Understanding Trends in Alternative Work Arrangements in the United States

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This article discusses trends in alternative work arrangements in the United States using data from the Contingent Worker Survey (CWS) supplements to the Current Population Survey (CPS) for 1995 to 2017, the 2015 RAND-Princeton Contingent Work Survey, and administrative tax data from the Internal Revenue Service for 2000 to 2016. Based on cyclically adjusted comparisons of the CPS CWS, measures using self-respondents in the CPS CWS, and measures of self-employment and 1099 workers from administrative tax data, we conclude that there has likely been a modest upward trend in the share of the U.S. workforce in alternative work arrangements during the 2000s. We also present evidence from Amazon Mechanical Turk suggesting that the basic monthly CPS question on multiple job holding misses many instances of multiple job holding.

Keywords: alternative work arrangements, gig economy, self-employment, independent contractor

Many observers have speculated that traditional employment relationships may be in decline in the United States, driven by the rise of digital platforms and online gig work as well as through the increased fragmentation of supply chains and use of domestic outsourcing leading to a greater use of contract workers and independent contractors (Weil 2014; Government Accountability Office 2015). But high frequency, comprehensive, point-in-time measures of U.S. work arrangements have not been available (Bernhardt 2014).

In 2015, we attempted to fill this void. The U.S. Bureau of Labor Statistics (BLS) had been unable to conduct the Contingent Work Survey (CWS), a Current Population Survey (CPS) supplement and its main instrument for tracking alternative (or nonstandard) work arrangements, since 2005. We tried to update the CWS data by conducting the RAND-Princeton Con-

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tingent Work Survey (RPCWS), a version of the CWS, as part of the RAND American Life Panel (ALP) in October and November 2015. At the time we undertook the RPCWS, the BLS did not have funding or plans to undertake another round of the CPS CWS in the near term. We attempted to make the RPCWS as comparable as possible the 2005 CPS CWS.

The 2015 RAND survey pointed to what appeared to be a substantial increase in the share of the workforce engaged in an alternative work arrangement on their main job compared with the 2005 CWS. Boosted by growth in the share of workers classified as self-employed freelancers or working for a contract firm that contracts workers out to work onsite at other companies, our initial estimates indicated that the percent of workers in alternative jobs rose from 10.7 percent in 2005 to 15.8 percent in 2015 (Katz and Krueger 2016, 2019). Online gig work appeared to account for only a small share of the large rise in alternative work arrangements through 2015.

The increase in alternative work arrangements implied by the comparison of the 2005 CPS CWS and 2015 RPCWS seemed consistent as well with administrative tax data showing a rise in the share of tax returns and workers with self-employment income in the 2000s as seen in Schedule C filing rates and 1099 receipt rates (Abraham et al. 2018a, 2018b; Jackson, Looney, and Ramnath 2017; Katz and Krueger 2016). Our study and related efforts using a range of sources helped generate a discussion of the incidence, composition, and nature of U.S. alternative work arrangements, and the need for more accurate and more frequent surveys and administrative data collection efforts (for example, Abraham et al. 2018a, 2018b; Farrell and Greig 2016a, 2016b).

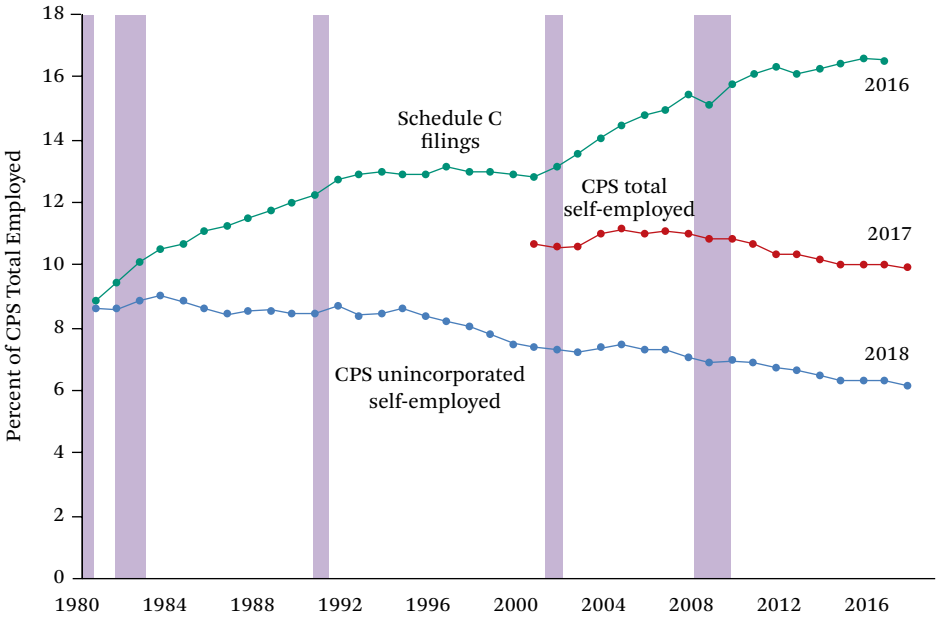
Following our undertaking of the 2015 RPCWS, the BLS secured funding for a new CWS, which was conducted as a supplement to the May 2017 CPS. The 2017 CPS CWS findings were released in June 2018 and indicate, in seeming contrast to our earlier findings from the 2015 RPCWS, a slight decline in the incidence of alternative work arrangements from 10.7 percent in 2005 to 10.1 percent in 2017 (BLS 2018), driven by a decline in the share of workers classified as independent contractors.

