

Entrepreneurship and the Gig Economy: Evidence from U.S. Tax Returns*

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*The views presented are our own and do not necessarily reflect the views or official position of the United States Internal Revenue Service. This research is conducted through the Joint Statistical Research Program of the Statistics of Income Division of the IRS. All results have been reviewed to ensure that no confidential information is disclosed.

Motivation

- **Labor markets** play a central role in individuals' decision to enter **entrepreneurship**
 - ▶ Growing evidence about role of firm-specific financial distress or labor market downturns (Babina, 2020; Hacamo and Kleiner, 2022), and employment insurance (Hombert et al., 2020; Gottlieb et al., 2022)

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- **Gig economy** has disrupted **labor markets**
 - ▶ Platform intermediation of goods and services, including leasing, selling, services, and transportation
 - ▶ Transformed **income opportunities** for individuals (Abraham et al., 2018; Collins et al., 2019; Lim et al., 2019)
 - ▶ Characterized by **low entry costs** and **flexible hours**

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- We study the interaction between **participation in the gig economy** and **entrepreneurial activity** using novel data on the **universe of U.S. tax returns**

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3. Does the gig economy alter the **profiles of newly created firms**?
 - ▶ Provide **firm-level** evidence on the **sectoral distribution, performance, and growth** of newly created firms

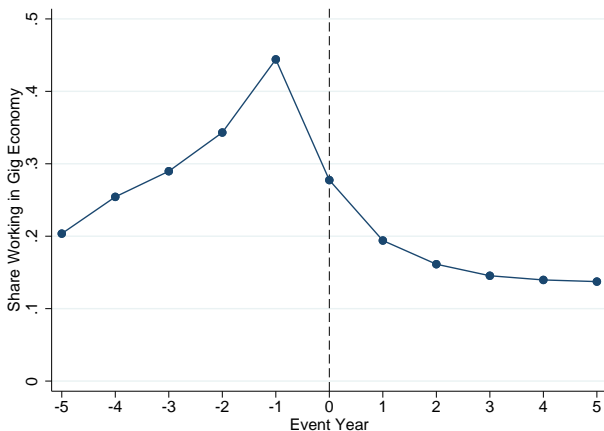
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3. Does the gig economy alter the **profiles of newly created firms**?
 - ▶ Provide **firm-level** evidence on the **sectoral distribution**, **performance**, and **growth** of newly created firms
4. Are entrepreneurs with experience in the gig economy **better off**?
 - ▶ Examine **earnings trajectory** of individuals

Gig Economy and Entrepreneurship

- **Setting:** Gig Economy in the U.S.
 - ▶ Substantial growth in the availability of gig opportunities over the past decade with **10M individuals** participating in the U.S.
- **Uncertainty** is an inherent element of entrepreneurship
- Several ways through which the gig economy reduces uncertainty faced by potential entrepreneurs and encourages entrepreneurial entry:
 - ▶ **Learning:** Opportunities in the gig economy likely mirror the experiences of an entrepreneur, allowing individuals to gain **industry-specific experience**
 - ▶ **Experimentation:** Allows individuals to experiment and supports risk-taking (Ewens, Nanda, and Rhodes-Kropf, 2018) either by providing an additional source of **startup capital** or by **lowering downside risk**, thus providing entrepreneurs with ability to smooth income (Barrios, Hochberg, and Yi, 2022)

Timing of Gig Work and Entrepreneurship



- ▶ Around 7-10% of individuals who establish firms in our sample participate in the gig economy
- ▶ Steady increase in share participating in the gig economy before starting a firm

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- Allows us to directly link **individuals** to **newly created firms**
 - ▶ Information on **entrepreneurs' characteristics**
 - ▶ Follow newly created firms from the time of founding and observe subsequent **growth** and **performance**
 - ▶ Observe **employees** at firms over time and **access to credit**

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- **Mechanisms:**
 - ▶ **Learning:** Gig workers start firms in **similar industries** and are more likely to rely on **independent contractors**
 - ▶ **Experimentation:** Gig workers create **larger and riskier firms** (less likely to survive, yet higher performance) that are more likely to access **external financing**

