What May Be Driving Growth In the “Gig Economy?”

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Disclaimer

Any opinions and conclusions expressed herein are those of the authors and do not necessarily represent the views of the U.S. Census Bureau.

All results have been reviewed to ensure that no confidential information is disclosed (DRB Bypass #’s CBDRB-2018-CDAR-041, -068, -076, DRB-B0098-CDAR-20180626, and DRB-B0045-CED-20190425).
Why all the interest in the “Gig Economy?”
Why so much interest?

• Introduction and rapid growth of digital marketplaces
  • Matching buyers and sellers of products (Etsy, Ebay)
  • Matching service providers and seekers (VRBO, Airbnb, TaskRabbit, Upwork, Uber and Lyft)
• Short duration employment opportunities facilitated by the internet, mediated through these online platforms
• Is new technology producing an accelerated pace of change in the organization of work?
Why So Much Interest?

Popular perception of dramatic growth in number of workers with no long-term connection to a particular business (“gig workers”)

Important for Workers
- workers have more labor market flexibility
- may bear more risk in terms of health insurance coverage, retirement savings, legal rights and protections

Ability to Track Workforce
Gig jobs may not be captured by traditional workforce measures. Growth in gig work may correspond to increasing inaccuracy of size and growth of workforce and productive inputs of businesses.
1) How many workers participate in the gig economy?
2) How many jobs?
3) How has this changed over time?
4) Is gig employment large enough to matter for measures of employment?
5) Do we get the same answers from household survey data, business data and tax data?
Big Questions: Who Participates, How, and Why?

1. Traits of gig workers
   1) Age
   2) Education
   3) specific locations and sectors

2. How do workers use gig jobs?
   1) Primary or secondary source of earnings?
   2) Stopgap following job loss?
   3) Attracted by new opportunity?
   4) Income smoothing?
Big Questions: Impact on Other Workers and Sectors?

1. Is there an impact on other workers already present in an industry/location before gig jobs introduced?

2. Do we observe an impact on earnings of these workers if they remain employed?
Defining and Measuring Gig Employment
Contributing Works


Defining Gig Employment

Borrowed from the music industry, a “gig” refers to a job with no long-term connection to a particular business. Gig workers:

- are employed on a particular task or for a defined time.
- have no implicit or explicit contract for a continuing work relationship
- they are a subset of contingent workers and can include:
  - Freelancers
  - Day laborers
  - Some contract workers
Measuring Gig Employment

- Data from specific companies:
  - Issue: limited if any information about placing this labor market activity into the broader context of an individual’s activities

- Transactions level data (deposits into financial accounts)
  - Issues: questions about representativeness, no data on expenses, and may be missing some transactions

- Survey Data
  - CPS Contingent Worker Supplement (CWS) was asked in 1995, 1997, 1999, 2001, 2005, & 2017, so missing important years when gig employment has been increasing
  - CWS primarily asks about main jobs, so misses secondary work

- Tax Data
  - 1099-misc, 1040 schedule C, 1040 schedule SE
  - Annual reference frame
  - Some income may not be reported to tax authorities
Casting a Wider Net: Unincorporated Self-employment

Gig workers are a subset of the unincorporated self-employed

- Measured in household surveys
- Should in theory file a Schedule C and possibly Schedule SE

Trends in unincorporated self-employment from both household surveys and tax data are a first place to look for trends in gig employment
Survey data show that self-employment is relatively low and unchanging over time.

Source: Abraham, Haltiwanger, Sandusky, and Spletzer (2017)
Self-employment Rates: Survey vs Tax Data

Tax data suggest self-employment jobs may be growing

Source: Abraham, Haltiwanger, Sandusky, and Spletzer (2017)
Exploring Divergence between Survey and Tax Data on Self-employment

• The best way to understand discrepancies between household survey data and administrative tax data is to compare information from the two sources for the same set of people.