In this article, we revisit the measurement of trends in U.S. alternative work arrangements and try to reconcile our 2015 RPCWS results with the 2005 and 2017 CPS CWS findings. An analysis of all six CPS CWS from 1995 to 2017 indicates a modest upward trend in the incidence of alternative work arrangements of about 1 percent of the workforce from 2000 to 2017, after accounting for business cycle conditions. The higher incidence of alternative work arrangements in the 2015 RPCWS than the CWS can largely be accounted for by cyclical conditions (a tighter labor market in 2017 than 2015), differences in survey methods (the use of self-responses only in the RPCWS versus half the responses being from proxy respondents in the CPS CWS), and sampling issues with respect to the RAND web panel (an apparent oversample of multiple job holders in the RPCWS). After adjusting for these differences, the RPCWS suggests a 1 to 2 percentage point increase in the share of workers in alternative work from 2005 to 2015, rather than the 5 percentage point increase originally reported (see Katz and Krueger 2016).

Given the benefit of hindsight, we conclude that comparisons of trends in work arrangements across surveys with different sampling frames (as is the case for the CPS and RAND ALP) and at different points of the business cycle require extra caution, even after the best attempts to make the surveys as comparable as possible. Another lesson is that workers appear to have a difficult time accurately reporting on their work status in standard surveys, and the problems are likely greater for proxy respondents (see also Abraham and Amaya 2018). We conclude that the basic monthly CPS and CWS instrument may have difficulty capturing changes in the incidence of casual or intermittent work in the United States because respondent reporting errors are likely to be exacerbated during a period of changing work relationships.

A puzzle remains concerning the rising trend in self-employment measures in administrative tax data relative to a declining trend in worker self-reports of self-employment rates in primary jobs in the CPS as seen in figure 1. Schedule C filings as a share of CPS employment increased from 12.9 percent in 2000 to

Figure 1. Trends in Self-Employment



Source: Current Population Survey, 1980 to 2017 (BLS 2019); IRS Statistics of Income Publication 1304, table 1.3 (U.S. Department of Treasury, IRS 2019).

16.6 percent in 2016 driven by a rise in the share of nonemployers—Schedule C filers without any employees (documented in Abraham et al. 2018a, 2018b). In contrast, the share of employees in the CPS classified as self-employed, unincorporated continued a secular decline in the 2000s, falling from 7.5 percent in 2000 to 6.3 percent in 2016. We draw on an analysis of Internal Revenue Service (IRS) administrative data by Brett Collins and his colleagues to explore in more detail the importance of online gig economy, primary versus secondary jobs, and small jobs (low amounts of annual earnings) in accounting for the rise in the incidence of 1099 receipts and self-employment income in the 2000s (see Collins et al. 2019). The rise in the share of workers with 1099 receipts and self-employment incomes is driven by individuals with relatively small amounts of self-employment income where, over the course of a year, the earnings appear to be secondary and supplemental sources of income.

We also examine data on two new questions on electronically mediated work that were added to the 2017 CWS. The BLS concluded that more than two-thirds of affirmative responses to these new questions were false positives and recoded the data. In the recoded data, 1 percent of the workforce was classified as having performed electronically mediated work in the survey reference week, similar to our estimate from the RPCWS and to estimates by Diana Farrell, Fiona Greig, and Amar Hamoudi (2018, 2019) using comprehensive banking data. Finally, we present evidence from Amazon Mechanical Turk that suggests that the basic monthly CPS question on multiple job holding misses many instances of multiple job holding.

REWEIGHTING THE RAND SURVEY

For our 2016 paper (Katz and Krueger 2016), we worked with the RAND Institute to add questions on alternative work arrangements to the RAND ALP conducted in October and November 2015 resulting in the Rand-Princeton Contingent Worker Survey (RPCWS). The additional questions were closely patterned on the BLS's CWS questions. There are several important differences between the RPCWS and the CPS CWS, however. First, the RPCWS survey was conducted online, and the CWS is conducted in person or over the telephone. Second,

the RAND sample used in the RPCWS was recruited through a variety of methods (such as a group recruited for the University of Michigan internet panel, a random digit dial sample, and a snowball sample), and likely is less representative of the U.S. workforce than the CPS CWS sample. Third, all individuals self-respond about themselves in the RAND survey, whereas the BLS accepts proxy responses as well as self-responses in the CPS, including the CWS. Approximately half of responses to the CPS CWS are from proxy respondents on behalf of others in their household. Fourth, the U.S. economy and the labor market were not as strong in October and November 2015, when the RPCWS was conducted, as they were in May 2017, when the latest BLS CWS survey was conducted. Fifth, the sample size for the RPCWS survey is considerably smaller than that of the CPS.[1]

Did features of the RAND survey upwardly bias our estimate of the share of workers in alternative work arrangements compared with CWS? We first focus on the representativeness of the sample, and then turn to proxy respondents in the CPS and cyclical factors.

