-call workers in both the RPCWS and BLS CWS. Fortunately, day laborers are a very small group in the BLS data, so the results are not meaningfully affected.

<sup>3</sup> The RAND ALP sample is described here: <https://alpdata.rand.org/index.php?page=panelcomposition>.

<sup>4</sup> The RAND ALP weighting procedures are described at: <https://alpdata.rand.org/index.php?page=weights>.

historical CPS data and found no evidence of systematic seasonality between February and October or November in the share of workers who are self-employed or multiple jobholders. These patterns suggest that seasonality is unlikely to distort the observed pattern in alternative work arrangements when we compare the CPS and RAND surveys.

Column 1 of Table 1 reports descriptive statistics of workers based on the October 2015 CPS as a benchmark against which to assess the RAND ALP sample of workers.<sup>5</sup> Corresponding estimates from the RPCWS are presented in the next three columns. The second column provides unweighted estimates, the third column provides estimates using the weights RAND provided, and the fourth column (labeled “Alt. Weight”) provides estimates where we adjusted the RAND sample weights to down weight the self-employed. Throughout the remainder of the paper we emphasize results using the adjusted weights, unless otherwise noted, although we also report results weighted by the original RAND sample weights for comparison.

Although the weighted ALP sample is a bit younger, on average, it is broadly similar to the U.S. workforce as represented by the October CPS.<sup>6</sup> The ALP sample is about equally likely to work part-time as the CPS sample, but about 8 percentage points more likely to hold more than one job (5.2 percent versus 13.1 percent). Because CPS data do not indicate an upward trend in multiple jobholding since 2005, the high incidence of multiple jobholding in the ALP sample raises a concern about the representativeness of respondents in the ALP internet panel. The weighted industry and occupation distributions of the two samples are similar, however, even though these variables were not used in the construction of sample weights. Lastly, it is

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<sup>5</sup> Both the CPS and RPCWS samples in Table 1 are limited to those who worked in the survey reference week.

<sup>6</sup> The ALP sample consists of individuals age 18 and older, whereas the CPS sample consists of those age 16 and older.

noteworthy that the ALP sample reported considerably higher weekly earnings than the CPS sample.

As in any sample of the population, there are concerns about the representativeness of the respondents. To probe the robustness of our conclusions, we take some steps to ensure that the particular nature of the RAND sample is not driving our main conclusions, such as checking the sensitivity of our findings to dropping multiple jobholders.

### **III. Basic Findings**

Table 2 reports the percentage of individuals who were employed in an alternative work arrangement based on the 1995 and 2005 CPS CWS and our 2015 RAND survey.<sup>7</sup> (The sum of the alternative work categories does not necessarily equal the figure in the first row because of rounding and because a small number of individuals are both on-call and contract workers in the BLS CWS.) “Independent Contractors” are individuals who report they obtain customers on their own to provide a product or service as an independent contractor, independent consultant, or freelance worker. “On-Call Workers” report having certain days or hours in which they are not at work but are on standby until called to work. “Temporary Help Agency Workers” are paid by a temporary help agency. “Workers Provided by Contract Firms” are individuals who worked for a company that contracted out their services during the reference week.

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<sup>7</sup> The CPS CWS was conducted for rotation groups 1-3 and 5-7 of the eight rotation groups in the basic CPS in 2005. Following the BLS, the percentages we report are derived as the ratio of the weighted count of workers engaged in the alternative work arrangement divided by the weighted count of the total number of workers. The CPS supplement is used to compute the numerator, and the basic monthly CPS is used to compute the denominator. The weights for the numerator are the CWS supplement weights, while the weights for the denominator are the basic CPS weights. As a practical matter, the results are very similar if only participants in the CWS supplement are included in the analysis, and only supplement weights are used.

The CPS CWS figures in Table 2 (and throughout the rest of the paper) were computed to be as comparable as possible to the RPCWS sample. Most importantly, in both samples we excluded the small number of day laborers from the alternative work category and we imposed the sample restriction that individuals must have worked in the survey reference week. Nevertheless, our CPS CWS tabulations are close to the published numbers for 1995 and 2005, and they match exactly if we do not impose these restrictions.

The RPCWS data indicate a significant rise in the incidence of alternative work arrangements from the 10.1 percent share in the CPS CWS in 2005. Using the weights that Rand provided, 17.2 percent of all workers were employed in alternative work arrangements in 2015, although that figure is probably overstated because of the over representation of self-employed workers in the ALP sample. If we instead use the Alternative Weights, which down weight the self-employed to match the October 2015 CPS, the figure is 15.8 percent, still indicating a substantial rise (and, as expected, the share of independent contractors is most notably affected by the alternative weights). Thus, using the alternative weights, we conclude that the share of workers in alternative work arrangements in their main job increased by 5.7 percentage points (or by over 50 percent) from 2005 to 2015.

*A striking implication of these estimates is that all of the net employment growth in the U.S. economy from 2005 to 2015 appears to have occurred in alternative work arrangements.*

Total employment according to the CPS increased by 9.1 million (6.5 percent) over the decade, from 140.4 million in February 2005 to 149.4 in November 2015.<sup>8</sup> The increase in the share of

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<sup>8</sup> BLS CPS employment levels (seasonally adjusted) are from <http://www.bls.gov/webapps/legacy/cpsatab1.htm>. According to the BLS establishment survey, (seasonally adjusted) nonfarm payroll employment increased by a similar amount – 9.8 million jobs (7.4 percent) – over this period.

workers in alternative work arrangements from 10.1 percent in 2005 to 15.8 percent in 2015 implies that the number of workers employed in alternative arrangement increased by 9.4 million (66.5 percent), from 14.2 million in February 2005 to 23.6 million in November 2015. Thus, these figures imply that employment in traditional jobs (standard employment arrangements) slightly declined by 0.4 million (0.3 percent) from 126.2 million in February 2005 to 125.8 million in November 2015. Unfortunately, we cannot determine the extent to which the replacement of traditional jobs with alternative work arrangements occurred before, during or after the Great Recession. But it appears that as of late 2015, the labor market had not yet fully recovered from the huge loss of traditional jobs from the Great Recession.

All four categories of nonstandard work increased from 2005 to 2015. Independent contractors continue to be the largest group (8.9 percent in 2015), but the share of workers in the three other categories more than doubled from 3.2 percent in 2005 to 7.3 percent in 2015. The fastest growing category of nonstandard work involves contracted workers. The percentage of workers who report that they worked for a company that contracted out their services in the preceding week rose from 0.6 percent in 2005 to 3.1 percent in 2015.<sup>9</sup> Because of the concern previously noted that the RAND sample over represents multiple jobholders, who possibly could be more likely to report contract work, in the bottom of Table 2 we exclude multiple jobholders. Even in this restricted sample there was still a notable rise in the percentage of workers who

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<sup>9</sup> Goldschmidt and Schmieder (2015) document a large rise in domestic outsourcing (“contracting out”) in Germany as well since the 1990s, with a large growth of contracted out workers being employed by business service firms and temporary help agencies. Song, et al. (2016) find related evidence for United States of increasing worker sorting across firms by (permanent) wage levels, pattern that is consistent with a rising reliance on contracting out of low-wage work by many firms.

were contracted out from 0.6 percent in 2005 to 2.0 percent in 2015, suggesting the sharp increase in contracted out workers is a robust finding.

#### **IV. Corroborating Evidence from Internal Revenue Service**

The rise in alternative work arrangements evident in Table 2, especially the increase in the share of workers who indicated that they were “working or self-employed as an independent contractor, an independent consultant, or a freelance worker” from 6.9 percent in 2005 to 8.4 percent in 2015 is a stark contrast to the declining trend in the share of employees who indicate that they are self-employed based on published CPS data. If self-employment were truly waning, one would not expect to find a rise in independent contractors, and that trend was even evident (although more mild) in the 1995 and 2005 CWS as well.

Figure 1 provides some further evidence on this issue by utilizing Internal Revenue Service (IRS) data on the number of tax returns that were filed containing Schedule C (Form 1040), which is used to report income (or losses) individuals earn from operating a business or practicing a profession as a sole proprietor. In other words, individuals file Schedule C with the IRS to report income related to self-employment activities. Specifically, Figure 1 reports the number of Schedule C filers relative to total employment from the CPS each year from 1979 through 2014 as well as the number of unincorporated self-employed individuals according to the CPS relative to total CPS employment, and the total number of self-employed individuals according to the CPS relative to total CPS employment since 2000.<sup>10</sup> (Incorporated self-employed individuals should file a corporate income tax form, not Schedule C.) It is clear that

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<sup>10</sup> The number of Schedule C filers is available from Statistics of Income publication 1304 Table 1.3; see <https://www.irs.gov/uac/SOI-Tax-Stats-Individual-Income-Tax>Returns-Publication-1304-%28Complete-Report%29>.

the IRS and CPS data show divergent trends in the number of self-employed individuals.

Although the proportion of employees who were self-employed was similar in the CPS and IRS data in 1979, the CPS data show a declining trend while the IRS data show a rising trend.

There also is an upward trend in the number of tax returns that contain 1099-MISC income relative to total CPS employment, which the U.S. Treasury Department provided to us for years from 2000 through 2012. This trend is consistent with the Schedule C data and the rise in independent contractors in the CWS. And Abraham, et al. (2015) report from tax and CPS data a rise in self-employed non-employers (individuals with over \$1000 in Schedule C income but not employees) as a percent of employment from 12 percent in 2000 to 16 percent in 2013.

Understanding the reasons underlying the divergent trends between the IRS and CPS data on self-employment should be a priority for future research.<sup>11</sup> Nevertheless, we interpret the IRS data as consistent with the upward trend from 1995 to 2015 in the share of workers who reported themselves as either working or being self-employed as an independent contractor, independent consultant, or freelancer in the BLS CWS and RPCWS.

## **V. Characteristics of those in Alternative Work Arrangements**

Table 3 reports the characteristics of workers in alternative work arrangements in 1995, 2005, and 2015. Thus, the sample characteristics displayed in Table 3 are limited to respondents

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<sup>11</sup> A possible reconciliation is that the CPS self-employment measure only covers main jobs. Thus, if a growing share of individuals have self-employment income from secondary jobs or activities but not from main jobs, then one could see a rise in the share of tax filers reporting Schedule C income and receiving 1099s even if self-employment in their main jobs is not increasing. But the increase the share of individuals reporting to be independent contractors in their main jobs in the BLS CWS and RPCWS does not appear consistent with a decline in self-employment in main jobs in the standard monthly CPS. Some independent contract work and freelancing in main jobs does not appear to be reported as self-employment in the standard class of worker questions in the CPS.

classified as a temporary help worker, on-call worker, contract company worker, or an independent contractor or freelancer.

The share of workers in alternative work arrangements who also report themselves as self-employed has declined from 58 to 59 percent in 1995 and 2005 to under half (48 percent) in 2015, reflecting the growth in the share of workers in the category who worked through contract firms or temporary help firms. There has also been a notable rise in the share of workers in alternative work arrangements for women. Furthermore, the share of alternative workers who are college graduates, multiple jobholders, or Hispanics display notable increases.

Construction and professional and business services were the two most prevalent industry groups among those in alternative work in 1995 and 2005, but the educational and health services industry has surpassed them over the last decade. More than one in five workers in an alternative work arrangement was working in education or health services in 2015. Together, professional and business services, health and education, and other services represented half of all of those engaged in an alternative work arrangement. Although the manufacturing sector has received a great deal of attention insofar as alternative work arrangements are concerned, it accounts for only 6.2 percent of all those engaged in alternative work, and just 2.6 percent of workers who are contracted out.

Workers in alternative work arrangements are spread throughout several occupations. The largest number of workers in alternative arrangements is found in sales occupations, although it represents less than 10 percent of all workers in alternative work arrangements. The occupational mix of alternative workers has become more diffuse since 2005.

## VI. Incidence of Alternative Work Arrangements

Table 4 reports the percentage of workers in various categories that are employed in alternative work arrangements in their main jobs.<sup>12</sup> For example, 6.4 percent of those aged 16 to 24 were employed in an alternative work arrangement in 2015, while 14.3 percent of those aged 25-54 and 23.9 percent of those aged 55-74 were employed in an alternative work arrangement. The 1995 and 2005 CWS also show a positive age gradient in the incidence of alternative work. Interestingly, the rise in the incidence of alternative work occurred has been sharpest for older workers (those 55 to 75 years old) and strong for prime age workers (those 25 to 54 years old) as well. But there was no change in the percentage of workers aged 16-24 who were employed in alternative work arrangement from 2005 to 2015, despite the over 50 percent growth in incidence across all workers. Thus, the age gradient in alternative work has become steeper.

Tables 4a to 4d provide the corresponding information separately for each category of alternative work. The likelihood of working for a firm that contracted them out increased among young workers (see Table 4d), but for the three other categories young people did not register a meaningful increase in the likelihood of working in an alternative work arrangement.

Table 4 shows a notable rise in the likelihood of working in an alternative work arrangement for women. From 2005 to 2015, the percentage of women who were employed in an alternative work arrangement more than doubled, rising from 8.3 percent to 17.0 percent. The percentage increased by a more modest amount for men, from 11.6 percent to 14.7 percent. As a consequence, women are now more likely than men to be employed in an alternative work

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<sup>12</sup> The estimates in Table 4 (and Tables 4a to 4d) for subgroups should be interpreted with some caution because of the small sample size in the RPCWS for many subgroups.

arrangement. The contrasting trends were particularly stark for the independent contractor category with a drop in incidence for men and a large rise for women as shown in Table 4(b).

Workers in all educational categories experienced a rise in the likelihood of working in an alternative work arrangement. Alternative work arrangements were most prevalent in the construction and professional business services industries in 2005. Although workers in these industries continue to have a high likelihood of being employed in alternative work arrangements, the growth of alternative work arrangements has been much greater in previously lagging sectors including transportation and warehousing, information and communications, education and health care, and public administration. Figure 2 illustrates trends from 1995 to 2015 in the share of workers in alternative work arrangements by industry.

Occupational groups experiencing particularly large increases in the nonstandard work from 2005 to 2015 include computer and mathematical, community and social services, education, health care, legal, protective services, personal care, and transportation jobs.

### *Is Alternative Work Growing in High- or Low-Wage Sectors?*

To assess whether alternative work is growing in higher or lower wage sectors of the labor market, we used the following regression approach. We first used the 2005 CPS Monthly Outgoing Rotation Group (MORG) file to estimate a “kitchen sink Mincer regression” of the form:

$$Y_i = X_i b + e_i ,$$

where  $Y_i$  is individual “i’s” log hourly wage rate,  $X_i$  is a vector of predictor variables including years of education, potential experience, potential experience squared and dummy variables

indicating race, Hispanic ethnicity, sex, industry, and occupation. This regression is meant for descriptive purposes only, and the 2005 CPS MORG sample was used to estimate the regression because it is in the middle of the three surveys. With the descriptive regression in hand, we determined quintile cutoffs based on the distribution of  $\hat{Y}_i = X_i b$  using the 2005 MORG file.