• Growing group of survey respondents who file taxes for self-employment activity not captured in survey. This group contains:
  1. **Missing Secondary Job:** Primary job is Wage and salary in both survey and tax data, do not report secondary SE job to survey,
  2. **Misclassified jobs:** Wage and salary on survey, self-employed in tax data,
  3. **Report no employment** on survey
Using Tax Data to Shed Light on Gig Employment
Census Nonemployer Statistics

- Nonemployers are:
  - businesses that have no paid employment or payroll,
  - are subject to federal income taxes,
  - have receipts of $1,000 or more ($1 or more for the Construction sector)
- Most are self-employed individuals operating sole proprietorships
- Nonemployer statistics originate from Schedule C filings to the Internal Revenue Service
Schedule C

**SCHEDULE C (Form 1040)**

**Profit or Loss From Business**

(Proprietorship)

<table>
<thead>
<tr>
<th>Name of proprietor</th>
<th>Social security number (SSN)</th>
</tr>
</thead>
</table>

**A** Principal business or profession, including product or service (see instructions)

**B** Enter code from instructions

**C** Business name. If no separate business name, leave blank.

**D** Employer ID number (EIN) (see instr.)

**E** Business address (including suite or room no.)

City, town or post office, state, and ZIP code

**F** Accounting method: (1) ☐ Cash (2) ☐ Accrual (3) ☐ Other (specify)

**G** Did you “materially participate” in the operation of this business during 2017? If “No,” see Instructions for limit on losses.

**H** If you started or acquired this business during 2017, check here.

**I** Did you make any payments in 2017 that would require you to file Form(s) 1099? (see Instructions)

**J** If “Yes,” did you or will you file required Forms 1099?

**Part I. Income**

1. Gross receipts or sales. See Instructions for line 1 and check the box if this income was reported to you on Form W-2 and the “Statutory employee” box on that form was checked.

2. Returns and allowances

3. Subtract line 2 from line 1

4. Cost of goods sold (from line 42)

5. Gross profit. Subtract line 4 from line 3

6. Other income, including federal and state gasoline or fuel tax credit or refund (see Instructions)

7. Gross income. Add lines 5 and 6

**Part II. Expenses.** Enter expenses for business use of your home only on line 30.

8. Advertising

9. Car and truck expenses (see

10. Office expense (see instructions)

11. Pension and profit-sharing plans

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Economics and Statistics Administration
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Schedule C

| SCHEDULE C  
| Form 1040 |  |
| Profit or Loss From Business | (Sole Proprietorship) |
| Department of the Treasury | Internal Revenue Service (IRS) |

Go to www.irs.gov/ScheduleC for instructions and the latest information.
Attach to Form 1040, 1040NR, or 1041; partnerships generally must file Form 1065.

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A Principal business or profession, including product or service (see instructions)

C Business name. If no separate business name, leave blank.

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**Part II Expenses.**

Enter expenses for business use of your home only on line 30.

8 Advertising

9 Car and truck expenses (see

10 Apartment rent or lease

11 Home office expense (see instructions)

12 Office expense (see instructions)

13 Home office expense (see instructions)

14 fringe benefits

15 Insurance

16 Taxes (including property)

17 Utilities

18 Office expense (see instructions)

19 Pension and profit-sharing plans
Schedule C

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(Sole Proprietorship)


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**Social security number (SSN)**

**Enter code from instructions**

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### Schedule C Industry Codes

#### Principal Business or Professional Activity Codes

These codes for the Principal Business or Professional Activity classify sole proprietorships by the type of activity they are engaged in to facilitate the administration of the Internal Revenue Code. These six-digit codes are based on the North American Industry Classification System (NAICS).

Select the category that best describes your primary business activity (for example, Real Estate). Then select the activity that best identifies the principal source of your sales or receipts (for example, real estate agent). Now find the six-digit code assigned to this activity (for example, 531210, the code for offices of real estate agents and brokers) and enter it on Schedule C or C-EZ, line B.