Table 1 reports the percentage of workers engaged in various measures of alternative work arrangements from the RPCWS survey and all the CWS surveys, for all respondents age eighteen and older, and for three separate age groups (eighteen to twenty-four, twenty-five to fifty-four, and fifty-five to seventy-five). Panel A shows workers who report being self-employed on their main job based on the basic monthly CPS class of worker question; panel B shows the alternative work categories based on CWS questions. 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. Contract workers are individuals who worked for a company that contracted out their services during the reference week.[2]

Our figures do not exactly match the published CWS results because we use a different sample (age eighteen and older) and because we use a different definition of contract workers to align with the RPCWS survey, but we were able to replicate the published CWS figures when we used the same sample restrictions and contract worker definition as the BLS.

The raw (unweighted) 2015 RPCWS tabulations are shown in column 1 of table 1 indicating 13.3 percent of the workforce in self-employment and 20.5 percent in alternative work arrangements. RAND developed a set of survey weights to adjust the ALP sample to more closely match the CPS based on age, gender, race, ethnicity, education, and household income groups. These weights did not consider differences in self-employment or multiple job holding rates in the RAND versus CPS samples, however. The RAND sample contained a substantially higher percentage of workers who identified as self-employed—11.6 percent—in the RCPWS after applying the RAND weight than the October 2015 CPS—9.6 percent. Consequently, we further adjusted the RAND weights to match the CPS self-employment rate in October 2015. Results using these weights, called Altwt., are presented in column 2 of table 1. We took this step to protect against the possibility that the RAND sample may overrepresent workers who are more likely to be in alternative jobs.

The estimates in column 2 were the core focus of our earlier study and suggested that 15.8

1. A sixth difference is that in some cases the skip logic in the RAND questionnaire slightly deviated from that used by BLS to compute statistics from the CWS, so we recomputed statistics from CWS to more closely mirror the RAND skip logic.

2. In the published CPS CWS tabulations, contract workers are further restricted to those "who are usually assigned to only one customer and usually work at the customer's worksite." We do not impose this restriction in our tabulations of the BLS CWS or RPCWS. Our results also differ from CWS because we restrict the CWS sample to those age eighteen and older who worked in the reference week to be comparable to RPCWS, whereas the official figures include those age sixteen and older who were employed (but not necessarily worked) in the reference week.

Table 1. Self-Employed and Alternative Work Arrangements

	Rand Unwt. (1)	Rand Altwt. (2)	Rand Altwt. 2 (3)	1995 CWS (4)	1997 CWS (5)	1999 CWS (6)	2001 CWS (7)	2005 CWS (8)	2017 CWS (9)
Panel A. Self-employed (basic monthly)									
Overall	13.3	9.6	9.2	11.6	11.3	10.6	10.2	10.8	9.9
18–24	5.1	5.9	6.5	2.7	2.4	2.2	1.8	2.0	2.3
25–54	9.2	7.3	6.9	11.8	11.2	10.5	10.3	10.6	9.1
55–75	19.9	18.1	17.0	20.2	20.2	18.9	17.8	18.0	15.7
Panel B. Alternative work arrangements									
Any arrangement									
Overall	20.5	15.8	13.7	10.1	10.2	9.6	9.4	10.8	10.5
18–24	8.5	6.4	5.7	6.7	6.6	6.5	6.5	7.4	6.2
25–54	17.1	14.3	11.9	10.0	10.1	9.5	9.2	10.4	9.9
55–75	26.5	23.9	21.5	14.1	14.1	13.3	13.6	15.1	14.4
Independent contractors									
Overall	11.7	8.4	7.2	6.4	6.4	6.1	6.1	7.0	6.7
18–24	3.4	2.1	2.4	1.5	1.5	1.6	1.7	2.2	2.1
25–54	8.1	6.8	5.5	6.6	6.5	6.2	6.1	6.8	6.2
55–75	17.8	15.8	13.8	10.5	10.4	9.7	10.5	11.3	10.4
On-call workers									
Overall	2.6	2.6	2.4	1.5	1.5	1.5	1.5	1.7	1.6
18–24	0.0	0.0	0.0	1.9	2.1	1.7	2.4	2.4	1.8
25–54	2.3	2.6	2.3	1.4	1.3	1.3	1.3	1.5	1.5
55–75	3.1	3.3	3.2	2.2	2.0	2.1	1.6	1.9	1.9

Temporary help agency workers									
Overall	2.0	1.6	1.7	1.0	1.0	0.9	0.9	0.9	0.9
18–24	1.7	1.7	1.9	1.8	1.8	1.9	1.5	1.4	1.3
25–54	2.3	1.6	1.6	0.9	0.9	0.8	0.8	0.8	0.9
55–75	1.5	1.7	1.7	0.6	0.8	0.7	0.9	0.7	0.8
Contract workers									
Overall	4.2	3.1	2.5	1.3	1.4	1.3	1.1	1.4	1.4
18–24	3.4	2.5	1.4	1.5	1.3	1.5	1.1	1.5	1.1
25–54	4.4	3.2	2.4	1.4	1.5	1.4	1.1	1.4	1.5
55–75	4.1	3.1	2.8	1.0	1.0	0.9	0.7	1.4	1.4
Observations	2,194	2,194	2,194	54,415	53,493	49,420	36,574	42,087	46,071
Unemployment rate (SA)	5.0	5.0	5.0	5.4	5.2	4.4	4.2	5.4	4.3

Source: Authors' compilation based on the CPS CWS supplements for 1995, 1997, 1999, 2001, 2005, and 2017 (U.S. Census Bureau 2019) and the RPCWS (Katz and Krueger 2019).