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- Entrepreneurs with prior experience in the gig economy appear to benefit in terms of **labor earnings growth**

Contribution

1. Role of Entrepreneurship for Economic Growth (Haltiwanger et al., 2013)
 - ▶ Multiple factors influence entrepreneurial entry, including capital constraints (e.g., Evans and Jovanovic, 1989) and regulation (e.g., Black and Strahan, 2002)
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2. The Economic Effects of the Gig Economy
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3. Role of Labor Markets for Entrepreneurship (Babina, 2020; Hacamo and Kleiner, 2022; Hombert et al., 2020; Gottlieb et al., 2022)

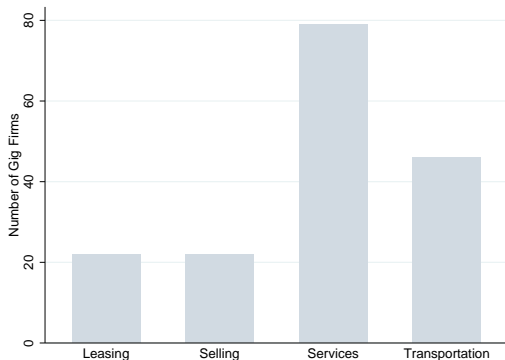
Focus on the role of a large-scale labor market innovation in supporting entrepreneurship

Plan for the Presentation

- **Gig Economy**
- Data on U.S. Tax Returns
- Effect on Entrepreneurship
- Mechanisms
- Are Gig Founders Better Off?

Gig Economy in the U.S.

- **Manually collected** information on firms operating in the gig economy
- Classify 174 gig firms into the following categories: **Leasing**, **Selling**, **Services**, and **Transportation**



Measuring the Gig Economy

- Observing participation in the gig economy
 - ▶ Comprehensive information on individuals' **sources of personal income** (e.g., wages, capital gains, income from proprietorships and partnerships)
 - ▶ Identify income received by individuals from the **manually compiled list of firms in the gig economy**
 - ▶ Income from activity in the gig economy is primarily reported in **Forms 1099-MISC, 1099-NEC, and 1099-K**

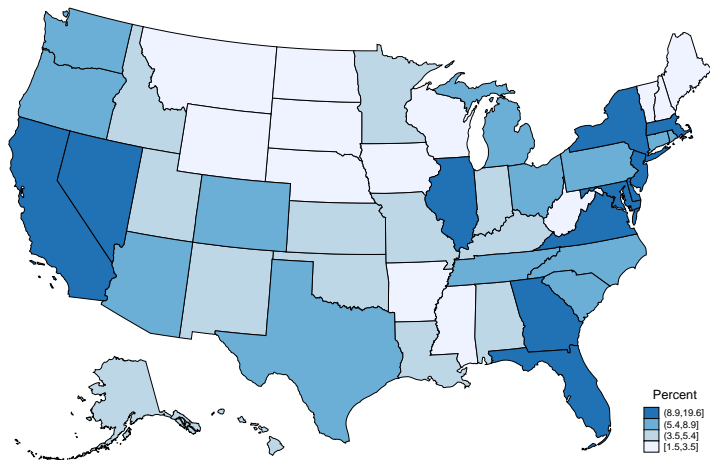
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- Key Summary Statistics [Gig Work from 2012 to 2021](#) [Characteristics of Gig Workers](#)
 - ▶ Average gig worker receives about \$14,000 in gig income
 - ▶ Over 10M individuals have participated in the gig economy over our sample period [Number of Gig Workers](#) [Number of Gig Workers by Type](#)
 - ▶ In 2021, almost \$120 billion of income provided through gig firms [Gig Income](#)
[Gig Income by Type](#)

Map of the Gig Economy



- Number of individuals participating in the gig economy in sample period relative to labor force in 2021
- 1.5% to 19.6% have participated in the gig economy