**Notes:** If your principal source of income is from farming activities, you should file Schedule F.

#### Accommodation, Food Services, & Drinking Places

1. **Accommodation**
   - 721310 Rooming & boarding houses, dormitories, & workers' camps
   - 721210 RV (recreational vehicle) parks & recreational camps
   - 721110 Traveler accommodation (including hotels, motels, & bed & breakfast inns)

2. **Food Services & Drinking Places**
   - 722514 Cafeterias & buffets
   - 722513 Limited-service restaurants
   - 722515 Snack & non-alcoholic beverage bars
   - 722511 Full-service restaurants
   - 722512 Limited-service restaurants
   - 722330 Special food services (including food service contractors & caterers)

#### Arts, Entertainment, & Recreation

1. **Amusement, Gambling, & Recreation Industries**
   - 713100 Amusement parks & arcades
   - 713200 Gambling industries
   - 713900 Other amusement & recreation services (including golf courses, skiing facilities, marinas, fitness centers, bowling centers, skating rinks, miniature golf courses)

2. **Museums, Historical Sites, & Similar Institutions**
   - 712100 Museums, historical sites, & similar institutions
   - 721100 Performing Arts, Spectator Sports, & Related Industries
   - 711410 Agents & managers for artists, athletes, entertainers, & other public figures
   - 711510 Independent artists, writers, & performers
   - 711100 Performing arts companies
   - 711300 Promoters of performing arts, sports, & similar events
   - 711210 Spectator sports (including professional sports clubs & racetrack operations)

#### Educational Services

1. **611000 Educational services (including schools, colleges, & universities)**

#### Finance & Insurance

1. **Credit Intermediation & Related Activities**
   - 522100 Depository credit intermediation (including commercial banking, savings institutions, & credit unions)
   - 522200 Nondepository credit intermediation (including sales financing & consumer lending)
   - 522300 Activities related to credit intermediation (including loan brokers)

2. **Insurance Agents, Brokers, & Related Activities**
   - 524210 Insurance agencies & brokerages
   - 524290 Other insurance related activities

#### Manufacturing

1. **315000 Apparel mfgrs.**
2. **312000 Beverage & tobacco product mfgrs.**
3. **334000 Computer & electronic product mfgrs.**
4. **335000 Electrical equipment, appliance, & component mfgrs.**
5. **332000 Fabricated metal product mfgrs.**
6. **337000 Furniture & related product mfgrs.**
7. **333000 Machinery mfgrs.**
8. **339110 Medical equipment & supplies mfgrs.**
9. **322000 Paper mfgrs.**
Nonemployer Statistics (NES)

NES is an annual series that provides subnational economic data for businesses that have no paid employees and are subject to federal income tax. This series includes the number of businesses and total receipts by industry.

Latest

2016 County Business Patterns Shows Overall Growth in Employment
April 19, 2016
Construction led all sectors in the largest rate of employment growth with an increase of 5.0 percent from 2015 to 2016, according to new economic statistics.

Transit and Ground Passenger Transportation Increased in 2015
May 25, 2017
Nonemployers have grown at a 2.6% average annual rate, 1997-2015

For comparison: CES total nonfarm employment has grown at a 0.8% average annual rate, 1997-2015.
Nonemployer data are published by Legal Form of Organization since 2008:
- Corporations
- S-Corporations
- Sole Proprietors
- Partnerships

We can replicate the sole proprietor statistics with our microdata, 2010-2016.
We focus on self-employment in industry 4853 “Taxi and Limousine Services”

An industry where development of new technologies has lowered the barriers to entry

Substantial recent growth:
- 2013: ↑ 21,494 (11%)
- 2014: ↑ 72,305 (32%)
- 2015: ↑ 184,185 (62%)
- 2016: ↑ 220,261 (46%)
Published Nonemployer Statistics: Ridesharing Industry

In industry 4853 (taxi drivers), almost all nonemployers are sole-proprietors.
Do Rideshare Drivers Identify as Self-Employed on Survey?

We are able to link the 2012-2015 ridesharing nonemployers to their responses in the CPS-ASEC.