We then predicted  $\hat{Y}_i$  for each individual in the 1995 and 2005 CPS CWS and the 2015 RPCWS using the individual's characteristics  $X_i$  and the vector of regression coefficients  $b$  estimated from the 2005 MORG file. We used  $\hat{Y}_i$  to assign individuals to a quintile of the predicted wage distribution based on the 2005 quintile wage cutoffs, and computed the weighted probability that an individual in the quintile was employed in an alternative work arrangement.

To carry out this exercise, we found it necessary to make one further adjustment to the 2015 RAND sample weights. In particular, we adjusted the alternative sample weights so the fraction of workers in each predicted quintile matched the fraction in each predicted quintile from the 2015 CPS MORG file. This reweighting was necessary because the RPCWS data under-represented the proportion of workers predicted to be in the lowest quintile, even though the initial RAND weights did a reasonable job approximating the distribution of average worker characteristics as shown in Table 1.

Figure 3 reports the results of this exercise. To make the patterns easier to detect, in addition to showing the percentage of workers in each predicted wage quintile who are employed in an alternative work arrangement, the figure also shows the OLS regression line through the five percentages each year. It is clear from Figure 3 that the incidence of alternative work is greater among workers who are predicted to have higher wages. The rise in the incidence of alternative work arrangements from 1995 to 2015 is similar across the predicted wage

distribution as indicated by almost parallel upward shifts in the regression lines from 1995 to 2005 to 2015.

Figures 4 through 7 present the corresponding graphs for each category of alternative work arrangements, showing the percent of temporary help agency workers, on-call workers, contracted-out workers, and independent contractors by predicted wage quintile, respectively. Four patterns are notable. First, the upward sloping relationships found in Figure 3 are primarily due to independent contractors (including independent consultants and freelancers). Second, from 2005 to 2015 workers in the lower predicted-wage quintiles experienced a larger rise in independent contractor work than did workers in the highest quintiles, although the relationship was still upward sloping. Third, and not surprisingly, the likelihood that workers are employed in temporary help agency jobs and on-call jobs is higher in the lower predicted-wage quintiles than in the higher predicted-wage quintiles. Fourth, there was a notable rise in the likelihood of workers being contracted out to other firms for those in the highest predicted-wage quintiles, rendering a sharply upward sloping pattern by 2015. Thus, in 2015 workers with attributes and jobs that are associated with higher wages are more likely to have their services contracted out than are those with attributes and jobs that are associated with lower wages. Indeed, the lowest predicted quintile-wage group did not experience a rise in contract work.

## **VII. Online and Offline Intermediated Work**

A major goal when we designed our questionnaire was to provide the first nationally-representative survey-based estimates of the percent of workers working in what has been variously called “the gig economy,” the “sharing economy,” the “online platform economy,” or the “on-demand economy.” Our approach was to first ask workers: “On either your main job or

a secondary job, do you do direct selling to customers?” We then followed up by asking about the nature of their direct selling activities. A total of 19.4 percent of U.S. employees responded that they were engaged in direct selling to customers on their job. The direct selling of goods or services to customers is widespread among U.S. workers and it goes far beyond retail sales clerks.

Of those who engaged in direct selling, however, only 7 percent answered that they worked with an intermediary, such as Avon or Uber, in their direct selling activity. Among those workers who said they worked with an intermediary, about one-third said that the intermediary is online, such as Uber or TaskRabbit, and two-thirds reported that the intermediary is offline. Thus, only about 0.5 percent of all workers identify customers through an online intermediary. This figure, which requires many caveats (such as the ambiguity of the term “direct selling” and the small sample size) is nonetheless remarkably close to Harris and Krueger’s (2015) estimate of 0.4 percent of the workforce based on the frequency of Google searches for terms related to online intermediaries and to Farrell and Greig’s (2016a) estimate of 0.6 percent of the working-age population (or approximately 0.4 percent of the workforce) based on the frequency of bank deposits from online work platforms.

## **VIII. Wages and Hours**

We can compare earnings and work hours of workers in alternative work arrangements and those in traditional employment.<sup>13</sup> The 2005 CWS collected earnings information from workers in alternative work arrangements in rotation groups 1-3 and 5-7, and earnings of all

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<sup>13</sup> See Goldschmidt and Schmieder (2015) and Dube and Kaplan (2010) for longitudinal evidence on the (approximately 10 percent) wage decline that security guards and janitors incur when they transition from direct employees to employees of business services firms in Germany and the United States respectively.

employees in rotation groups 4 and 8.<sup>14</sup> Although we cannot distinguish between workers in alternative and traditional employment arrangements in rotation groups 4 and 8, because workers in alternative employment arrangements comprised only 10 percent of all workers at that time, the vast majority of employees were in a traditional employment relationship. Thus, by assigning all employees in rotation groups 4 and 8 to the category of traditional employment and comparing them to workers identified in an alternative work arrangement in the other rotation groups, we only attenuate differences in earnings or hours by a small amount (approximately 10 percent).<sup>15</sup>

Another limitation of the CPS is that earnings are only available for the main job. For the RPCWS data, however, we collected separate information on earnings in the main job and all other jobs combined.

Table 5 presents wage regressions where the dependent variable is the natural logarithm of hourly earnings on the main job.<sup>16</sup> The first column reports results for a regression with the 2005 CWS data that only includes four dummy variables indicating each of the four categories of alternative work arrangements; the base group is all employees. The second column contains a standard Mincer wage regression (with controls for education, experience, race/ethnicity, and sex) augmented to include the alternative work arrangement dummies. The third column contains the augmented Mincer regression with the addition of 22 occupation dummy variables.

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<sup>14</sup> Earnings information was not collected for workers in a traditional employment relationship in rotation groups 1-3 and 5-7; and information on alternative work arrangements was not collected for workers in rotation groups 4 and 8. We exclude contingent workers, who have wage information, in rotation groups 1-3 and 5-7.

<sup>15</sup> If  $\theta$  is the proportion of workers in an alternative employment arrangement, the difference in mean earnings between workers in an alternative work arrangement and all workers will be  $(1 - \theta)$  times the difference in mean earnings between workers in an alternative work arrangement and workers in a traditional employment arrangement.

<sup>16</sup> Hourly earnings were derived as weekly earnings (censored below \$50 per week) divided by actual hours worked on the main job, and are censored below \$1 per hour and above \$1,000 per hour.

Columns 4-6 present the corresponding regressions with the RPCWS data (although the base group consists exclusively of those in a traditional employment relationship).

Before conditioning on covariates, the 2005 and 2015 results are similar: freelancers and contract workers are paid more per hour than traditional employees, while temporary help and on-call workers are paid less. (We discount the positive but imprecise estimate for on-call workers in RPCWS.) When we control for personal characteristics and occupation in the 2005 CWS, the penalty associated with working for a temporary help agency shrinks but remains significant and the other differentials all become small and statistically insignificant. In the RPCWS the estimates are less precise, but independent contractors continue to earn a positive hourly wage premium even after conditioning on personal characteristics and occupation. Given the imprecision of the estimates, we recommend caution in interpreting the estimated coefficients using the RPCWS.

Table 6 contains analogous regression results for the log of weekly earnings, and the pattern of results is clearer. In the CWS, all of the categories of alternative work exhibit a large negative weekly wage differential relative to all employees except workers provided through a contract company, and in the RPCWS all of the alternative work categories, including contract workers, are paid less per week than workers in a traditional employment relationship conditional on the listed personal characteristics and occupation dummies. Independent contractors, for example, earn 33 log points less per week than employees with similar characteristics, even though they earn 16 log points more per hour. Appendix Table A presents regressions for the log of hourly and weekly wages combining earnings and hours on the main job and any secondary jobs for the RPCWS sample, with similar results to those for the main job shown in Tables 5 and 6. Obviously, the contrast between the hourly and weekly wage

differentials in the main job for alternative vs. traditional workers (mechanically) reflects lower weekly hours in the main job for those in alternative work arrangements, which we turn to next.

Table 7 reports regressions where the dependent variable is the log of hours worked on all jobs. The results show a consistent pattern with workers in alternative work arrangements working considerably fewer hours per week than traditional employees.<sup>17</sup> The gap in average work hours is largest for on-call workers and smallest for contract workers, although it appears to be a ubiquitous feature of working in an alternative employment arrangement.

An important question to address is whether work hours are typically lower for workers in alternative work arrangements by choice, or because these workers often face “hours constraints” that limit their work hours. We can provide some purchase into this question by comparing the frequency with which workers in alternative work arrangements and traditional jobs report that they are working involuntarily part-time. We did not ask about part-time for economic reasons in the RPCWS, but the information is available from the 2005 CWS. Workers are classified as part-time for an economic reason if they worked less than 35 hours in the survey week in all jobs combined and cited a reason such as slack work or unfavorable business conditions, inability to find full-time work, or seasonal declines in demand as the reason for their part-time hours. Workers in alternative work arrangements are more than twice as likely than other workers to be classified as part-time for economic reasons (7.7 percent versus 3.3 percent), and this continues to be the case if we restrict the sample only to part-time workers. On-call and temporary help agency workers were the most likely to be classified as part-time for economic reasons (13.2 percent and 12.6 percent, respectively), while independent contractors and

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<sup>17</sup> The lower weekly hours for alternative workers shown in Table 7 is quite similar when limiting the analysis to the main job, as can be seen by taking the differences between the coefficients on alternative work category indicators for log weekly wages in Table 6 and the corresponding coefficients for log hourly wages in Table 5.

contracted-out workers were less likely to be so classified (6.0 percent and 5.2 percent, respectively), but all four alternative groups were more likely to be classified as part-time for economic reasons than were traditional employees.

## **IX. Worker Satisfaction with Work Arrangements**

The CWS asked workers who identified themselves as paid by a temporary help agency, on a temporary job, on-call workers, and independent contractors whether they would prefer a traditional employment arrangement over their current arrangement. The specific questions were tailored to the particular work arrangement. Temporary help agency employees were asked, “Would you prefer a job with a different type of employer?” All workers who reported that they were on a temporary job – including those employed by a temporary help agency – were asked, “Would you prefer to have a job that is permanent rather than temporary?”<sup>18</sup> On-call workers were asked, “Would you prefer a job where you worked regularly scheduled hours?” And workers who were self-employed as an independent contractor or freelancer were asked, “Would you prefer to work for someone else rather than being an independent contractor?” (Workers who were contracted out to provide services to another company were not asked whether they would prefer to work directly for that other company.) The response set in each case was “no,” “yes,” “don’t know,” “refused,” and “depends”.

We asked a similar, though not identical, set of questions in the RPCWS. Temporary help agency workers on temporary jobs and on-call workers were asked the identical questions as in the CWS. Workers who were self-employed as an independent contractor or a freelancer were

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<sup>18</sup> A temporary job was defined as a job that “lasts only for a limited time or until the completion of a project.” Not surprisingly, a large majority of temporary help agency employees reported that they were on a temporary job.

asked, “Would you prefer to work for someone else rather than being self-employed, an independent contractor or a freelance worker?” The response set was either “yes” or “no.”

Table 8 provides a comparison of the 1995 and 2005 CWS and 2015 RPCWS data of workers’ preferences concerning their work arrangement. We restricted both samples to workers who worked in the survey reference week. (We were able to exactly replicate the published CWS results without this restriction.) Because the questions and response set were close but not identical, as well as the small sample sizes in the RPCWS, the results should be taken as suggestive.<sup>19</sup> This caveat aside, the general pattern found in the earlier 1995 and 2005 CWS seems to hold. A large majority of temporary help agency employees on temporary jobs would prefer a permanent job and almost half of on-call workers would prefer a job with regularly scheduled hours.

The 1995 and 2005 CWS found that more than 80 percent of independent contractors and freelancers preferred their work arrangement to working for someone else, and a similar proportion responded likewise in the 2015 RPCWS.<sup>20</sup> It is possible that the CWS question prompts independent contractors and freelancers to reflect on the advantages of being their own boss, which elicits a favorable response, rather than the disadvantages of working fewer hours than workers in traditional employment relationships, which would elicit a less positive response. The results in Table 8 suggest substantial stability over time in workers’ stated preferences regarding their work arrangements, despite the significant growth in the share of workers in

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<sup>19</sup> The sample sizes for the 2015 RPCWS are 18 temporary help employees on temporary jobs, 57 on-call workers, and 209 independent contractors and freelancers.

<sup>20</sup> Recall that allowable responses were broader in the CWS (including refused and “it depends”). If we look at the percent of independent contractors who said they would prefer to work for someone else, the figures were 9.8 percent in 1995, 8.8 percent in 2005 and 16.3 percent in 2015.

alternative work arrangements over the last decade. More than 80 percent of independent contractors and freelancers continue to indicate they prefer such an arrangement to being an employee. In contrast, the vast majority of those employed by temporary help agencies on temporary jobs would prefer a permanent, and almost half of on-call workers would rather have regularly scheduled hours. Thus, it appears that many workers who become independent contractors and freelancers are sorting into those work relationships based, in part, on their preference for being their own boss, while many (and possibly most) workers in on-call and temporary help jobs have a preference for more steady employment with regular hours.

## **X. Conclusion**

Many possible factors could have contributed to the large increase in the incidence of alternative work arrangements for American workers from 2005 to 2015 that we have documented in this paper. Although a fuller evaluation will have to await further research, here we provide an initial evaluation of some leading explanations.

The first explanation is that alternative work is more common among older workers and more highly educated workers, and the workforce has become older and more educated over time. A shift-share analysis, however, indicates that shifts in the age and education distribution of the workforce account for only about 10 percent of the increase in the percentage of workers employed in alternative work arrangements from 2005 to 2015.<sup>21</sup> Other supply-side factors,

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<sup>21</sup> Specifically, we divided the sample into 30 age-by-education cells. If we assign the fraction of workers in each cell that was employed in an alternative work arrangement in 2005 based on the BLS CWS and allow the share of workers in each cell to change according to the observed changes between the 2005 CPS and 2015 CPS, we predict that the overall share in workers employed in alternative work arrangements would have risen by 0.5 percentage point, compared with the 5.7 percentage point increase that was actually observed. We reach a similar conclusion using the 2015 age-by-education distribution from the RPCWS.

such as a possible increase in demand for flexible work hours (perhaps supported by the increased availability of health insurance as a result of the Affordable Care Act) may also have contributed, although it is unlikely that supply-side factors account for the lion's share of the rise in alternative work arrangements since the rise in employees who are hired out to other firms through contract firms or temporary help agencies accounts for more than half of the overall rise in the share of employment in alternative work arrangements in the last decade.