Note: The sample includes employed individuals who are age eighteen or older. Panel A reports the percent of employed workers who are self-employed. Panel B reports the percent of employed who are independent contractors, on-call workers, temporary help agency workers, and contract workers. Any alternative work arrangement includes all of the listed categories in panel B. Individual categories may not add to the total due to rounding or changes in definitions that improve comparability between the RPCWS and CPS CWS. Column 1 reports unweighted figures from the 2015 RPCWS; column 2 uses a set of weights that accounts for the overrepresentation of self-employed workers; and column 3 uses a set of weights that further accounts for the overrepresentation of multiple job holders in the ALP, both relative to the October 2015 basic monthly CPS. Columns 4 through 9 are weighted using CPS final weights in panel A and CPS supplement weights in panel B.

percent of the U.S. workforce was in alternative work arrangements in their primary job in October and November 2015 (Katz and Krueger 2016). The implication was a large (5 percentage point) rise in the share working in alternative work arrangements from the 10.8 percent in the 2005 CWS (in column 8) to the 15.8 percent in the 2015 RPCWS. In contrast, the May 2017 CWS in column 9 yielded only 10.5 percent in alternative work arrangements.

Multiple job holding is another dimension in which the RAND sample does not match the CPS. In the unweighted RPCWS sample, 14.3 percent of workers reported multiple jobs and in the weighted sample 13.1 percent did. The corresponding figure from the October 2015 CPS is 5.2 percent. We did not previously adjust the RAND sample to match the CPS in terms of the proportion of workers who held multiple jobs, however.[3] Because multiple job holders may be more likely to work in alternative jobs, we created a new set of weights (Altwt. 2) that adjusted the Altwt. weights to down weight multiple job holders, and match the October 2015 CPS. Tabulations using these weights are reported in column 3 of table 1. Using the second set of weights causes the share of workers in alternative jobs to fall by 2.1 percentage points (from 15.8 percent to 13.7 percent), and accounts for 40 percent of the 5.3 percentage point gap between the RPCWS survey and the 2017 CWS in terms of the overall share of workers in alternative work arrangements.

The largest discrepancy in the share of workers in alternative jobs between the RPCWS survey and the CWS (either 2005 or 2017) occurs for the oldest group of respondents (those age fifty-five to seventy-five). Reweighting the RPCWS data to account for the oversampling of multiple job holders in the RAND survey shrinks the discrepancy for older workers, but it remains substantial (more than 7 percentage points higher in the 2015 RPCWS than in the 2017 CWS) and much larger than for those age eighteen to twenty-four (a 0.5 percentage point gap) or those age twenty-five to fifty-four (a 2 percentage point gap). A possible explanation for the age pattern in the discrepancy in the alternative work share in the RPCWS and the CWS is that internet panels, such as the RAND ALP, may be particularly unrepresentative of older Americans. The RPCWS seems to especially oversample elderly individuals who report themselves to be independent contractors, that category accounting for half of the discrepancy with the CWS. The higher incidence of temporary help agency and contract workers in the RPCWS is more similar for all three age groups.

CWS: CYCLE AND PROXY RESPONDENTS

The bottom row of table 1 reports the seasonally adjusted unemployment rate in each month when the RAND and CWS surveys were conducted. The unemployment rate was 1.1 percentage point lower when the latest CWS was conducted in May 2017 than when the previous CWS was conducted in February 2005, and 0.7 percentage point lower in May 2017 than when the October and November 2015 RPCWS was conducted. If a tighter job market increases the fraction of workers who are in traditional employment, then cyclical factors could affect comparisons of the share of workers in alternative work over time.

The unemployment rate averaged 4.3 percent in February 1999 and February 2001, the same as it was in May 2017. Thus a simple way to adjust for unemployment rate differences is to compare the average of the 1999 and 2001 CWS surveys with the 2017 CWS survey. The share of workers in alternative work arrangements rose by 1 percentage point from 1999–2001 to 2017, from 9.5 percent to 10.5 percent. A 0.6 percentage point increase in independent contractors was responsible for most of this rise.

Notice also that the unemployment rate was about the same when the CWS was conducted in 1997 and 2005, which provides another set of years to compare the growth in alternative work at similar points of the business cycle. Over this period, the share of workers in alternative jobs

3. To partly address this discrepancy in our earlier paper, in one set of results we compared the share of contract workers restricting the sample to single job holders (Katz and Krueger 2016). This narrowed the gap between the 2015 CWS and the RPCWS sample by 1 percentage point.

rose by 0.6 of a percentage point, again mainly because of a rise in independent contractors. These figures suggest that, cyclically adjusted, the share of independent contractors in the workforce is rising by 0.04 to 0.08 of a percentage point per year.