<table>
<thead>
<tr>
<th>Year</th>
<th>Non-employers</th>
<th>Nonemployers SE in CPS-ASEC</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>194,000</td>
<td>48,500</td>
<td>25%</td>
</tr>
<tr>
<td>2013</td>
<td>219,000</td>
<td>40,000</td>
<td>18%</td>
</tr>
<tr>
<td>2014</td>
<td>320,000</td>
<td>59,000</td>
<td>18%</td>
</tr>
<tr>
<td>2015</td>
<td>489,000</td>
<td>77,000</td>
<td>16%</td>
</tr>
</tbody>
</table>
Why are we focused on Industry 4853?

Industry 4853 is unique in exhibiting phenomenal growth
Table below is industries that are large (2M+) or have large growth (100K+)

<table>
<thead>
<tr>
<th>NAICS</th>
<th>Level 2016</th>
<th>Growth 2012-2016</th>
<th>Growth 2012-2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>230</td>
<td>2,471,026</td>
<td>124,228</td>
<td>5.3%</td>
</tr>
<tr>
<td>485</td>
<td>869,052</td>
<td><strong>621,116</strong></td>
<td><strong>250.5%</strong></td>
</tr>
<tr>
<td>531</td>
<td>2,595,577</td>
<td>287,464</td>
<td>12.5%</td>
</tr>
<tr>
<td>541</td>
<td>3,441,179</td>
<td>228,977</td>
<td>7.1%</td>
</tr>
<tr>
<td>561</td>
<td>2,064,328</td>
<td>80,894</td>
<td>4.1%</td>
</tr>
<tr>
<td>611</td>
<td>717,924</td>
<td>114,469</td>
<td>19.0%</td>
</tr>
<tr>
<td>711</td>
<td>1,221,596</td>
<td>146,990</td>
<td>13.7%</td>
</tr>
<tr>
<td>812</td>
<td>2,720,918</td>
<td>160,955</td>
<td>6.3%</td>
</tr>
<tr>
<td>Total</td>
<td>24,813,048</td>
<td>2,077,133</td>
<td>9.1%</td>
</tr>
</tbody>
</table>
Using Published Nonemployer Statistics to Explore Impact of Gig Economy in an Industry/Location

- Track number of nonemployers and total receipts in a particular industry and location (state, county, MSA, CSA)
- Track growth or declines in these numbers over time
- Add to wage and salary employment for a county and industry group to get a measure of total jobs
- Track share of total jobs that are not wage and salary jobs
Learning More about Gig Economy
Through Data Integration:

Rideshare Driver Example
Contributing Work

“Driving the Gig Economy”
What can we learn from data integration?

We add value by linking nonemployer sole proprietors in NAICS 4853 in years 2010-2016:

- To demographics (age, gender, race and ethnicity, foreign-born, education . . .)
- To wage and salary earnings from the Longitudinal Employer-Household Dynamics Data (LEHD, all states + DC)

We link the 2010-2016 Nonemployer microdata across time

- Define entrants and incumbents
- Define annual earnings growth from both self-employment and wage and salary employment
Rideshare Example:
Who is entering sector 4853?
Nonemployer Descriptive Statistics

Industry NOT 4853:
Percent Foreign Born

- 2011 Incumbents
- 2011 Entrants
- 2012 Entrants
- 2013 Entrants
- 2014 Entrants
- 2015 Entrants
- 2016 Entrants
Industry becoming composed of lower percentage foreign born over time

Industry NOT 4853: Percent Foreign Born

Industry 4853: Percent Foreign Born


Industry composed of increasing share female over time

Industry NOT 4853:
Percent Female

Industry 4853:
Percent Female

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Industry becoming younger over time

Industry NOT 4853:
Percent Age<35

Industry 4853:
Percent Age<35
Industry becoming less non-white over time

Industry NOT 4853: Percent Nonwhite

- 2011 Incumbents
- 2011 Entrants
- 2012 Entrants
- 2013 Entrants
- 2014 Entrants
- 2015 Entrants
- 2016 Entrants

Industry 4853: Percent Nonwhite

- 2011 Incumbents
- 2011 Entrants
- 2012 Entrants
- 2013 Entrants
- 2014 Entrants
- 2015 Entrants
- 2016 Entrants
Entrants increasingly likely to combine self-employment with wage and salary work
Gross receipts for new entrants falling over time