Second, technological changes that lead to enhanced monitoring, standardize job tasks and make information on worker reputation more widely available may be leading to greater disintermediation of job tasks. Coase's (1937) classic explanation for the boundary of firms rested on the minimization of transaction costs within firm-employee relationships. Technological changes may be reducing the transaction costs associated with contracting out job tasks, however, and thus supporting the disintermediation of work.

Third, Abraham and Taylor (1996) argue that contracting out is often sought because firms seek to restrict the pool of workers with whom rents are shared, as well as to reduce the volatility of core employment. A rise in inter-firm variability in profitability is thus consistent with a greater desire for contracting out to reduce rent sharing (although increased contracting out could also have contributed to the rise in inter-firm variability in profits). Relatedly, Weil (2014) argues that competitive pressures are causing a "fissuring" of the workplace, with either workers being misclassified as contract employees or work being redefined to make greater use of contract workers and independent contractors. And Song, et al. (2016) find a rising correlation of firm wage premiums with worker skills and worker wage fixed effects (the permanent wage component that persists across employers). The patterns suggest that high-rent firms are

increasingly contracting out standardized and lower-wage work and restricting rent sharing to a smaller core of highly compensated workers.

Finally, it is plausible that the dislocation caused by the Great Recession in 2007-2009 may have caused many workers to seek alternative work arrangements when traditional employment was not available. Although we cannot assess how much of the rise in alternative work arrangements occurred in the aftermath of the Great Recession, if this is the case then one might expect a return to a lower percentage of workers employed in alternative work arrangements over time, as the effects of the recession continue to fade.

Regardless of the explanation for the growth in alternative work, our findings indicate that workers in alternative work arrangements earn considerably less per week than do regular employees with similar characteristics and in similar occupations. Furthermore, the earnings gap derives more from the fact that workers in alternative work arrangements work fewer hours per week than from the gap in hourly earnings (although employees of temporary help agencies may be an exception to this pattern). Evidence from the likelihood that workers cite an economic reason for working part-time hours suggests that many workers in alternative employment arrangements may be hours constrained compared with employees in traditional jobs. Not surprisingly in view of these findings, a majority or near-majority of temporary help agency workers and on-call workers would prefer permanent employment with regularly scheduled hours over their employment arrangement. A majority of workers who are self employed as independent contractors or freelancers, however, apparently value the flexibility and independence that comes with being their own boss and report that they would prefer to work for themselves rather than for someone else.

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Table 1

## Characteristics of Employed Workers

| (Percent of Employed Who Worked in Survey Week)     | CPS      | RAND Oct/Nov-2015 |          |             | (Percent of Employed Who Worked in Survey Week) | CPS      | RAND Oct/Nov-2015 |          |             |
|-----------------------------------------------------|----------|-------------------|----------|-------------|-------------------------------------------------|----------|-------------------|----------|-------------|
|                                                     | Oct-2015 | Unweighted        | Weighted | Alt. Weight |                                                 | Oct-2015 | Unweighted        | Weighted | Alt. Weight |
| Self-Employment                                     | 9.6      | 13.3              | 11.6     | 9.6         | Occupation:                                     |          |                   |          |             |
| Median Age (Years)                                  | 46.0     | 50.0              | 41.0     | 41.0        | Management                                      | 11.4     | 13.3              | 12.6     | 12.6        |
| Mean Age (Years)                                    | 46.1     | 48.3              | 42.6     | 42.5        | Business and Financial Operations               | 4.8      | 7.9               | 7.9      | 7.9         |
| Female                                              | 46.8     | 55.5              | 47.1     | 47.1        | Computer and Mathematical                       | 2.8      | 3.4               | 3.1      | 3.1         |
| Race/Ethnicity:                                     |          |                   |          |             | Architecture and Engineering                    | 2.1      | 2.1               | 2.0      | 2.1         |
| White                                               | 79.1     | 80.6              | 76.1     | 75.9        | Life, Physical, and Social Science              | 1.0      | 1.5               | 1.4      | 1.4         |
| African-American                                    | 11.8     | 8.7               | 10.1     | 10.3        | Community and Social Service                    | 1.7      | 4.3               | 2.9      | 2.9         |
| Hispanic                                            | 16.6     | 15.5              | 19.7     | 19.8        | Legal                                           | 1.2      | 1.8               | 1.4      | 1.4         |
| Educational Attainment:                             |          |                   |          |             | Education, Training, and Library                | 6.0      | 8.8               | 6.6      | 6.7         |
| Bachelor's Degree or Higher                         | 36.3     | 48.5              | 35.4     | 35.5        | Arts, Design, Entertainment, Sports, and Media  | 2.0      | 3.3               | 2.7      | 2.6         |
| Some College or Associate's Degree                  | 28.9     | 37.2              | 30.1     | 30.1        | Healthcare Practitioners and Technical          | 6.1      | 6.0               | 5.9      | 6.0         |
| High School Graduate                                | 26.6     | 12.0              | 28.3     | 28.3        | Healthcare Support                              | 2.3      | 3.9               | 3.9      | 3.9         |
| Less Than High School Diploma                       | 8.3      | 2.3               | 6.2      | 6.1         | Protective Service                              | 2.1      | 1.9               | 2.8      | 2.8         |
| Multiple Jobholder                                  | 5.2      | 14.3              | 13.2     | 13.1        | Food Preparation and Serving Related            | 5.5      | 3.0               | 4.5      | 4.5         |
| In Labor Force (Percent of Population)              | 62.7     | 62.8              | 67.5     | 67.5        | Building and Grounds Cleaning and Maintenance   | 3.9      | 1.9               | 2.7      | 2.7         |
| Part-Time Employment (< 35 Actual Hours)            | 25.2     | 26.2              | 24.2     | 23.5        | Personal Care and Service                       | 3.5      | 3.2               | 2.8      | 2.6         |
| Part-Time Employment: First Job (< 35 Actual Hours) | 26.4     | 29.0              | 27.0     | 26.2        | Sales and Related                               | 10.2     | 8.5               | 8.4      | 8.3         |
| Industry:                                           |          |                   |          |             | Office and Administrative Support               | 12.0     | 13.2              | 11.7     | 11.8        |
| Agriculture, Forestry, Fishing, and Hunting         | 1.5      | 1.0               | 1.6      | 1.5         | Farming, Fishing, and Forestry                  | 0.7      | 0.5               | 0.6      | 0.5         |
| Mining                                              | 0.6      | 0.6               | 0.5      | 0.5         | Construction and Extraction                     | 5.2      | 1.5               | 2.8      | 2.6         |
| Utilities                                           | 0.9      | 0.5               | 0.9      | 0.9         | Installation, Maintenance, and Repair           | 3.5      | 1.8               | 2.8      | 2.8         |
| Construction                                        | 6.6      | 3.1               | 4.1      | 3.9         | Production                                      | 5.7      | 4.1               | 5.0      | 5.1         |
| Manufacturing                                       | 10.6     | 7.3               | 8.6      | 8.8         | Transportation and Material Moving              | 6.3      | 3.9               | 5.4      | 5.5         |
| Wholesale Trade                                     | 2.4      | 2.6               | 2.2      | 2.2         | Median Actual Hours Worked: Total               | 40.0     | 40.0              | 40.0     | 40.0        |
| Retail Trade                                        | 11.0     | 8.7               | 9.6      | 9.6         | First Job                                       | 40.0     | 40.0              | 40.0     | 40.0        |
| Transportation and Warehousing                      | 4.4      | 3.8               | 5.4      | 5.4         | Second Job                                      | 10.0     | 10.0              | 10.0     | 10.0        |
| Information                                         | 2.0      | 3.3               | 3.6      | 3.7         | Mean Actual Hours Worked: Total                 | 38.8     | 38.5              | 39.4     | 39.6        |
| Financial Activities                                | 6.7      | 9.2               | 9.2      | 9.2         | First Job                                       | 38.1     | 36.7              | 37.5     | 37.8        |
| Professional and Business Services                  | 11.9     | 14.5              | 13.4     | 13.2        | Second Job                                      | 13.3     | 12.9              | 14.0     | 14.1        |
| Education and Health Services                       | 22.7     | 26.0              | 22.4     | 22.5        | Median Weekly Earnings: First Job (\$)          | 700.0    | 875.0             | 875.0    | 875.0       |
| Leisure and Hospitality                             | 9.1      | 5.4               | 6.0      | 6.0         | Mean Weekly Earnings: First Job (\$)            | 895.4    | 1014.8            | 1016.7   | 1019.6      |
| Other Services (Excluding Public Administration)    | 5.0      | 5.2               | 4.8      | 4.7         |                                                 |          |                   |          |             |
| Public Administration                               | 4.7      | 8.7               | 7.7      | 7.8         | Number of Observations                          | 58,629   | 2,194             | 2,194    | 2,194       |

Source: Current Population Survey; Katz and Krueger (2015).

| <b>Table 2</b>                                                  |                 |                 |                          |                    |
|-----------------------------------------------------------------|-----------------|-----------------|--------------------------|--------------------|
| <b>Alternative Work Arrangements</b>                            |                 |                 |                          |                    |
| <b>(Percent of Employed Who Also Worked During Survey Week)</b> | <b>CPS</b>      | <b>CPS</b>      | <b>RAND Oct/Nov-2015</b> |                    |
|                                                                 | <b>Feb-1995</b> | <b>Feb-2005</b> | <b>Weighted</b>          | <b>Alt. Weight</b> |
| Alternative Work Arrangements                                   | 9.3             | 10.1            | 17.2                     | 15.8               |
| Independent Contractors                                         | 6.4             | 6.9             | 9.6                      | 8.4                |
| On-Call Workers                                                 | 1.6             | 1.7             | 2.8                      | 2.6                |
| Temporary Help Agency Workers                                   | 1.0             | 0.9             | 1.6                      | 1.6                |
| Workers Provided by Contract Firms                              | 0.5             | 0.6             | 3.3                      | 3.1                |
| Note:                                                           |                 |                 |                          |                    |
| Workers Provided by Contract Firms (Single Jobholders)          | 0.5             | 0.6             | 2.1                      | 2.0                |
| Number of Observations                                          | 61,752          | 63,437          | 2,194                    | 2,194              |

Source: Current Population Survey; Katz and Krueger (2015).

**Table 3**  
**Characteristics of Workers in Alternative Work Arrangements**

| (Percent)                                           | CPS      | CPS      | RAND Oct/Nov-2015 |             | (Percent)                                      | CPS      | CPS      | RAND Oct/Nov-2015 |             |
|-----------------------------------------------------|----------|----------|-------------------|-------------|------------------------------------------------|----------|----------|-------------------|-------------|
|                                                     | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |                                                | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |
| Self-Employment                                     | 57.8     | 59.4     | 53.0              | 47.5        | Occupation:                                    |          |          |                   |             |
| Median Age (Years)                                  | 41.0     | 44.0     | 47.0              | 45.0        | Management                                     | 12.3     | 11.5     | 8.8               | 8.6         |
| Mean Age (Years)                                    | 41.8     | 44.2     | 46.8              | 46.5        | Business and Financial Operations              | 3.5      | 5.1      | 7.4               | 7.3         |
| Female                                              | 37.7     | 38.6     | 50.3              | 50.8        | Computer and Mathematical                      | 2.0      | 2.5      | 4.1               | 4.2         |
| Race/Ethnicity:                                     |          |          |                   |             | Architecture and Engineering                   | 1.4      | 1.8      | 1.3               | 1.3         |
| White                                               | 88.5     | 85.9     | 80.0              | 79.2        | Life, Physical, and Social Science             | 1.5      | 1.0      | 0.8               | 0.9         |
| African-American                                    | 7.9      | 8.0      | 8.8               | 9.3         | Community and Social Service                   | 0.4      | 0.6      | 3.9               | 4.3         |
| Hispanic                                            | 7.0      | 12.0     | 19.3              | 19.6        | Legal                                          | 1.5      | 1.2      | 1.7               | 1.7         |
| Educational Attainment:                             |          |          |                   |             | Education, Training, and Library               | 4.3      | 4.5      | 7.8               | 8.1         |
| Bachelor's Degree or Higher                         | 30.1     | 32.4     | 37.7              | 38.4        | Arts, Design, Entertainment, Sports, and Media | 5.0      | 5.7      | 6.4               | 6.2         |
| Some College or Associate's Degree                  | 28.9     | 29.4     | 30.6              | 30.1        | Healthcare Practitioners and Technical         | 3.4      | 3.6      | 4.7               | 4.8         |
| High School Graduate                                | 29.4     | 27.3     | 25.6              | 25.4        | Healthcare Support                             | 1.5      | 2.0      | 4.3               | 4.4         |
| Less Than High School Diploma                       | 11.6     | 10.9     | 6.1               | 6.0         | Protective Service                             | 1.5      | 1.5      | 2.5               | 2.8         |
| Multiple Jobholder                                  | 8.0      | 7.3      | 32.0              | 33.0        | Food Preparation and Serving Related           | 1.4      | 1.4      | 3.1               | 3.3         |
| Part-Time Employment (< 35 Actual Hours)            | 38.9     | 35.6     | 47.7              | 46.2        | Building and Grounds Cleaning and Maintenance  | 4.6      | 5.1      | 2.6               | 2.6         |
| Part-Time Employment: First Job (< 35 Actual Hours) | 41.1     | 37.4     | 53.9              | 52.4        | Personal Care and Service                      | 5.2      | 6.3      | 7.5               | 7.0         |
| Industry:                                           |          |          |                   |             | Sales and Related                              | 14.5     | 13.0     | 9.6               | 9.4         |
| Agriculture, Forestry, Fishing, and Hunting         | 2.4      | 1.6      | 4.4               | 4.1         | Office and Administrative Support              | 7.1      | 5.9      | 5.2               | 5.4         |
| Mining                                              | 0.4      | 0.3      | 0.5               | 0.5         | Farming, Fishing, and Forestry                 | 1.1      | 0.6      | 2.1               | 1.9         |
| Utilities                                           | 0.2      | 0.4      | 0.3               | 0.4         | Construction and Extraction                    | 12.9     | 13.8     | 4.4               | 4.1         |
| Construction                                        | 17.0     | 18.2     | 7.0               | 6.7         | Installation, Maintenance, and Repair          | 3.0      | 3.5      | 2.3               | 2.2         |
| Manufacturing                                       | 5.1      | 4.7      | 5.9               | 6.2         | Production                                     | 5.1      | 3.5      | 3.3               | 3.3         |
| Wholesale Trade                                     | 2.8      | 2.3      | 0.6               | 0.7         | Transportation and Material Moving             | 6.7      | 5.7      | 6.1               | 6.3         |
| Retail Trade                                        | 7.4      | 7.4      | 6.3               | 6.4         | Median Actual Hours Worked: Total              | 40.0     | 40.0     | 35.0              | 36.0        |
| Transportation and Warehousing                      | 4.1      | 4.1      | 5.4               | 5.4         | First Job                                      | 40.0     | 40.0     | 32.0              | 32.0        |
| Information                                         | 2.9      | 2.1      | 3.6               | 3.8         | Second Job                                     | 10.0     | 12.0     | 8.0               | 8.0         |
| Financial Activities                                | 7.6      | 8.1      | 6.4               | 6.2         | Mean Actual Hours Worked: Total                | 37.1     | 37.3     | 33.3              | 33.9        |
| Professional and Business Services                  | 24.3     | 23.0     | 20.7              | 20.6        | First Job                                      | 35.7     | 36.1     | 29.3              | 29.6        |
| Education and Health Services                       | 12.1     | 13.5     | 21.9              | 22.3        | Second Job                                     | 13.7     | 13.9     | 12.6              | 13.0        |
| Leisure and Hospitality                             | 3.0      | 5.2      | 4.7               | 4.6         | Median Weekly Earnings: First Job (\$)         | 350.0    | 500.0    | 625.0             | 625.0       |
| Other Services (Excluding Public Administration)    | 9.8      | 8.0      | 7.4               | 7.1         | Mean Weekly Earnings: First Job (\$)           | 502.5    | 728.9    | 869.3             | 874.4       |
| Public Administration                               | 0.9      | 1.1      | 4.7               | 5.0         | Number of Observations                         | 5,221    | 4,384    | 450               | 450         |

Source: Current Population Survey; Katz and Krueger (2015).