From 1997 to 1999, the unemployment rate fell by 0.8 of a percentage point and the CWS showed a 0.6 percentage point drop in the alternative work share. The decline in the unemployment rate between 2015 and 2017 was in the same ballpark, so the business cycle could perhaps account for 0.6 percentage point of the difference between the 2015 RPCWS and the 2017 CWS.

An alternative approach to examining trend versus business cycle factors in alternative work arrangements is to use all six CPS CWS from 1995 to 2017 shown in columns 4 to 9 in table 1. We regress the overall alternative work arrangements rate on the (seasonally adjusted) unemployment rate in the month of the survey and a linear (yearly) time trend yielding a coefficient (standard error) on the unemployment rate of 0.901 (0.076) and on the trend of 0.0596 (0.0055).[4] The 0.7 percentage point gap in unemployment between the October-November 2015 RPCWS and the May 2017 CWS multiplied by coefficient for unemployment also yields a 0.6 percentage point higher alternative work arrangements rate in the 2015 RPCWS than in the 2017 CWS from a weaker labor market. The regression also implies a trend rise in the alternative work arrangements rate of 0.06 of a percentage point per year.

Independent contractor status in CWS is derived from different questions that were asked separately of the self-employed and wage and salary workers. Those who identify as self-employed in the basic monthly class of worker question are asked, "Are you self-employed as an independent contractor, independent consultant, freelance worker, or something else?" Those who are classified as wage and salary workers in the basic monthly question are asked, "Last week, were you working as an independent contractor, an independent consultant or freelance worker? That is, someone who obtains customers on their own to provide a product or service."[5] Following BLS, the results in table 1 combine the two groups using the recoded data. From 1999 through 2001 to 2017, both groups contributed 0.3 percentage points to the overall rise in independent contractors of 0.6 percentage points.

One puzzle evident in the CPS data is that, although the cyclically adjusted share of independent contractors in CWS is rising slowly over time, the share of workers who report themselves as self-employed in the basic CPS is declining over the same periods. The basic monthly CPS shows a particularly sharp decline in self-employment among older workers. A partial reconciliation of the divergent trends in self-employment in the basic monthly CPS and the CWS is that the decline in self-employment in the basic monthly CPS largely reflects a decline in the self-employment of those who are employers (small business owners) rather than of the nonemployer self-employed (Hipple and Hammond 2016). And the self-employed who are employers are not counted as independent contractors in the CWS.

Proxy Respondents

Proxy respondents are likely to be less knowledgeable about the employment status of the person for whom they are reporting than that person, and possibly less willing to provide answers that lead to supplemental questions about alternative work arrangements as well. This could cause a mode bias wherein proxy respondents are more likely to report that a household member is employed in a traditional

4. The analogous regression on the published BLS CWS share of all workers (age sixteen and older) in alternative work arrangements leads to almost identical estimates of a 0.882 (0.132) effect of unemployment and a 0.0525 (0.0095) time trend coefficient.

5. The RAND survey combined these two questions and asked it of everyone: "Last week, were you working or self-employed as an independent contractor, an independent consultant, or a freelance worker? That is, someone who obtains customers on their own to provide a product or service." In the various years of the CWS, between 86 percent and 88 percent of the independent contractors were self-employed according to the class of worker question.

Table 2. Proxy Respondents and Alternative Work Arrangements

	Proxy Respondents		Alternative Work Arrangements	
	All Respondents (1)	Independent Contractors (2)	Self-Respondents (3)	Proxy Respondents (4)
1995	51.1	46.5	10.9	9.2
1997	50.6	43.9	11.2	9.0
1999	50.8	44.9	10.6	8.5
2001	50.8	44.0	10.4	8.3
2005	50.1	43.9	11.8	9.6
2017	48.9	41.0	11.8	8.9

Source: Authors' calculations based the CPS CWS supplements for 1995, 1997, 1999, 2001, 2005, and 2017 (U.S. Census Bureau 2019).

Note: Column 1 reports the percent of CWS respondents who were proxy respondents and column 2 reports the percent of independent contractors who were proxy respondents. Columns 3 and 4 report the percent of self-respondents and proxy respondents, respectively, who reported being in an alternative work arrangement. All columns are weighted using supplement weights.

job (as opposed to in an alternative work arrangement) than that household member would be had he or she been a self-respondent. Table 2 reports various statistics on proxy and self-respondents from the CWS. The share of responses in the CWS from proxy respondents has hovered close to 50 percent in all the waves of the survey; the RAND survey accepts only self-responses. Responses from proxies totaled 51.1 percent in 1995 and 48.9 percent in 2017. Katz and Krueger (2019) find that proxy respondents were about 2 percentage points less likely to report being in an alternative work arrangement than were self-respondents in the 1995 and 2015 CPS CWS surveys. It is not clear whether the survey mode has a causal effect on responses, or whether self-responders are truly more likely to be engaged in an alternative work arrangement (perhaps because they are likely to work from home, and therefore to be available to self-respond as self-employed when an interviewer visits their home or calls). Nonetheless, the 2 percentage point differential persisted after we controlled for respondents' educational attainment, experience, race, and sex in a linear probability regression model. Table 2 indicates that this gap has grown to 2.9 percentage points in 2017.