Industry NOT 4853: Gross Receipts

Industry 4853: Gross Receipts
Net Receipts for new entrants falling over time

Industry NOT 4853:
Net Receipts

Industry 4853:
Net Receipts
Taking Stock

Introduction of online ridesharing platforms has lowered cost of entry to self-employment and has led to significant changes in the Taxi and Limousine Services industry

- Characteristics of ridesharing industry different from other Nonemployer industries
- Characteristics of new drivers different from those of traditional taxi drivers
- New drivers much more likely to have wage and salary work
Rideshare Entry: A Closer Look

What Drives Entry?

“Pull” vs “Push” factors
Rideshare Entry

Participants may be “pushed” into self-employment by economic setbacks or maybe be “pulled” in by opportunity.

- Does displacement “push” laid-off workers into self-employment?
  - Use LEHD UI wage records to measure displacement from a job – a separation from a firm where there was a mass displacement

- Does the availability of ridesharing “pull” in potential drivers?
  - Lowering of barriers to entry into NAICS 4853
  - Proxied by date that ride sharing platform companies entered CBSA where a person lives
What is a CBSA?

A core-based statistical area (CBSA) is a U.S. geographic area that consists of one or more counties (or equivalents) anchored by an urban center of at least 10,000 people plus adjacent counties that are socioeconomically tied to the urban center by commuting.

Approx. 935 CBSAs.
Rideshare Entry, Displacement, and Rideshare Opportunities

- Rich (anonymized) data allow us to explore factors that lead people to become a nonemployer sole proprietor in NAICS 4853

- Do “push” and “pull” factors increase the likelihood someone becomes a rideshare driver?
  
  **Push**: \( = 1 \) if individual was part of a mass layoff last year
  
  **Pull**: \( = \) Number of years Uber has been in CBSA

- We hold constant traits of worker and CBSA of residence.

**Challenge**: creating the sample of “eligible to enter”
Rideshare Entry: Who Is Eligible to Enter?

All US residents who are:

- old enough to drive in 2010-2015
- not currently NAICS 4853 nonemployers
- approx. 1.75 billion observations
Findings

Both displacement and number of years that Uber has been in the CBSA lead to increased likelihood that a person will enter industry 4853 self-employment.
Does Expansion of Rideshare Opportunities Impact Incumbent Taxi Drivers?

• Does Uber entry increase exit of incumbent taxi drivers?
• Does Uber entry decrease earnings of incumbent taxi drivers?
• Sample: Nonemployers in industry 4853 in 2010, followed until 2016
Findings

Number of years that Uber has been in the CBSA leads to increased probability of exit and lower earnings growth conditional on no exit
Summing Up

- Explored why the gig economy has received so much attention
- Identified traits of gig job and where to look for them in data-among self-employed
- Demonstrated survey and administrative data present very different pictures of the size and growth of the self-employed population
- Provided an introduction to Census Nonemployer Statistics and demonstrated how they may be used by anyone to characterize the self-employed in a particular industry and location.
Summing Up (continued)

- Linked nonemployer microdata over time and combined with traits of workers and other jobs they hold.
- Used the data to show how the introduction of online ridesharing platforms has led to significant changes in the Taxi and Limousine Services industry.
- Introduced data on US resident population to take a closer look at what drives entry and how rideshare presence impacts incumbent taxi drivers.
Findings:

- push and pull factors both play a role in decision to become a rideshare driver
- Introduction of rideshare does impact employment and earnings of incumbent taxi drivers
- Demonstrate that administrative data can, at relatively low cost and without sacrificing representativeness, be used to gain insight into the gig economy.
Next Steps…

- A lot of research using restricted access microdata.
- Designing public-use statistics from these research efforts just beginning.
- Data products from the Local Employment Dynamics program (Quarterly Workforce Indicators, Job-to-Job Flows) may serve as models.
- Input welcome!
Thank you. Questions and comments appreciated.

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