**Table 4**  
**Probability of Employed Workers Who Worked During Survey Week Also Being in Alternative Work Arrangements**

| (Percent of Each Characteristic)                 | CPS      | CPS      | RAND Oct/Nov-2015 |             | (Percent of Each Characteristic)               | CPS      | CPS      | RAND Oct/Nov-2015 |             |
|--------------------------------------------------|----------|----------|-------------------|-------------|------------------------------------------------|----------|----------|-------------------|-------------|
|                                                  | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |                                                | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |
| Age:                                             |          |          |                   |             | Occupation:                                    |          |          |                   |             |
| 16-24 Years Old                                  | 5.9      | 6.4      | 6.8               | 6.4         | Management                                     | 10.3     | 11.7     | 12.1              | 10.7        |
| 25-54 Years Old                                  | 9.3      | 9.8      | 15.4              | 14.3        | Business and Financial Operations              | 8.5      | 12.2     | 16.1              | 14.5        |
| 55-75 Years Old                                  | 13.8     | 14.4     | 26.4              | 23.9        | Computer and Mathematical                      | 12.6     | 10.6     | 22.8              | 21.6        |
| Gender:                                          |          |          |                   |             | Architecture and Engineering                   | 6.2      | 9.4      | 10.8              | 9.9         |
| Male                                             | 10.8     | 11.6     | 16.2              | 14.7        | Life, Physical, and Social Science             | 10.2     | 10.4     | 10.8              | 9.8         |
| Female                                           | 7.7      | 8.3      | 18.4              | 17.0        | Community and Social Service                   | 3.0      | 4.2      | 23.5              | 23.0        |
| Race/Ethnicity:                                  |          |          |                   |             | Legal                                          | 15.0     | 10.9     | 20.8              | 19.2        |
| White                                            | 9.7      | 10.5     | 18.1              | 16.5        | Education, Training, and Library               | 7.1      | 7.6      | 20.4              | 19.3        |
| African-American                                 | 6.9      | 7.7      | 14.9              | 14.2        | Arts, Design, Entertainment, Sports, and Media | 27.9     | 29.7     | 40.2              | 37.1        |
| Hispanic                                         | 7.4      | 9.2      | 16.9              | 15.7        | Healthcare Practitioners and Technical         | 7.4      | 7.7      | 13.7              | 12.6        |
| Educational Attainment:                          |          |          |                   |             | Healthcare Support                             | 7.7      | 9.5      | 19.0              | 17.9        |
| Bachelor's Degree or Higher                      | 10.8     | 10.9     | 18.3              | 17.1        | Protective Service                             | 8.0      | 7.2      | 15.5              | 15.5        |
| Some College or Associate's Degree               | 9.2      | 10.2     | 17.5              | 15.8        | Food Preparation and Serving Related           | 2.7      | 2.8      | 12.1              | 11.3        |
| High School Graduate                             | 8.6      | 9.3      | 15.6              | 14.2        | Building and Grounds Cleaning and Maintenance  | 12.9     | 15.2     | 16.7              | 15.2        |
| Less Than High School Diploma                    | 8.8      | 9.8      | 16.8              | 15.5        | Personal Care and Service                      | 22.0     | 20.6     | 46.1              | 42.1        |
| Industry:                                        |          |          |                   |             | Sales and Related                              | 11.3     | 11.2     | 19.7              | 17.9        |
| Agriculture, Forestry, Fishing, and Hunting      | 12.3     | 14.3     | 47.5              | 42.9        | Office and Administrative Support              | 4.7      | 4.2      | 7.6               | 7.2         |
| Mining                                           | 6.7      | 6.7      | 15.9              | 15.1        | Farming, Fishing, and Forestry                 | 14.5     | 10.6     | 64.2              | 59.0        |
| Utilities                                        | 2.3      | 4.8      | 6.5               | 6.5         | Construction and Extraction                    | 24.6     | 23.1     | 27.2              | 24.4        |
| Construction                                     | 28.0     | 24.9     | 29.8              | 27.2        | Installation, Maintenance, and Repair          | 7.8      | 9.6      | 13.9              | 12.4        |
| Manufacturing                                    | 3.2      | 4.0      | 11.8              | 11.1        | Production                                     | 5.1      | 5.2      | 11.3              | 10.1        |
| Wholesale Trade                                  | 6.7      | 7.4      | 5.1               | 4.7         | Transportation and Material Moving             | 8.6      | 9.0      | 19.2              | 18.2        |
| Retail Trade                                     | 6.0      | 6.1      | 11.3              | 10.6        |                                                |          |          |                   |             |
| Transportation and Warehousing                   | 9.5      | 9.7      | 17.5              | 15.8        |                                                |          |          |                   |             |
| Information                                      | 7.7      | 8.8      | 16.9              | 16.2        |                                                |          |          |                   |             |
| Financial Activities                             | 10.4     | 11.0     | 12.0              | 10.7        |                                                |          |          |                   |             |
| Professional and Business Services               | 25.0     | 23.3     | 26.6              | 24.7        |                                                |          |          |                   |             |
| Education and Health Services                    | 5.8      | 6.5      | 16.9              | 15.7        |                                                |          |          |                   |             |
| Leisure and Hospitality                          | 3.8      | 6.4      | 13.5              | 12.1        |                                                |          |          |                   |             |
| Other Services (Excluding Public Administration) | 18.0     | 16.3     | 26.8              | 23.8        |                                                |          |          |                   |             |
| Public Administration                            | 1.6      | 2.3      | 10.5              | 10.1        |                                                |          |          |                   |             |

Source: Current Population Survey; Katz and Krueger (2015).

**Table 4(a)**  
**Probability of Employed Workers Who Worked During Survey Week Also Being an Independent Contractor**

| (Percent of Each Characteristic)                 | CPS      | CPS      | RAND Oct/Nov-2015 |             | (Percent of Each Characteristic)               | CPS      | CPS      | RAND Oct/Nov-2015 |             |
|--------------------------------------------------|----------|----------|-------------------|-------------|------------------------------------------------|----------|----------|-------------------|-------------|
|                                                  | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |                                                | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |
| Age:                                             |          |          |                   |             | Occupation:                                    |          |          |                   |             |
| 16-24 Years Old                                  | 1.7      | 2.2      | 2.6               | 2.1         | Management                                     | 9.7      | 10.6     | 7.7               | 6.6         |
| 25-54 Years Old                                  | 6.6      | 6.8      | 7.7               | 6.8         | Business and Financial Operations              | 6.7      | 9.6      | 7.9               | 6.8         |
| 55-75 Years Old                                  | 10.5     | 11.2     | 17.9              | 15.8        | Computer and Mathematical                      | 5.9      | 5.3      | 7.7               | 7.1         |
| Gender:                                          |          |          |                   |             | Architecture and Engineering                   | 3.6      | 5.9      | 7.9               | 7.0         |
| Male                                             | 7.9      | 8.5      | 9.2               | 8.0         | Life, Physical, and Social Science             | 7.3      | 8.6      | 5.9               | 5.0         |
| Female                                           | 4.5      | 5.2      | 10.0              | 8.8         | Community and Social Service                   | 1.6      | 2.1      | 13.2              | 12.6        |
| Race/Ethnicity:                                  |          |          |                   |             | Legal                                          | 14.5     | 10.5     | 14.0              | 12.2        |
| White                                            | 6.9      | 7.4      | 10.7              | 9.4         | Education, Training, and Library               | 2.3      | 2.6      | 9.1               | 8.2         |
| African-American                                 | 3.0      | 3.7      | 4.5               | 4.1         | Arts, Design, Entertainment, Sports, and Media | 24.3     | 25.9     | 27.2              | 24.7        |
| Hispanic                                         | 3.9      | 4.9      | 8.1               | 7.2         | Healthcare Practitioners and Technical         | 4.0      | 4.2      | 7.6               | 6.6         |
| Educational Attainment:                          |          |          |                   |             | Healthcare Support                             | 1.9      | 3.6      | 12.8              | 11.8        |
| Bachelor's Degree or Higher                      | 8.4      | 8.3      | 10.1              | 9.0         | Protective Service                             | 0.4      | 0.9      | 3.4               | 3.4         |
| Some College or Associate's Degree               | 5.9      | 7.0      | 9.3               | 8.0         | Food Preparation and Serving Related           | 0.4      | 0.4      | 8.6               | 7.8         |
| High School Graduate                             | 5.6      | 6.3      | 9.9               | 8.7         | Building and Grounds Cleaning and Maintenance  | 9.5      | 9.6      | 9.7               | 8.0         |
| Less Than High School Diploma                    | 5.1      | 4.8      | 6.6               | 5.5         | Personal Care and Service                      | 19.0     | 17.8     | 37.3              | 33.6        |
| Industry:                                        |          |          |                   |             | Sales and Related                              | 10.2     | 10.3     | 12.5              | 11.1        |
| Agriculture, Forestry, Fishing, and Hunting      | 9.6      | 13.3     | 36.4              | 32.4        | Office and Administrative Support              | 1.5      | 1.5      | 3.1               | 2.7         |
| Mining                                           | 2.6      | 1.6      | 5.2               | 4.2         | Farming, Fishing, and Forestry                 | 7.7      | 7.0      | 61.0              | 56.1        |
| Utilities                                        | 1.0      | 0.2      | 0.0               | 0.0         | Construction and Extraction                    | 18.2     | 17.1     | 10.3              | 8.8         |
| Construction                                     | 22.6     | 20.2     | 17.6              | 16.2        | Installation, Maintenance, and Repair          | 6.3      | 7.0      | 9.7               | 8.9         |
| Manufacturing                                    | 1.3      | 1.9      | 6.1               | 5.5         | Production                                     | 2.2      | 2.3      | 6.7               | 5.8         |
| Wholesale Trade                                  | 5.5      | 4.4      | 1.2               | 1.2         | Transportation and Material Moving             | 3.6      | 4.2      | 3.3               | 2.9         |
| Retail Trade                                     | 4.8      | 5.1      | 6.6               | 6.0         |                                                |          |          |                   |             |
| Transportation and Warehousing                   | 5.9      | 6.0      | 3.1               | 2.7         |                                                |          |          |                   |             |
| Information                                      | 5.7      | 6.2      | 9.9               | 9.1         |                                                |          |          |                   |             |
| Financial Activities                             | 9.4      | 9.9      | 9.0               | 7.7         |                                                |          |          |                   |             |
| Professional and Business Services               | 15.3     | 14.9     | 15.3              | 13.6        |                                                |          |          |                   |             |
| Education and Health Services                    | 2.5      | 3.1      | 9.3               | 8.2         |                                                |          |          |                   |             |
| Leisure and Hospitality                          | 1.8      | 3.8      | 7.6               | 6.6         |                                                |          |          |                   |             |
| Other Services (Excluding Public Administration) | 15.2     | 14.5     | 18.8              | 16.1        |                                                |          |          |                   |             |
| Public Administration                            | 0.4      | 0.3      | 2.8               | 2.4         |                                                |          |          |                   |             |

Source: Current Population Survey; Katz and Krueger (2015).