If the difference in the alternative work percentage is interpreted as a survey mode effect, that half of CPS respondents are proxy respondents could account for 1.5 percentage point of the difference between the 2015 RPCWS survey and the 2017 CWS.

Furthermore, the percentage of CWS self-respondents in alternative jobs shows a somewhat stronger upward trend over time than the corresponding percentage for proxy responses. The pattern is particularly apparent for independent contractors, where the share who are proxy respondents has fallen from 46.5 percent in 1995 to 41 percent in 2017. The entire drop from 2005 to 2017 in the share of workers in alternative jobs occurred among proxy respondents in the CWS. The rate held steady for self-respondents.

Summing Up

We can account for just over 4 percentage points of the 5.3 percentage point difference in the 15.8 percent share of the workforce in alternative work arrangements between the 2015 RPCWS (reported in Katz and Krueger 2016) and the 10.5 percent in the 2017 CWS, as follows: 2.1 are a result of differential sample representativeness reflected in greater multiple job holding in the RPCWS, 1.5 is due to the use of proxy respondents in CWS, and 0.6 arises from differences in the state of the business cycle between 2015 and 2017.

TRENDS IN ADMINISTRATIVE TAX DATA

Trends in self-employment have been diverging in survey and administrative tax data since 1980. The contrast is particularly striking in the 2000s (as illustrated in figure 1). Self-employment based on worker self-reports in the CPS declined in the 2000s, the drop driven by a decline in the unincorporated self-employed, which fell 1.2 percentage points from 2000 to 2016. The number of Schedule C filings as a share of employment, however, continued rising by 3.7 percentage points from 2000 to 2016. Katharine Abraham and her colleagues (2018b) also report a rise since 2000 in several administrative measures of self-employment for tax and census data, including the share of self-employed nonemployers, that is, individuals with more than $1,000 in business income but no employees. Abraham and her colleagues find, using linked household survey and administrative tax data for the same individuals, a noticeable increase in the share of individuals with self-employment income reported to the IRS but not in the CPS. Emilie Jackson, Adam Looney, and Shanthi Ramnath (2017) document that the share of the workforce with self-employment income (who are Schedule SE filers) increased from 10.1 percent in 2000 to 12.2 percent in 2014. Finally, Lawrence Mishel (2018), using publicly available Social Security Administration data, finds that the share of individuals with taxable earnings who have self-employment income increased from 9.6 percent in 2000 to 11.7 percent in 2015. The CWS and RPCWS data seem more consistent with the tax data in showing a modest rise in independent contractors as a share of employment in the 2000s (as seen in table 1).

A potential reconciliation of the divergent trends in CPS and administrative tax measures of self-employment could be that the CPS measure covers only primary jobs, but the tax measures include individuals with self-employment from secondary jobs or activities. Mishel's (2018) tabulations, however, imply that the share of those with any taxable earnings who only had self-employment income increased by 1 percentage point, from 5.8 percent in 2000 to 6.8 percent in 2015.

Collins and his colleagues (2019) use micro administrative tax data from the IRS covering the universe of tax returns to attempt to reconcile the different trends in self-employment and alternative work arrangements and to explore the role of gig work mediated by online platforms. They report a noticeable rise in the 1099 economy in the 2000s, the share of earners with income from alternative nonemployee work arrangements (1099 income from any 1099-MISC nonemployee compensation or from gig economy company income on a 1099K) increasing by 1.9 percentage points—from 9.9 percent in 2000 to 11.8 percent in 2016. A rapidly rising share of individuals receiving 1099 income from gigs mediated through online labor platforms from 2013 to 2016 accounts for more than half the growth of the 1099 workforce in the 2000s.

Collins and his colleagues (2019) explore in detail the patterns and distribution of 1099 and other self-employment earnings in tax data. They find that the rise in the incidence of 1099 income is driven by individuals with 1099 income as secondary income or with low or modest levels of 1099 income (less than $2,500 per year). The share of the workforce earning a full-time, full-year income at the minimum wage ($15,000 or more) from 1099 income or self-employment (Schedule SE) income as their primary source of income has not noticeably risen since 2000. Collins and his colleagues conclude from administrative tax data that the rise in online platform work for labor is driven by earnings that are secondary and supplemental sources of income. Using banking data from de-identified Chase checking accounts, Farrell, Greig, and Hamoudi (2019) similarly conclude that the rise in the incidence of earnings from the online platform economy from 2012 to 2018 largely reflects secondary and occasional sources of income.

Thus, assuming no rise in the underreporting of the amount of self-employment income in tax data, the Collins and colleagues (2019) findings suggest that self-employment as a primary income source has not been rising for workers with strong labor-force attachment over the course of a year. These results are reinforced by Mishel's (2018) conclusion that much of the rise of the incidence of self-employment reflects side activities by freelancers as self-employment earnings as a share of

total earnings increased by much less than the share of workers with any self-employment income from 2000 to 2015.