| Table 4(b)<br>Probability of Employed Workers Who Worked During Survey Week Also Being an On-Call Worker |          |          |                   |             |                                                |          |          |                   |             |
|----------------------------------------------------------------------------------------------------------|----------|----------|-------------------|-------------|------------------------------------------------|----------|----------|-------------------|-------------|
| (Percent of Each Characteristic)                                                                         | CPS      | CPS      | RAND Oct/Nov-2015 |             | (Percent of Each Characteristic)               | CPS      | CPS      | RAND Oct/Nov-2015 |             |
|                                                                                                          | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |                                                | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |
| Age:                                                                                                     |          |          |                   |             | Occupation:                                    |          |          |                   |             |
| 16-24 Years Old                                                                                          | 2.1      | 2.5      | 0.0               | 0.0         | Management                                     | 0.3      | 0.7      | 1.6               | 1.4         |
| 25-54 Years Old                                                                                          | 1.4      | 1.5      | 2.7               | 2.6         | Business and Financial Operations              | 0.4      | 0.7      | 1.6               | 1.3         |
| 55-75 Years Old                                                                                          | 2.2      | 1.9      | 3.6               | 3.3         | Computer and Mathematical                      | 0.2      | 0.8      | 4.1               | 3.6         |
| Gender:                                                                                                  |          |          |                   |             | Architecture and Engineering                   | 0.4      | 0.8      | 0.0               | 0.0         |
| Male                                                                                                     | 1.4      | 1.6      | 3.0               | 2.8         | Life, Physical, and Social Science             | 0.1      | 0.3      | 0.0               | 0.0         |
| Female                                                                                                   | 1.7      | 1.8      | 2.5               | 2.5         | Community and Social Service                   | 1.4      | 1.5      | 0.4               | 0.4         |
| Race/Ethnicity:                                                                                          |          |          |                   |             | Legal                                          | 0.3      | 0.0      | 1.3               | 1.1         |
| White                                                                                                    | 1.5      | 1.8      | 2.5               | 2.4         | Education, Training, and Library               | 4.4      | 4.6      | 7.7               | 7.7         |
| African-American                                                                                         | 1.5      | 1.4      | 4.0               | 3.7         | Arts, Design, Entertainment, Sports, and Media | 1.7      | 2.7      | 3.9               | 3.3         |
| Hispanic                                                                                                 | 1.7      | 2.2      | 4.0               | 3.7         | Healthcare Practitioners and Technical         | 2.0      | 2.6      | 1.3               | 1.1         |
| Educational Attainment:                                                                                  |          |          |                   |             | Healthcare Support                             | 3.5      | 3.0      | 2.0               | 2.0         |
| Bachelor's Degree or Higher                                                                              | 1.1      | 1.4      | 1.9               | 1.8         | Protective Service                             | 2.3      | 2.9      | 3.3               | 3.3         |
| Some College or Associate's Degree                                                                       | 1.7      | 1.7      | 2.5               | 2.3         | Food Preparation and Serving Related           | 1.9      | 1.8      | 0.9               | 0.9         |
| High School Graduate                                                                                     | 1.6      | 1.7      | 3.3               | 3.2         | Building and Grounds Cleaning and Maintenance  | 1.7      | 3.1      | 4.5               | 4.6         |
| Less Than High School Diploma                                                                            | 2.0      | 2.6      | 6.4               | 6.1         | Personal Care and Service                      | 2.3      | 1.5      | 3.3               | 3.6         |
| Industry:                                                                                                |          |          |                   |             | Sales and Related                              | 0.8      | 0.7      | 4.2               | 3.9         |
| Agriculture, Forestry, Fishing, and Hunting                                                              | 2.3      | 1.0      | 9.7               | 9.0         | Office and Administrative Support              | 1.0      | 1.0      | 0.0               | 0.0         |
| Mining                                                                                                   | 1.7      | 4.0      | 0.0               | 0.0         | Farming, Fishing, and Forestry                 | 6.3      | 1.8      | 0.0               | 0.0         |
| Utilities                                                                                                | 1.1      | 3.6      | 0.0               | 0.0         | Construction and Extraction                    | 4.6      | 3.6      | 8.0               | 7.3         |
| Construction                                                                                             | 3.8      | 2.9      | 4.1               | 3.6         | Installation, Maintenance, and Repair          | 1.1      | 1.7      | 0.0               | 0.0         |
| Manufacturing                                                                                            | 0.5      | 0.6      | 1.3               | 1.1         | Production                                     | 0.6      | 0.7      | 1.0               | 1.0         |
| Wholesale Trade                                                                                          | 0.9      | 1.1      | 1.4               | 1.2         | Transportation and Material Moving             | 2.9      | 2.9      | 9.8               | 9.8         |
| Retail Trade                                                                                             | 0.9      | 0.8      | 2.2               | 2.3         |                                                |          |          |                   |             |
| Transportation and Warehousing                                                                           | 2.7      | 2.9      | 12.1              | 11.3        |                                                |          |          |                   |             |
| Information                                                                                              | 1.1      | 1.3      | 0.7               | 0.7         |                                                |          |          |                   |             |
| Financial Activities                                                                                     | 0.5      | 0.8      | 0.9               | 0.8         |                                                |          |          |                   |             |
| Professional and Business Services                                                                       | 1.2      | 1.4      | 2.0               | 2.0         |                                                |          |          |                   |             |
| Education and Health Services                                                                            | 2.5      | 2.8      | 2.4               | 2.4         |                                                |          |          |                   |             |
| Leisure and Hospitality                                                                                  | 1.7      | 2.1      | 2.6               | 2.3         |                                                |          |          |                   |             |
| Other Services (Excluding Public Administration)                                                         | 2.2      | 1.3      | 3.6               | 3.6         |                                                |          |          |                   |             |
| Public Administration                                                                                    | 0.9      | 1.4      | 2.5               | 2.5         |                                                |          |          |                   |             |

Source: Current Population Survey; Katz and Krueger (2015).

**Table 4(c)**  
**Probability of Employed Workers Who Worked During Survey Week Also Being a Temporary Help Agency Worker**

| (Percent of Each Characteristic)                 | CPS      | CPS      | RAND Oct/Nov-2015 |             | (Percent of Each Characteristic)               | CPS      | CPS      | RAND Oct/Nov-2015 |             |
|--------------------------------------------------|----------|----------|-------------------|-------------|------------------------------------------------|----------|----------|-------------------|-------------|
|                                                  | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |                                                | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |
| Age:                                             |          |          |                   |             | Occupation:                                    |          |          |                   |             |
| 16-24 Years Old                                  | 1.6      | 1.3      | 1.7               | 1.7         | Management                                     | 0.2      | 0.1      | 0.0               | 0.0         |
| 25-54 Years Old                                  | 0.9      | 0.8      | 1.7               | 1.6         | Business and Financial Operations              | 1.3      | 1.1      | 1.6               | 1.6         |
| 55-75 Years Old                                  | 0.6      | 0.7      | 1.6               | 1.7         | Computer and Mathematical                      | 1.9      | 1.3      | 1.9               | 2.0         |
| Gender:                                          |          |          |                   |             | Architecture and Engineering                   | 1.3      | 0.8      | 0.0               | 0.0         |
| Male                                             | 0.8      | 0.8      | 1.3               | 1.3         | Life, Physical, and Social Science             | 1.0      | 0.8      | 2.0               | 2.0         |
| Female                                           | 1.1      | 1.0      | 2.0               | 2.0         | Community and Social Service                   | 0.0      | 0.2      | 0.5               | 0.5         |
| Race/Ethnicity:                                  |          |          |                   |             | Legal                                          | 0.0      | 0.2      | 2.8               | 3.0         |
| White                                            | 0.8      | 0.7      | 1.3               | 1.3         | Education, Training, and Library               | 0.2      | 0.2      | 0.0               | 0.0         |
| African-American                                 | 1.8      | 1.8      | 3.9               | 3.9         | Arts, Design, Entertainment, Sports, and Media | 0.9      | 0.5      | 3.3               | 3.5         |
| Hispanic                                         | 1.3      | 1.4      | 2.4               | 2.3         | Healthcare Practitioners and Technical         | 0.7      | 0.6      | 1.9               | 1.9         |
| Educational Attainment:                          |          |          |                   |             | Healthcare Support                             | 1.5      | 2.1      | 2.8               | 2.8         |
| Bachelor's Degree or Higher                      | 0.7      | 0.6      | 1.1               | 1.1         | Protective Service                             | 0.6      | 0.1      | 0.0               | 0.0         |
| Some College or Associate's Degree               | 1.1      | 1.0      | 2.5               | 2.5         | Food Preparation and Serving Related           | 0.2      | 0.2      | 2.6               | 2.6         |
| High School Graduate                             | 0.9      | 0.8      | 1.0               | 1.0         | Building and Grounds Cleaning and Maintenance  | 0.8      | 1.4      | 2.5               | 2.6         |
| Less Than High School Diploma                    | 1.2      | 1.4      | 3.9               | 4.0         | Personal Care and Service                      | 0.5      | 1.0      | 4.8               | 4.4         |
| Industry:                                        |          |          |                   |             | Sales and Related                              | 0.2      | 0.1      | 1.4               | 1.4         |
| Agriculture, Forestry, Fishing, and Hunting      | 0.2      | 0.0      | 0.0               | 0.0         | Office and Administrative Support              | 2.0      | 1.5      | 2.1               | 2.1         |
| Mining                                           | 0.9      | 0.9      | 3.3               | 3.3         | Farming, Fishing, and Forestry                 | 0.3      | 1.5      | 0.0               | 0.0         |
| Utilities                                        | 0.0      | 0.9      | 0.0               | 0.0         | Construction and Extraction                    | 0.6      | 0.5      | 0.6               | 0.7         |
| Construction                                     | 0.4      | 0.4      | 2.4               | 2.2         | Installation, Maintenance, and Repair          | 0.3      | 0.6      | 2.8               | 2.3         |
| Manufacturing                                    | 1.3      | 1.3      | 3.5               | 3.5         | Production                                     | 2.1      | 2.2      | 2.4               | 2.4         |
| Wholesale Trade                                  | 0.3      | 1.3      | 0.9               | 0.9         | Transportation and Material Moving             | 1.8      | 1.7      | 2.8               | 2.9         |
| Retail Trade                                     | 0.2      | 0.1      | 0.0               | 0.0         |                                                |          |          |                   |             |
| Transportation and Warehousing                   | 0.4      | 0.4      | 0.4               | 0.4         |                                                |          |          |                   |             |
| Information                                      | 0.7      | 0.5      | 2.0               | 2.0         |                                                |          |          |                   |             |
| Financial Activities                             | 0.3      | 0.2      | 1.5               | 1.5         |                                                |          |          |                   |             |
| Professional and Business Services               | 5.9      | 4.6      | 2.4               | 2.5         |                                                |          |          |                   |             |
| Education and Health Services                    | 0.3      | 0.3      | 1.2               | 1.2         |                                                |          |          |                   |             |
| Leisure and Hospitality                          | 0.1      | 0.1      | 1.9               | 2.0         |                                                |          |          |                   |             |
| Other Services (Excluding Public Administration) | 0.4      | 0.4      | 3.4               | 3.1         |                                                |          |          |                   |             |
| Public Administration                            | 0.1      | 0.3      | 1.3               | 1.3         |                                                |          |          |                   |             |

Source: Current Population Survey; Katz and Krueger (2015).

**Table 4(d)**  
**Probability of Employed Workers Who Worked During Survey Week Also Being a Worker Provided by Contract Firms**

| (Percent of Each Characteristic)                 | CPS      | CPS      | RAND Oct/Nov-2015 |             | (Percent of Each Characteristic)               | CPS      | CPS      | RAND Oct/Nov-2015 |             |
|--------------------------------------------------|----------|----------|-------------------|-------------|------------------------------------------------|----------|----------|-------------------|-------------|
|                                                  | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |                                                | Feb-1995 | Feb-2005 | Weighted          | Alt. Weight |
| Age:                                             |          |          |                   |             | Occupation:                                    |          |          |                   |             |
| 16-24 Years Old                                  | 0.5      | 0.5      | 2.5               | 2.5         | Management                                     | 0.2      | 0.2      | 2.8               | 2.8         |
| 25-54 Years Old                                  | 0.5      | 0.6      | 3.3               | 3.2         | Business and Financial Operations              | 0.2      | 0.9      | 5.0               | 4.7         |
| 55-75 Years Old                                  | 0.5      | 0.6      | 3.3               | 3.1         | Computer and Mathematical                      | 4.7      | 3.2      | 9.1               | 8.9         |
| Gender:                                          |          |          |                   |             | Architecture and Engineering                   | 0.9      | 1.9      | 2.8               | 2.9         |
| Male                                             | 0.7      | 0.8      | 2.7               | 2.6         | Life, Physical, and Social Science             | 1.8      | 0.8      | 2.9               | 2.9         |
| Female                                           | 0.3      | 0.4      | 3.9               | 3.8         | Community and Social Service                   | 0.0      | 0.4      | 9.4               | 9.5         |
| Race/Ethnicity:                                  |          |          |                   |             | Legal                                          | 0.2      | 0.2      | 2.7               | 2.9         |
| White                                            | 0.5      | 0.6      | 3.6               | 3.4         | Education, Training, and Library               | 0.2      | 0.2      | 3.5               | 3.4         |
| African-American                                 | 0.6      | 0.8      | 2.5               | 2.5         | Arts, Design, Entertainment, Sports, and Media | 1.1      | 0.6      | 5.8               | 5.6         |
| Hispanic                                         | 0.5      | 0.8      | 2.5               | 2.4         | Healthcare Practitioners and Technical         | 0.7      | 0.3      | 3.0               | 3.0         |
| Educational Attainment:                          |          |          |                   |             | Healthcare Support                             | 0.8      | 0.7      | 1.4               | 1.3         |
| Bachelor's Degree or Higher                      | 0.6      | 0.6      | 5.4               | 5.2         | Protective Service                             | 5.1      | 3.4      | 8.8               | 8.8         |
| Some College or Associate's Degree               | 0.5      | 0.6      | 3.3               | 3.1         | Food Preparation and Serving Related           | 0.2      | 0.3      | 0.0               | 0.0         |
| High School Graduate                             | 0.5      | 0.4      | 1.4               | 1.3         | Building and Grounds Cleaning and Maintenance  | 0.9      | 1.3      | 0.0               | 0.0         |
| Less Than High School Diploma                    | 0.5      | 0.9      | 0.0               | 0.0         | Personal Care and Service                      | 0.2      | 0.3      | 0.6               | 0.5         |
| Industry:                                        |          |          |                   |             | Sales and Related                              | 0.1      | 0.1      | 1.6               | 1.5         |
| Agriculture, Forestry, Fishing, and Hunting      | 0.1      | 0.0      | 1.4               | 1.5         | Office and Administrative Support              | 0.2      | 0.2      | 2.5               | 2.4         |
| Mining                                           | 1.6      | 0.2      | 7.5               | 7.5         | Farming, Fishing, and Forestry                 | 0.2      | 0.3      | 3.2               | 2.9         |
| Utilities                                        | 0.4      | 0.5      | 6.5               | 6.5         | Construction and Extraction                    | 1.5      | 2.0      | 8.3               | 7.7         |
| Construction                                     | 1.4      | 1.5      | 5.8               | 5.2         | Installation, Maintenance, and Repair          | 0.3      | 0.3      | 1.4               | 1.2         |
| Manufacturing                                    | 0.1      | 0.2      | 0.9               | 0.9         | Production                                     | 0.1      | 0.2      | 1.2               | 1.0         |
| Wholesale Trade                                  | 0.1      | 0.6      | 1.6               | 1.5         | Transportation and Material Moving             | 0.4      | 0.3      | 3.3               | 2.7         |
| Retail Trade                                     | 0.1      | 0.1      | 2.5               | 2.3         |                                                |          |          |                   |             |
| Transportation and Warehousing                   | 0.5      | 0.5      | 1.9               | 1.5         |                                                |          |          |                   |             |
| Information                                      | 0.2      | 0.8      | 4.3               | 4.4         |                                                |          |          |                   |             |
| Financial Activities                             | 0.2      | 0.1      | 0.7               | 0.7         |                                                |          |          |                   |             |
| Professional and Business Services               | 2.7      | 2.4      | 6.9               | 6.6         |                                                |          |          |                   |             |
| Education and Health Services                    | 0.4      | 0.3      | 3.9               | 3.9         |                                                |          |          |                   |             |
| Leisure and Hospitality                          | 0.2      | 0.4      | 1.4               | 1.3         |                                                |          |          |                   |             |
| Other Services (Excluding Public Administration) | 0.3      | 0.2      | 1.0               | 1.0         |                                                |          |          |                   |             |
| Public Administration                            | 0.3      | 0.3      | 3.9               | 3.8         |                                                |          |          |                   |             |

Source: Current Population Survey; Katz and Krueger (2015).