MEASURING MULTIPLE JOB HOLDERS

As mentioned, the RAND survey indicates a much higher rate of multiple job holding than the CPS. Since January 1994, the basic monthly CPS has asked respondents about multiple job holding.[6] Multiple job holding is defined as working on more than one job during the survey reference week. BLS does not count individuals who were self-employed on their primary job and were either self-employed or an unpaid family worker on their second job as multiple job holders, which excludes workers who simultaneously work as independent contractors on Lyft and TaskRabbit, for example. Someone who reports moonlighting as a Lyft driver in addition to having a traditional W-2 job would be counted as a multiple job holder.

Despite the rise of the online platform economy, the monthly CPS shows a secular decline in multiple job holding. The percent of employees who were multiple job holders fell from an annual peak of 6.2 percent in 1996 to 4.9 percent in 2013. In the first half of 2018, 5 percent of workers were classified as multiple job holders.[7] This decline might be viewed as an indication that alternative work arrangements are not rising.

We designed a survey experiment using 2,291 participants age eighteen and older recruited on Amazon Mechanical Turk (MTurk) to explore whether the standard CPS-type question on multiple job holding fails to capture a substantial amount of the secondary work that takes place. The survey was conducted online in late March 2015, and respondents were paid $3 for their participation. Median survey completion time was seven minutes. The sample was not chosen to be representative, but instead was selected to oversample workers who worked on multiple jobs, often on a casual basis. Our motivation was to determine whether relatively many multiple job holders neglect to report that they worked on multiple jobs based on the standard CPS question, and to probe whether multiple job holders could be identified if we asked more specifically about overlooked work activities in the previous week.

Specifically, along the lines of the CPS, we asked, "Last week did you have more than one job or business, including part time, evening or weekend work?" A total of 39 percent of MTurk participants volunteered that they had more than one job or business in the previous week.

After asking multiple job holders how many jobs they held in the previous week, we asked all respondents, "Did you work on any gigs, HITs or other small paid jobs last week that you did not include in your response to the previous question?" (A HIT is a human intelligence task and reflects standard usage for small online jobs.) We next asked respondents to describe any work that they omitted.

Table 3 provides a tabulation of the responses. Of those who did not indicate holding multiple jobs on the CPS-like question, 61 percent acknowledged that they failed to report working on a gig, HIT, or small job in the previous week. The omitted work was frequently tasks conducted on MTurk based on free-form descriptions, but also included work as writers, editors, teachers, dog sitters, and other freelance activities. If these workers are added to the multiple job holders, the percent of workers who are multiple job holders would almost double from 39 percent to 77 percent.[8]

Younger respondents were much less likely to acknowledge omitting secondary jobs. Indi-

6. The key question is this: "Last week, did (name/you) have more than one (job/job or business), including part time, evening or weekend work?"

7. Research has also found that multiple job holding rate is acyclic over time, and only weakly correlated with the unemployment rate across labor markets (Hirsch, Husain, and Winters 2016).

8. The data may also include some false positives: 9.8 percent of multiple job holders according to the CPS-type question reported that they held only one job in the previous week. Under the assumption that these answers are correct, the share of multiple job holders would be 72.6 percent, still indicating substantial undercounting of multiple job holders.

Table 3. Underreporting of Multiple Jobs

Failed to Report Gigs, HITs, or Other Small Jobs Last Week	Multiple Job Holder on CPS Question	
	No	Yes
No	38.6%	61.6%
Yes	61.4	38.4

Source: Authors' calculations based on an MTurk Survey on Workers in the Share Economy implemented on March 30–31, 2015 (Krueger and Freeland 2019).
Note: The sample size is 2,291 participants on MTurk. HITs are human intelligence tasks.

viduals with less than a college degree were also somewhat less likely to acknowledge omitting secondary jobs.

The MTurk sample is highly nonrepresentative, but this survey experiment demonstrates that the standard multiple job holding question in the basic monthly CPS is susceptible to underreporting. Abraham and Ashley Amaya (2018) similarly find in a survey experiment conducted with an MTurk sample in 2016 that additional probing identified a substantial amount of informal work activity not captured by the CPS employment questions, implying an understatement of the overall employment rate and the multiple job holding rate. Although it seems clear that the CPS fails to capture much secondary work activity, leading to an understatement of the multiple job holding rate, the MTurk point-in-time surveys in 2015 and 2016 do not allow one to make assessments of whether there is a trend in the rate of understatement of multiple job holding.

Abraham and Amaya (2018) suggest that proxy respondents in the CPS may not be aware of multiple job holding arrangements for the worker on which they report. In the basic monthly CPS, we find that self-respondents are 25 to 40 percent more likely than proxy respondents to report holding multiple jobs, depending on the month. It is unclear, however, whether this difference represents a proxy respondent reporting effect or a real difference in work behavior.

ELECTRONICALLY MEDIATED WORK

The May 2017 CWS included two new questions on electronically mediated work to measure participation in the online platform economy. The questions were as follows:

Introduction. I now have a few questions related to how the internet and mobile apps have led to new types of work arrangements. I will ask first about tasks that are done in person and then about tasks that are done entirely online.

Q1. Some people find short, IN-PERSON tasks or jobs through companies that connect them directly with customers using a website or mobile app. These companies also coordinate payment for the service through the app or website.

For example, using your own car to drive people from one place to another, delivering something, or doing someone's household tasks or errands.

Does this describe ANY work you did LAST WEEK?