**Table 5**  
**Regressions of Log Hourly Wages From Main Job**

|                                          | 2005 Contingent Worker Survey |                         |                         | 2015 RAND Survey       |                         |                         |
|------------------------------------------|-------------------------------|-------------------------|-------------------------|------------------------|-------------------------|-------------------------|
|                                          | (1)                           | (2)                     | (3)                     | (4)                    | (5)                     | (6)                     |
| Independent Contractors                  | 0.1603<br>(0.0205) ***        | 0.0154<br>(0.0200)      | -0.0082<br>(0.0204)     | 0.1867<br>(0.0827) **  | 0.1439<br>(0.0821) *    | 0.1619<br>(0.0810) **   |
| On-Call Workers (Excluding Day Laborers) | -0.1042<br>(0.0352) ***       | -0.0407<br>(0.0355)     | -0.0295<br>(0.0343)     | 0.1741<br>(0.2365)     | 0.2261<br>(0.2467)      | 0.2825<br>(0.2533)      |
| Temporary Help Agency Workers            | -0.2350<br>(0.0446) ***       | -0.0971<br>(0.0411) **  | -0.0873<br>(0.0394) **  | -0.2264<br>(0.1121) ** | -0.1537<br>(0.1229)     | -0.1582<br>(0.1157)     |
| Workers Provided by Contract Firms       | 0.1214<br>(0.0488) **         | 0.0834<br>(0.0450) *    | 0.0223<br>(0.0425)      | 0.1243<br>(0.0928)     | 0.0159<br>(0.0783)      | -0.0238<br>(0.0746)     |
| Years of Education                       |                               | 0.0925<br>(0.0022) ***  | 0.0689<br>(0.0024) ***  |                        | 0.1025<br>(0.0104) ***  | 0.0855<br>(0.0098) ***  |
| Years of Experience                      |                               | 0.0346<br>(0.0013) ***  | 0.0300<br>(0.0012) ***  |                        | 0.0195<br>(0.0070) ***  | 0.0176<br>(0.0065) ***  |
| Years of Experience Squared              |                               | -0.0005<br>(0.0000) *** | -0.0005<br>(0.0000) *** |                        | -0.0003<br>(0.0001) **  | -0.0002<br>(0.0001) *   |
| Race:                                    |                               |                         |                         |                        |                         |                         |
| African-American                         |                               | -0.1701<br>(0.0160) *** | -0.1283<br>(0.0154) *** |                        | 0.0183<br>(0.0608)      | 0.0749<br>(0.0597)      |
| Asian/Pacific Islander                   |                               | -0.0435<br>(0.0242) *   | -0.0416<br>(0.0225) *   |                        | 0.0022<br>(0.0905)      | 0.0732<br>(0.0805)      |
| Other                                    |                               | -0.0339<br>(0.0306)     | -0.0498<br>(0.0286) *   |                        | -0.0479<br>(0.0858)     | -0.0585<br>(0.0827)     |
| Hispanic Ethnicity                       |                               | -0.0838<br>(0.0155) *** | -0.0656<br>(0.0148) *** |                        | 0.0171<br>(0.0630)      | 0.0551<br>(0.0622)      |
| Female                                   |                               | -0.2170<br>(0.0099) *** | -0.1786<br>(0.0108) *** |                        | -0.1930<br>(0.0377) *** | -0.1796<br>(0.0415) *** |
| Controls for 22 Occupations              | No                            | No                      | Yes                     | No                     | No                      | Yes                     |
| Adjusted R-Squared                       | 0.0052                        | 0.2594                  | 0.3207                  | 0.0066                 | 0.1369                  | 0.2059                  |
| Number of Observations                   | 18,366                        | 18,366                  | 18,366                  | 2,171                  | 2,171                   | 2,171                   |

Levels of Significance: \*\*\* = 0.01, \*\* = 0.05, \* = 0.10

Note: 2005 Contingent Worker Survey regressions weighted by either supplement weights or outgoing rotation groups as applicable.

2015 RAND Survey regressions weighted by weights that adjust for over-representation of self-employed workers.

Source: 2005 Current Population Survey CWS; 2015 RPCWS.

**Table 6**  
**Regressions of Log Weekly Wages From Main Job**

|                                          | 2005 Contingent Worker Survey |                         |                         | 2015 RAND Survey        |                         |                         |
|------------------------------------------|-------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                                          | (1)                           | (2)                     | (3)                     | (4)                     | (5)                     | (6)                     |
| Independent Contractors                  | 0.0743<br>(0.0212) ***        | -0.1135<br>(0.0200) *** | -0.1363<br>(0.0202) *** | -0.3305<br>(0.1030) *** | -0.3483<br>(0.0996) *** | -0.3297<br>(0.0952) *** |
| On-Call Workers (Excluding Day Laborers) | -0.4896<br>(0.0382) ***       | -0.4002<br>(0.0370) *** | -0.3674<br>(0.0342) *** | -0.5786<br>(0.2411) **  | -0.4935<br>(0.2299) **  | -0.3955<br>(0.2459)     |
| Temporary Help Agency Workers            | -0.3091<br>(0.0477) ***       | -0.1470<br>(0.0426) *** | -0.1454<br>(0.0403) *** | -0.6760<br>(0.1931) *** | -0.5229<br>(0.2161) **  | -0.5014<br>(0.1900) *** |
| Workers Provided by Contract Firms       | 0.1501<br>(0.0569) ***        | 0.0700<br>(0.0509)      | 0.0040<br>(0.0469)      | -0.1221<br>(0.1173)     | -0.2413<br>(0.1009) **  | -0.3017<br>(0.0902) *** |
| Years of Education                       |                               | 0.1058<br>(0.0024) ***  | 0.0795<br>(0.0027) ***  |                         | 0.1204<br>(0.0127) ***  | 0.1005<br>(0.0126) ***  |
| Years of Experience                      |                               | 0.0587<br>(0.0015) ***  | 0.0521<br>(0.0015) ***  |                         | 0.0431<br>(0.0088) ***  | 0.0412<br>(0.0080) ***  |
| Years of Experience Squared              |                               | -0.0010<br>(0.0000) *** | -0.0009<br>(0.0000) *** |                         | -0.0008<br>(0.0002) *** | -0.0007<br>(0.0002) *** |
| Race:                                    |                               |                         |                         |                         |                         |                         |
| African-American                         |                               | -0.1378<br>(0.0181) *** | -0.0883<br>(0.0171) *** |                         | -0.1699<br>(0.0938) *   | -0.0921<br>(0.0921)     |
| Asian/Pacific Islander                   |                               | -0.0021<br>(0.0282)     | 0.0054<br>(0.0263)      |                         | -0.0546<br>(0.1288)     | 0.0507<br>(0.1140)      |
| Other                                    |                               | -0.0507<br>(0.0344)     | -0.0727<br>(0.0324) **  |                         | -0.1198<br>(0.0977)     | -0.1366<br>(0.0940)     |
| Hispanic Ethnicity                       |                               | -0.0578<br>(0.0180) *** | -0.0230<br>(0.0169)     |                         | 0.0384<br>(0.0732)      | 0.0966<br>(0.0688)      |
| Female                                   |                               | -0.3956<br>(0.0113) *** | -0.3294<br>(0.0122) *** |                         | -0.3431<br>(0.0474) *** | -0.2956<br>(0.0476) *** |
| Controls for 22 Occupations              | No                            | No                      | Yes                     | No                      | No                      | Yes                     |
| Adjusted R-Squared                       | 0.0085                        | 0.3385                  | 0.4154                  | 0.0239                  | 0.1826                  | 0.2612                  |
| Number of Observations                   | 18,366                        | 18,366                  | 18,366                  | 2,171                   | 2,171                   | 2,171                   |

Levels of Significance: \*\*\* = 0.01, \*\* = 0.05, \* = 0.10

Note: 2005 Contingent Worker Survey regressions weighted by either supplement weights or outgoing rotation groups as applicable.

2015 RAND Survey regressions weighted by weights that adjust for over-representation of self-employed workers.

Source: 2005 Current Population Survey CWS; 2015 RPCWS.

**Table 7**  
**Regressions of Log Actual Hours Worked on All Jobs**

|                                          | 2005 Contingent Worker Survey |                         |                         | 2015 RAND Survey        |                         |                         |
|------------------------------------------|-------------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                                          | (1)                           | (2)                     | (3)                     | (4)                     | (5)                     | (6)                     |
| Independent Contractors                  | -0.0932<br>(0.0150) ***       | -0.1373<br>(0.0144) *** | -0.1284<br>(0.0144) *** | -0.4127<br>(0.0886) *** | -0.3863<br>(0.0896) *** | -0.3859<br>(0.0910) *** |
| On-Call Workers (Excluding Day Laborers) | -0.4065<br>(0.0335) ***       | -0.3700<br>(0.0323) *** | -0.3521<br>(0.0318) *** | -0.7065<br>(0.2172) *** | -0.6748<br>(0.2001) *** | -0.6388<br>(0.2045) *** |
| Temporary Help Agency Workers            | -0.0725<br>(0.0311) **        | -0.0426<br>(0.0317)     | -0.0520<br>(0.0315) *   | -0.4328<br>(0.1666) *** | -0.3537<br>(0.1769) **  | -0.3297<br>(0.1707) *   |
| Workers Provided by Contract Firms       | -0.0031<br>(0.0346)           | -0.0470<br>(0.0340)     | -0.0463<br>(0.0339)     | -0.1723<br>(0.0860) **  | -0.1823<br>(0.0857) **  | -0.1978<br>(0.0860) **  |
| Years of Education                       |                               | 0.0185<br>(0.0009) ***  | 0.0154<br>(0.0011) ***  |                         | 0.0182<br>(0.0059) ***  | 0.0150<br>(0.0069) **   |
| Years of Experience                      |                               | 0.0284<br>(0.0006) ***  | 0.0264<br>(0.0006) ***  |                         | 0.0235<br>(0.0042) ***  | 0.0236<br>(0.0041) ***  |
| Years of Experience Squared              |                               | -0.0005<br>(0.0000) *** | -0.0005<br>(0.0000) *** |                         | -0.0005<br>(0.0001) *** | -0.0005<br>(0.0001) *** |
| Race:                                    |                               |                         |                         |                         |                         |                         |
| African-American                         |                               | 0.0340<br>(0.0068) ***  | 0.0407<br>(0.0068) ***  |                         | -0.1633<br>(0.0765) **  | -0.1462<br>(0.0766) *   |
| Asian/Pacific Islander                   |                               | 0.0406<br>(0.0098) ***  | 0.0452<br>(0.0099) ***  |                         | -0.0497<br>(0.0791)     | -0.0232<br>(0.0749)     |
| Other                                    |                               | 0.0018<br>(0.0132)      | 0.0015<br>(0.0131)      |                         | -0.0781<br>(0.0568)     | -0.0825<br>(0.0573)     |
| Hispanic Ethnicity                       |                               | 0.0538<br>(0.0066) ***  | 0.0651<br>(0.0066) ***  |                         | 0.0152<br>(0.0419)      | 0.0287<br>(0.0457)      |
| Female                                   |                               | -0.1695<br>(0.0043) *** | -0.1445<br>(0.0049) *** |                         | -0.1572<br>(0.0305) *** | -0.1345<br>(0.0348) *** |
| Controls for 22 Occupations              | No                            | No                      | Yes                     | No                      | No                      | Yes                     |
| Adjusted R-Squared                       | 0.0091                        | 0.1114                  | 0.1283                  | 0.0793                  | 0.1445                  | 0.1635                  |
| Number of Observations                   | 63,427                        | 63,427                  | 63,427                  | 2,188                   | 2,188                   | 2,188                   |

Levels of Significance: \*\*\* = 0.01, \*\* = 0.05, \* = 0.10

Note: 2005 Contingent Worker Survey regressions weighted by final weights. 2015 RAND Survey regressions weighted by weights that adjust for over-representation of self-employed workers.

Source: 2005 Current Population Survey CWS; 2015 RPCWS.

| <b>Table 8</b>                                                            |                         |                         |                              |
|---------------------------------------------------------------------------|-------------------------|-------------------------|------------------------------|
| <b>Employment Preferences of Workers in Alternative Work Arrangements</b> |                         |                         |                              |
| <b>(Percent)</b>                                                          | <b>CPS<br/>Feb-1995</b> | <b>CPS<br/>Feb-2005</b> | <b>RAND<br/>Oct/Nov-2015</b> |
| Temporary Help Agency Workers:                                            |                         |                         |                              |
| Prefer a Job With a Different Type of Employer                            | 63.9                    | 57.2                    | N/A                          |
| Temporary Help Agency Workers With Temporary Jobs:                        |                         |                         |                              |
| Prefer a Job That is Permanent                                            | 82.9                    | 83.5                    | 76.9                         |
| On-Call Workers:                                                          |                         |                         |                              |
| Prefer a Job With Regularly Scheduled Hours                               | 57.7                    | 45.1                    | 44.7                         |
| Independent Contractors:                                                  |                         |                         |                              |
| Prefer to Work for Themselves                                             | 82.7                    | 82.5                    | 83.7                         |

Note: RAND survey weights have been adjusted to account for over-representation of self-employed workers.

Source: 1995 and 2005 Current Population Survey CWS; 2015 RPCWS.