Yes

No

Q2. Some people select short, ONLINE tasks or projects through companies that maintain lists that are accessed through an app or a website. These tasks are done entirely online and the companies coordinate payment for the work.

For example, data entry, translating text, web or software development, or graphic design.

Does this describe ANY work you did LAST WEEK?

Yes

No

In addition, in the case of affirmative responses to either question, a follow-up question asked whether the work was for the respondent's main job, a second job, or other additional work.

About 3 percent of workers reported that they had performed some work in person or remotely (or both) through an online intermediary in the reference week. After an extensive review, however, the BLS "determined that these questions did not work as intended and had a large number of incorrect 'yes' answers."[9] The BLS suspected that a large number of affirmative responses were false positives and recoded the originally reported responses to these questions using a confidential micro data file that included respondents' verbatim descriptions of their job duties, employer name, industry, occupation, and other information. (A handful of workers were reclassified in the opposite direction.) The BLS has made both the original reports and the recoded data available, although not all the data that were used to recode the originally reported responses have been made public. Using the BLS "as reported" and "reclassified" data, the false positive rate was 68.5 percent to question 1 (in-person tasks) and 76.4 percent to question 2 (remote tasks). Combining both questions, BLS recoded 69 percent of those who reported yes to at least one of the electronically mediated work as no.[10] Thus, in the recoded data, only 1 percent of the workforce is classified as working through an online intermediary.

Workers in some industries were much more likely to be reclassified as false positives than in others. For example, among those who originally reported themselves as finding some work through an online platform, 95 percent of workers whose primary industry was public administration, 94 percent in manufacturing, and 91 percent in construction were reclassified as not working online. By contrast, only 33 percent of workers in transportation and warehousing were reclassified as false positives.

The apparently high rate of false positive classification errors, even in the transportation industry, where Uber, Lyft, and other ridesharing platforms are used by a substantial proportion of workers, is indicative of the difficulty inherent in assessing the percentage of the workforce in alternative work arrangements from household survey data. Nonetheless, as with the BLS's recoded CWS data, both Katz and Krueger (2016, 2019) and Farrell, Greig, and Hamoudi (2019) estimate that only 0.5 percent to 1.5 percent of the workforce was engaged in online work in a given reference week or month for sample periods covering late 2015 to early 2018.

CONCLUSIONS

We conclude that there has likely been a modest upward trend in the share of the U.S. workforce in alternative work arrangements (independent contractors, contract workers, temporary help agency workers, and on-call workers) during the 2000s based on the cyclically adjusted comparisons of the CPS CWS, measures using self-respondents in the CPS CWS, and measures of self-employment and 1099 workers from administrative tax data. The growth in alternative work arrangements is not as sharp as suggested by our comparison of the 2015 RPCWS and the 2005 CPS CWS if more consistent measures are compared over time (Katz and Kreuger 2016). Differences in survey methods between the CPS CWS and the RPCWS related to the use of proxy respondents in the CPS and the less representative nature of the RAND ALP than the CPS likely account for our 2016 overstatement in trend growth in alternative work arrangements.

Estimating the percentage of workers in alternative work in both primary and secondary jobs is a difficult task in household surveys. Because only a relatively small proportion of workers are currently working in specific alternative employment arrangements in any given week, and often for relatively modest amounts of income or short periods, respondent (or coder) misclassifications and other nonsampling errors are likely to exert a sizable impact on estimates. In view of the differential trends in the CWS between proxy and self-respondents, one suggestion from our analysis is that the BLS should consider only using self-responses for

9. See Current Population Survey Staff 2018.

10. Proxy respondents were only slightly more likely than self-respondents to be reclassified as false positives (70.0 percent versus 68.2 percent).

CWS because proxy respondents may not be knowledgeable.

Furthermore, given the difficulty of measuring alternative work and multiple job holding in household surveys, it might also be worthwhile for the BLS to probe more deeply involvement in secondary work, as in our MTurk experiment. Abraham and Susan Houseman (2019), using data from the Survey of Household Economics and Decisionmaking, find that over the course of a month about a quarter of adults engage in some informal work activity outside of a main job. Anat Bracha and Mary Burke (2019) similarly find in a Survey of Informal Work Participation, a supplement to Survey of Consumer Expectations of the Federal Reserve Bank of New York, that 19 percent of U.S. household heads had some form of informal labor earnings in 2015. The implication is that most informal casual work is not reported to the CPS as a secondary job in response to the basic monthly multiple job holding question. A more deliberate approach to probing about nonstandard work activities and secondary jobs in the CPS appears warranted.

When it comes to measuring trends over time, an important lesson from our review of the evidence is that it is essential to hold constant survey modes, questionnaires, and survey design features to guard against the risk that nonsampling errors dominate time-series comparisons. A similar lesson was clear from the 1992–1993 CPS parallel overlap sample, which was used to evaluate the effects of the 1994 CPS redesign on employment, labor force, and unemployment (Polivka and Miller 1998). Although the fraction of workers employed in alternative work could be biased in any given year, repeated measures could nonetheless reflect actual changes over time if survey methods are held constant. In this regard, it could be a useful exercise to conduct another wave of the RPCWS survey in the future to assess trends in alternative work.

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