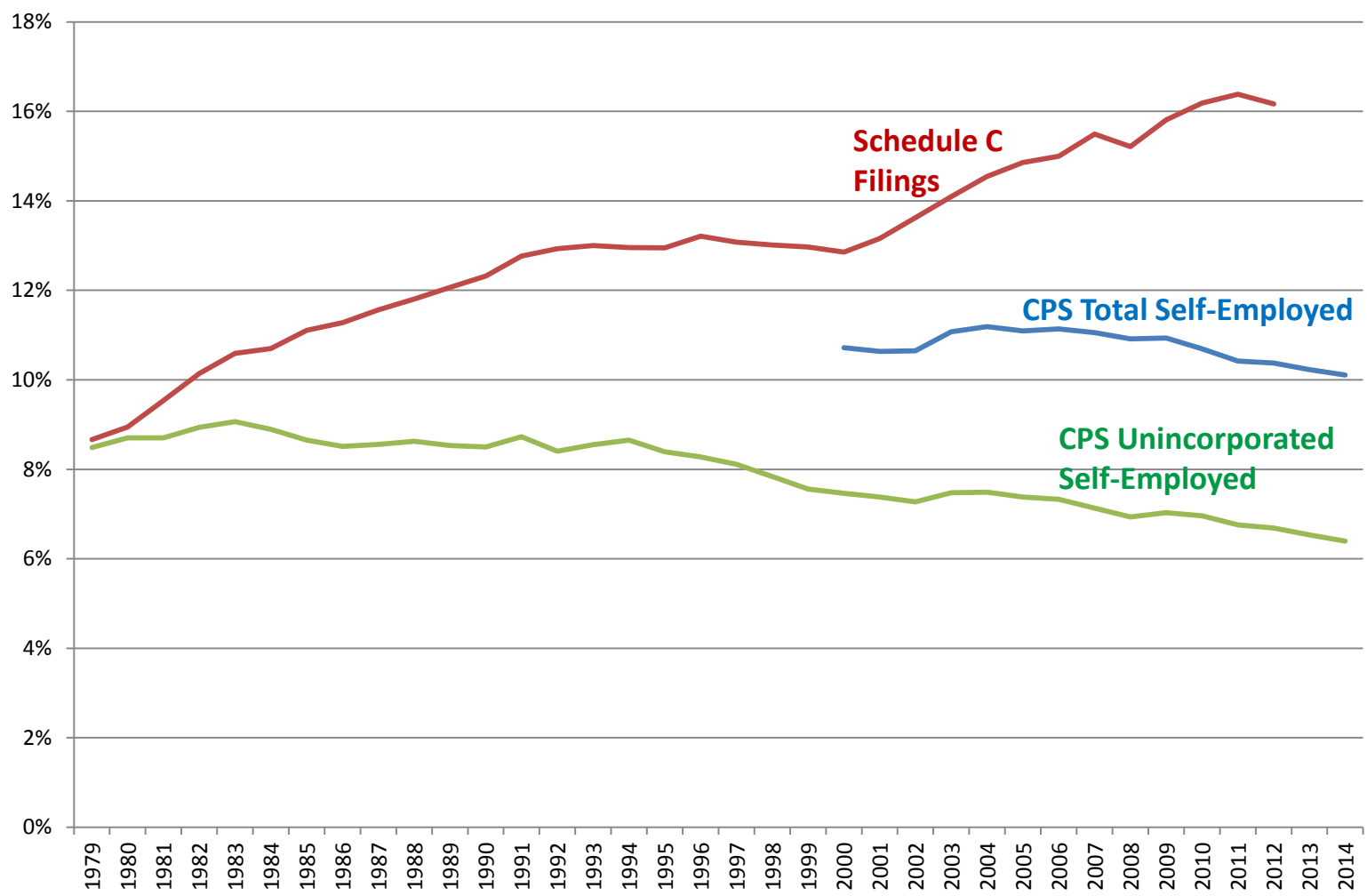
**Appendix Table A**  
**Regressions of Log Total Wages in 2015 RAND Survey**

|                                          | Total Hourly Wages     |                         |                         | Total Weekly Wages      |                         |                         |
|------------------------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
|                                          | (1)                    | (2)                     | (3)                     | (4)                     | (5)                     | (6)                     |
| Independent Contractors                  | 0.2093<br>(0.0799) *** | 0.1659<br>(0.0792) **   | 0.1816<br>(0.0776) **   | -0.2077<br>(0.1027) **  | -0.2234<br>(0.0996) **  | -0.2080<br>(0.0953) **  |
| On-Call Workers (Excluding Day Laborers) | 0.1578<br>(0.2368)     | 0.2104<br>(0.2475)      | 0.2622<br>(0.2526)      | -0.4604<br>(0.2238) **  | -0.3746<br>(0.2120) *   | -0.2842<br>(0.2317)     |
| Temporary Help Agency Workers            | -0.2298<br>(0.1117) ** | -0.1565<br>(0.1222)     | -0.1576<br>(0.1156)     | -0.6624<br>(0.1946) *** | -0.5099<br>(0.2161) **  | -0.4870<br>(0.1908) **  |
| Workers Provided by Contract Firms       | 0.1470<br>(0.0942)     | 0.0372<br>(0.0799)      | -0.0057<br>(0.0767)     | -0.0250<br>(0.1324)     | -0.1443<br>(0.1171)     | -0.2075<br>(0.1076) *   |
| Years of Education                       |                        | 0.1027<br>(0.0104) ***  | 0.0868<br>(0.0097) ***  |                         | 0.1203<br>(0.0126) ***  | 0.1013<br>(0.0125) ***  |
| Years of Experience                      |                        | 0.0190<br>(0.0069) ***  | 0.0168<br>(0.0065) ***  |                         | 0.0428<br>(0.0087) ***  | 0.0406<br>(0.0081) ***  |
| Years of Experience Squared              |                        | -0.0003<br>(0.0001) *   | -0.0002<br>(0.0001) *   |                         | -0.0008<br>(0.0002) *** | -0.0007<br>(0.0002) *** |
| Race:                                    |                        |                         |                         |                         |                         |                         |
| African-American                         |                        | 0.0199<br>(0.0605)      | 0.0789<br>(0.0590)      |                         | -0.1486<br>(0.0954)     | -0.0721<br>(0.0933)     |
| Asian/Pacific Islander                   |                        | -0.0248<br>(0.0887)     | 0.0438<br>(0.0797)      |                         | -0.0742<br>(0.1295)     | 0.0247<br>(0.1141)      |
| Other                                    |                        | -0.0428<br>(0.0864)     | -0.0540<br>(0.0832)     |                         | -0.1293<br>(0.0991)     | -0.1461<br>(0.0950)     |
| Hispanic Ethnicity                       |                        | 0.0066<br>(0.0631)      | 0.0454<br>(0.0619)      |                         | 0.0272<br>(0.0736)      | 0.0818<br>(0.0695)      |
| Female                                   |                        | -0.1930<br>(0.0374) *** | -0.1781<br>(0.0408) *** |                         | -0.3500<br>(0.0472) *** | -0.3094<br>(0.0469) *** |
| Controls for 22 Occupations              | No                     | No                      | Yes                     | No                      | No                      | Yes                     |
| Adjusted R-Squared                       | 0.0083                 | 0.1422                  | 0.2138                  | 0.0155                  | 0.1807                  | 0.2138                  |
| Number of Observations                   | 2171                   | 2171                    | 2171                    | 2171                    | 2171                    | 2171                    |

Levels of Significance: \*\*\* = 0.01, \*\* = 0.05, \* = 0.10.

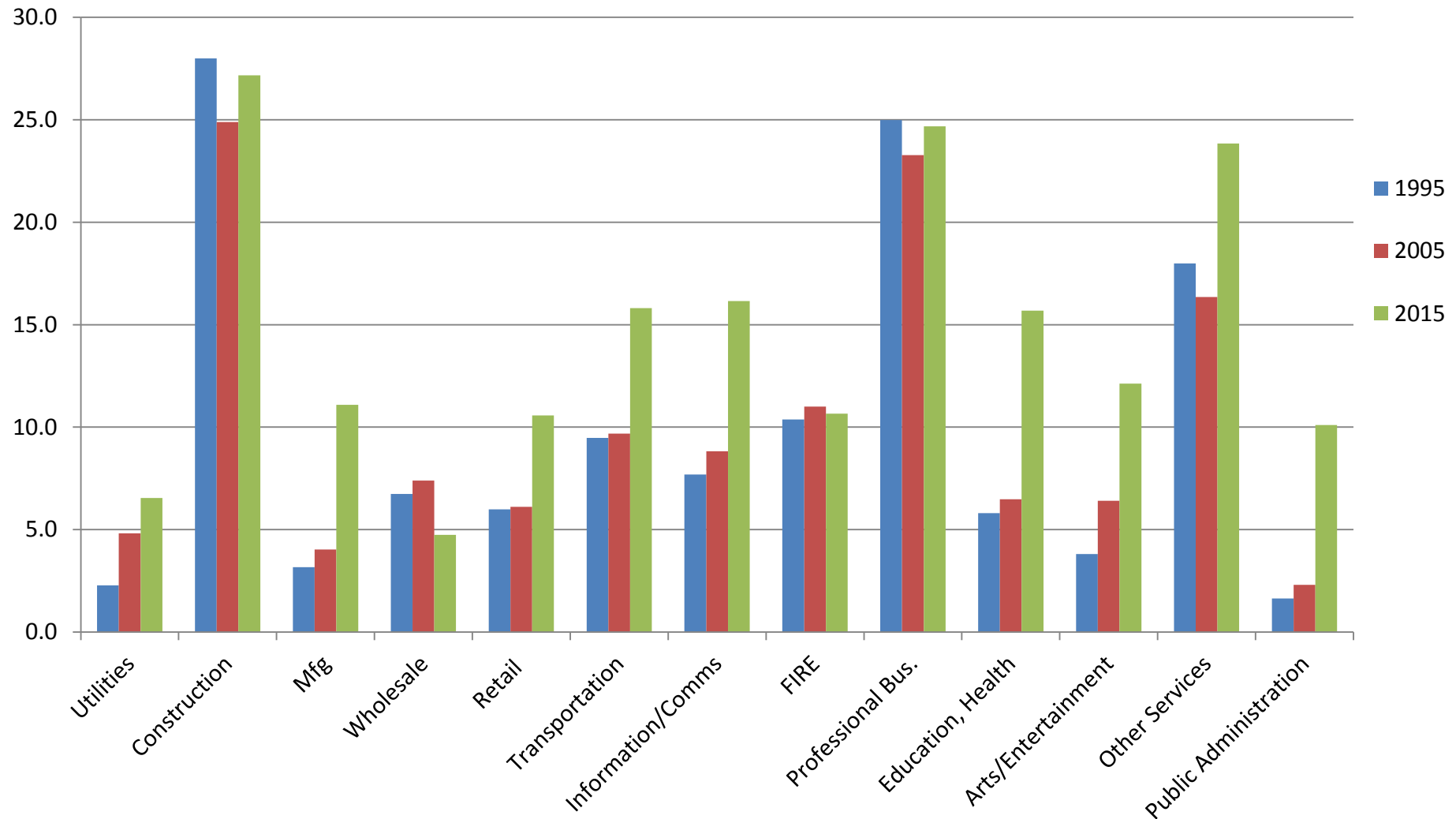
Weights adjust for undersampling of self-employed.

Figure 1: Percent of Employment in Self-Employment, Based on IRS Schedule C Filings and CPS Data, 1979-2014

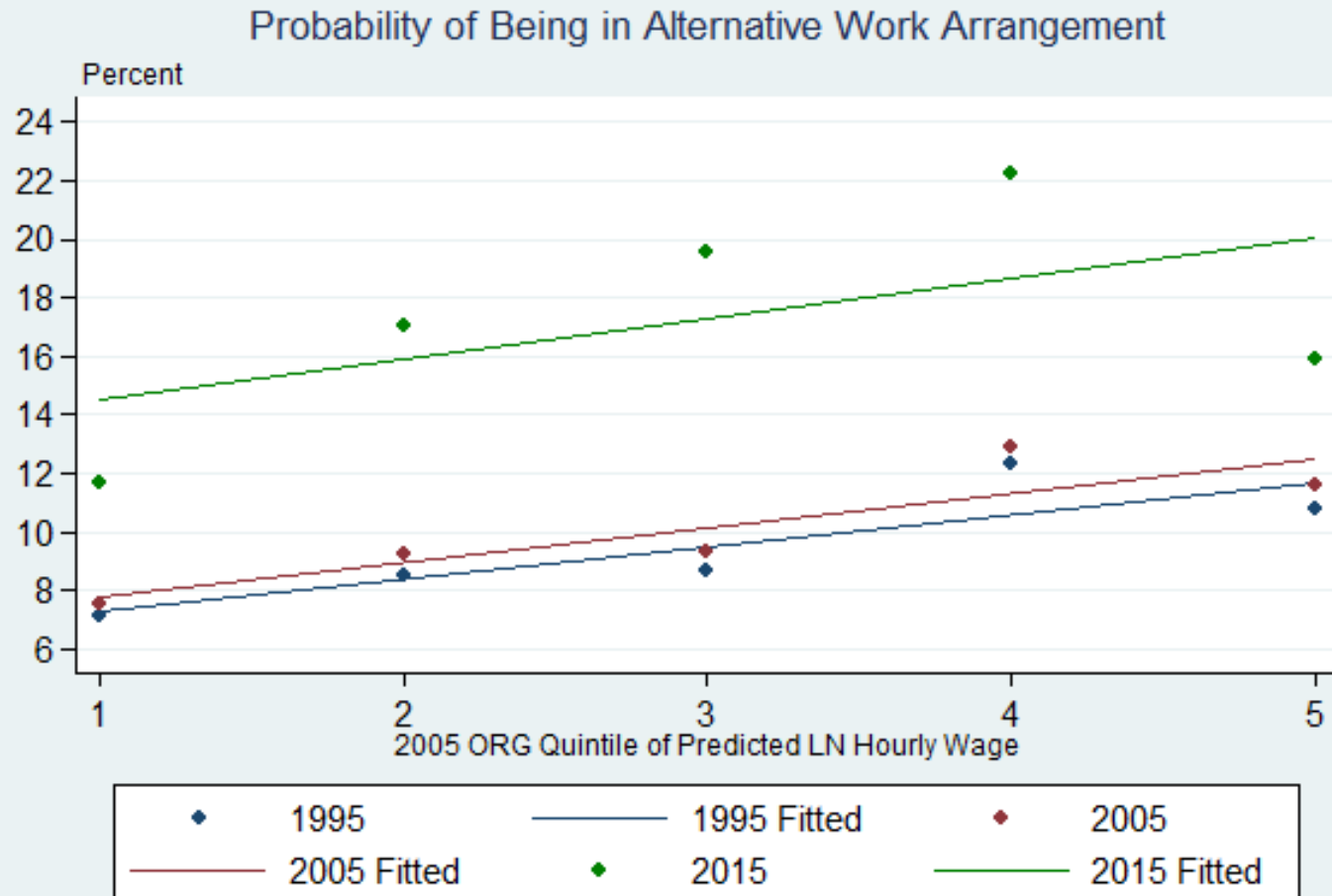


Source: Authors calculations based on Statistics of Income publication 1304 Table 1.3 and CPS.

# Figure 2: Percent of Workers in Alternative Work Arrangements, By Industry



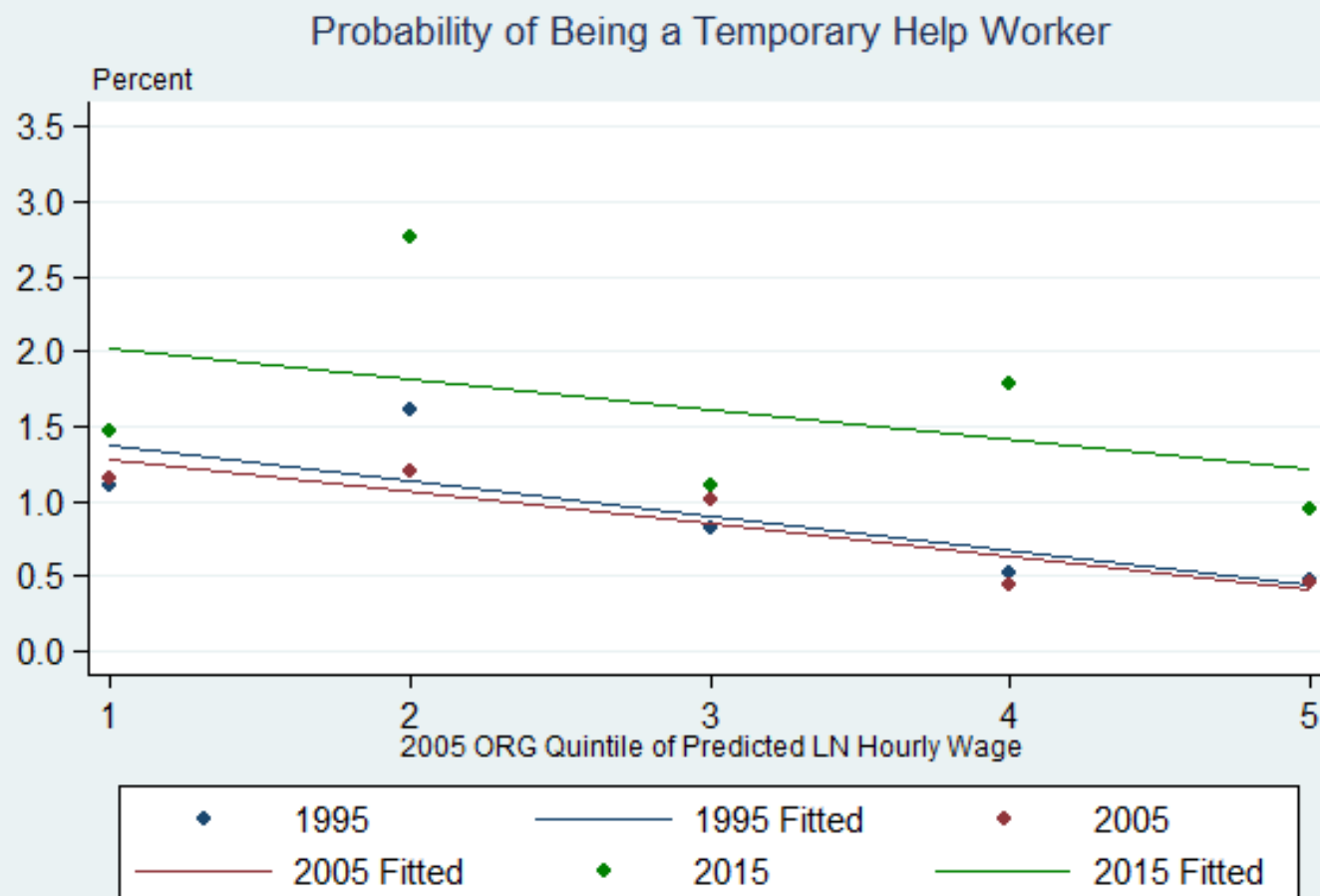
# Figure 3: Percent in Alternative Work Arrangement by Predicted-Wage Quintile



Note: 2005 Mincer regression on education, experience, experience<sup>2</sup>, industry, occupation, race, Hispanic, and gender.

Source: Contingent Worker Survey (1995 & 2005), 2015 survey by Katz and Krueger.

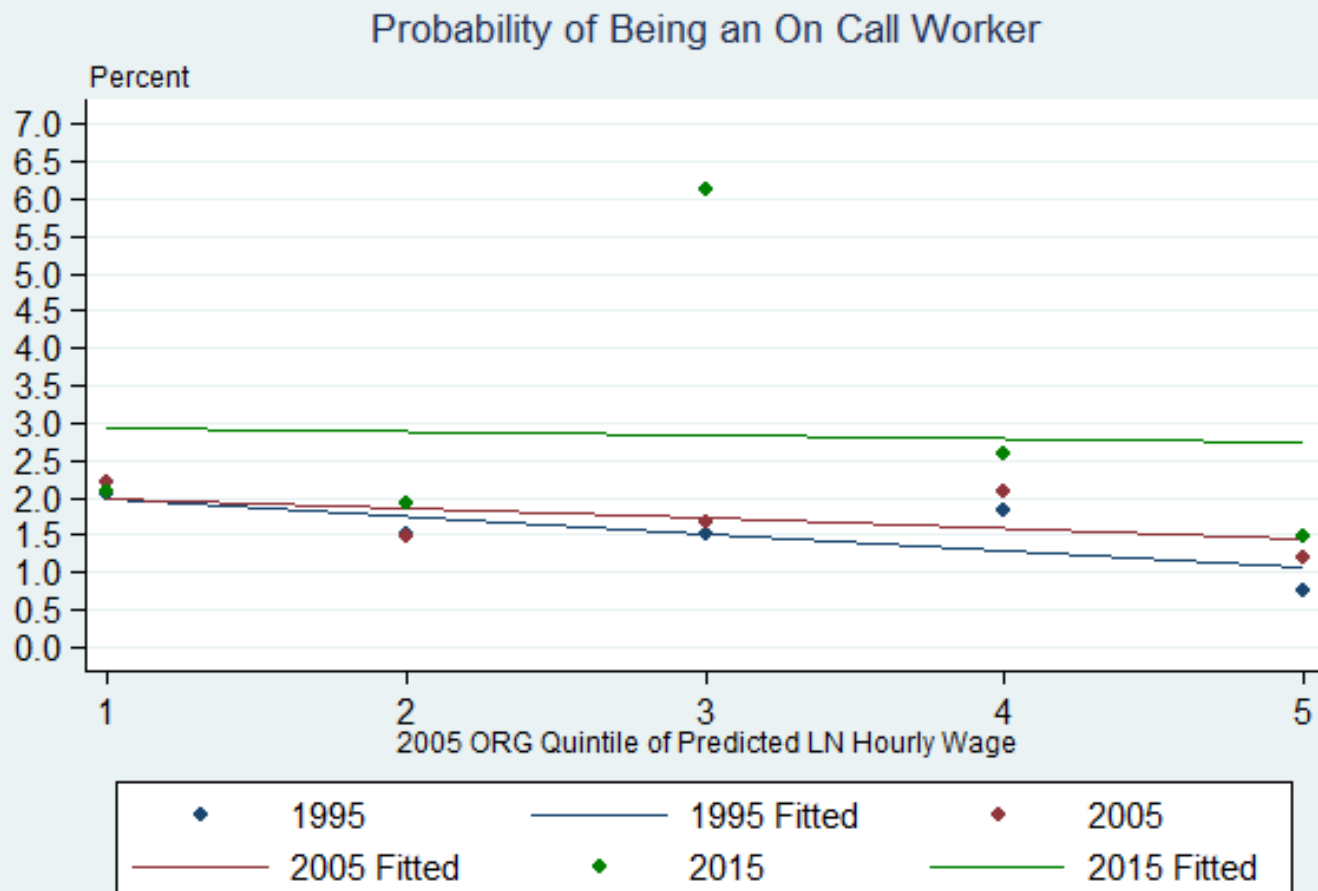
# Figure 4: Percent in Temporary Help Jobs by Predicted-Wage Quintile



Note: 2005 Mincer regression on education, experience, experience<sup>2</sup>, industry, occupation, race, Hispanic, and gender.

Source: Contingent Worker Survey (1995 & 2005), 2015 survey by Katz and Krueger.

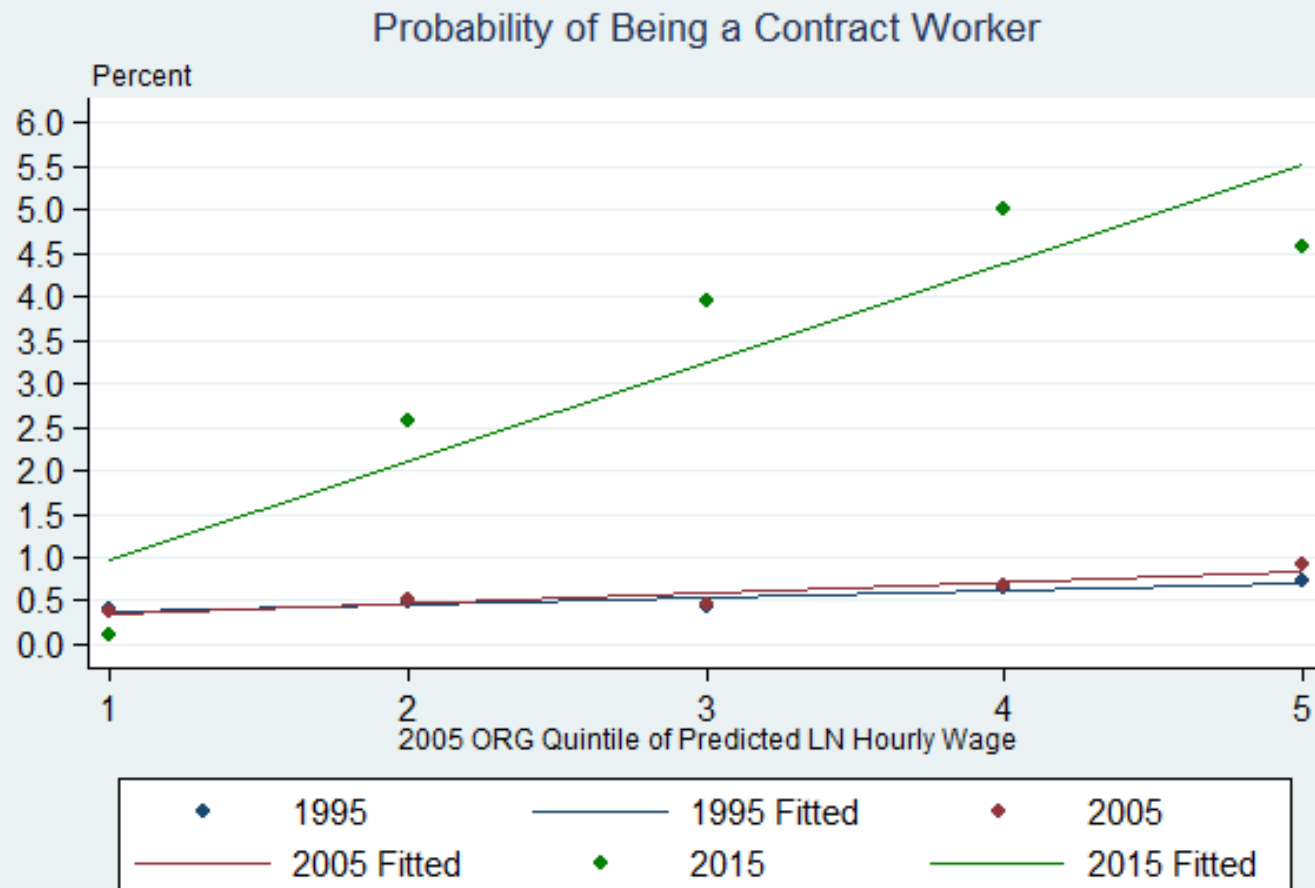
# Figure 5: Percent On-Call Workers by Predicted-Wage Quintile



Note: 2005 Mincer regression on education, experience, experience<sup>2</sup>, industry, occupation, race, Hispanic, and gender.

Source: Contingent Worker Survey (1995 & 2005), 2015 survey by Katz and Krueger.

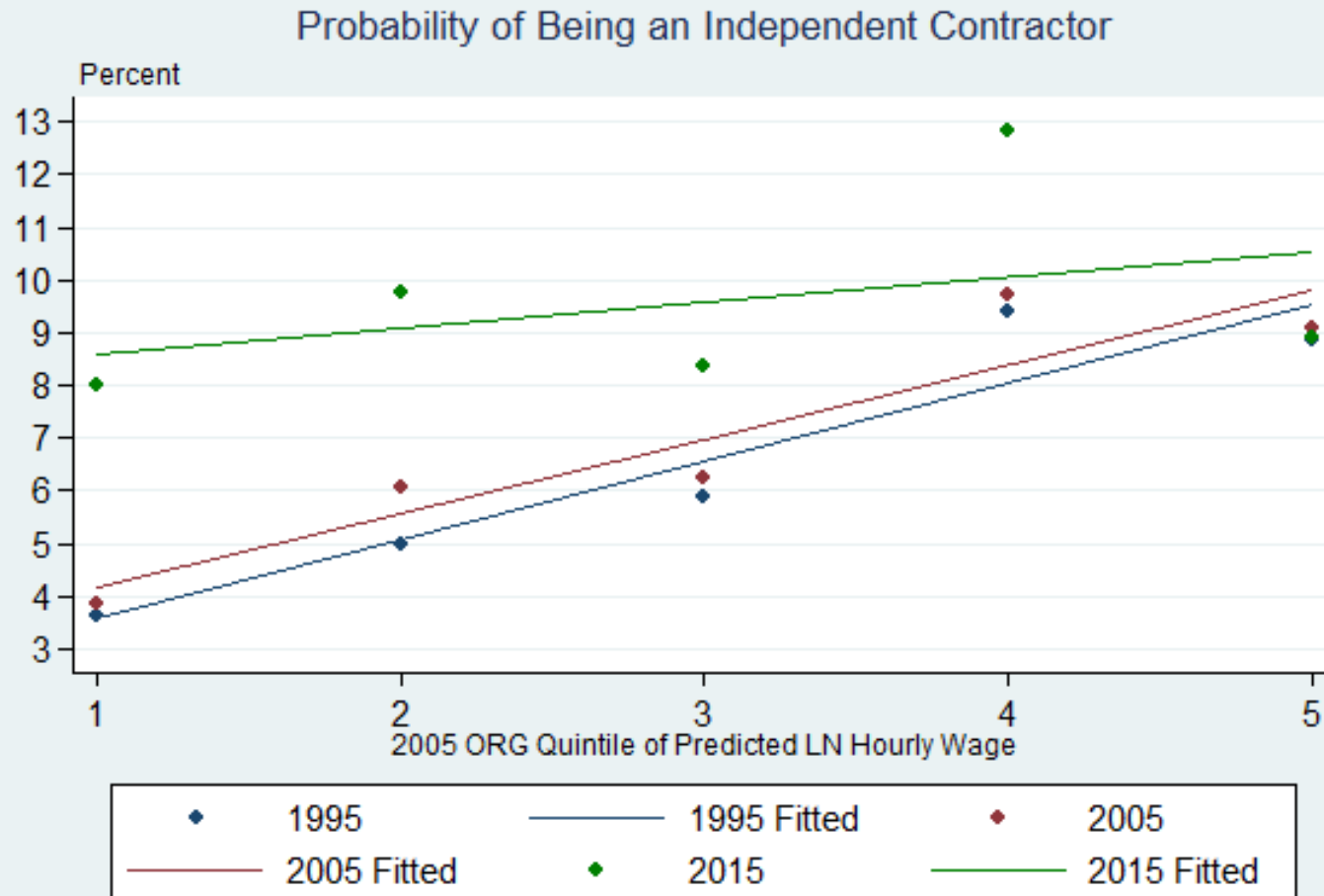
# Figure 6: Percent Contracted Out by Predicted-Wage Quintile



Note: 2005 Mincer regression on education, experience, experience<sup>2</sup>, industry, occupation, race, Hispanic, and gender.

Source: Contingent Worker Survey (1995 & 2005), 2015 survey by Katz and Krueger.

# Figure 7: Percent Independent Contractor/Freelancers by Predicted Wage Quintile



Note: 2005 Mincer regression on education, experience, experience<sup>2</sup>, industry, occupation, race, Hispanic, and gender.

Source: Contingent Worker Survey (1995 & 2005), 2015 survey by Katz and Krueger.