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 - ▶ Gig activity is minimal before 2012
- Allows us to identify entrepreneurs by linking individuals to newly created firms over time
- Common limitations in previously used datasets in the U.S.
 - ▶ Comprehensive data on [ALL](#) newly created firms [unavailable](#)
 - ▶ Challenging to obtain information on [newly created firms' characteristics at founding](#) and follow firms' [subsequent performance](#) and [employment growth](#)
 - ▶ Generally unable to observe [founder characteristics](#), including prior labor income

Measuring Entrepreneurship

- Use **Schedule C** for separate entities from Form 1040 to measure entry into entrepreneurship
 - ▶ Sole proprietorship is the most **common** organizational form
 - ▶ **Standardize** across a single firm type
 - ▶ Observe **ownership** and **wholly owned** by a single individual

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- Remove firms **mechanically created** to report income from gig activity
 - ▶ Require firms to have a **separate** tax identification number (EIN)
 - ▶ Drop firms with revenues **within \$100** of gig income
 - ▶ Remove firms where the **name** or the **business activity** reported includes the name of a gig firm

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- Aggregate patterns **closely follow** entrepreneurial entry from previously used datasets (e.g., Startup Cartography Project (Andrews et al., 2021))

Entrepreneurship in the U.S.

Additional Data and Sample

- **Data on Firm Performance:**

- ▶ Data on firm outcomes at founding year and subsequent performance, including [survival](#), [revenues](#), and [profitability](#)
- ▶ Firm employment of both [salaried employees](#) and [independent contractors](#)
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- **Final Sample:**

- ▶ Individual sample includes population with ages from 25 to 65 from 2012 to 2021: ~1.3B individual-year observations
- ▶ Firm sample includes [ALL](#) newly created firms in the U.S. during the sample period

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Univariate Evidence

- Start with providing univariate evidence by comparing gig workers to population and founders with gig vs. non-gig experience

Sample	U.S. Population	Gig Workers	Non-Gig Founders	Gig Founders
Founder	0.007	0.035***	1.000	1.000
Adjusted Gross Income	96,000	45,000***	104,000	59,000***
Low Income	0.325	0.571***	0.316	0.430***
Receives EITC	0.197	0.393***	0.214	0.313***
Single with Dependents	0.143	0.211***	0.129	0.139***
Age	44	39***	41	38***

- ▶ About 3.5% of gig workers start new firms
- ▶ Gig workers and gig founders tend to earn relatively lower income
- ▶ Gig workers and gig founders are more likely to be single with dependents and younger

Empirical Specification

- Estimate the following specification:

$$Y_{cit} = \alpha_{c \times t} + \beta \cdot \text{Gig Worker}_{i,t-1} + \gamma \cdot X_{i,t-1} + \varepsilon_{cit}$$

- ▶ *Gig Worker*_{*i,t-1*} as an indicator variable equal to one if an individual received gig income at any point in time **prior to year *t***
- ▶ Our baseline specification relies on **county × year** fixed effects ($\alpha_{c \times t}$)
- ▶ Our strictest specification includes a set of **granular fixed effects** for an individual's **gender**, **filing status**, **age** (40 values), **dependents status**, and **income percentile** at the specific year and county pair (100 values)
- ▶ Standard errors are clustered at the county level

Entry into Entrepreneurship

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	Founder			
	(1)	(2)	(3)	(4)
Gig Worker	1.034*** (0.036)	1.025*** (0.034)	0.984*** (0.033)	0.981*** (0.033)
County FE	Yes	No	No	No
Year FE	Yes	No	No	No
County \times Year FE	No	Yes	Yes	Yes
Granular FE	No	No	No	Yes
Controls	No	No	Yes	No
Observations (Billions)	1.3	1.3	1.3	1.3

- ▶ More than a doubling in the propensity to start a new firm
- ▶ Consistent with increase in business registrations due to the entry of Uber/Lyft (Barrios et al., 2022) and in establishments due to the entry of Airbnb (Mao et al., 2023)

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First-Time Founders

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	First-time Founder			
	(1)	(2)	(3)	(4)
Gig Worker	0.760*** (0.024)	0.752*** (0.022)	0.713*** (0.021)	0.712*** (0.021)
County FE	Yes	No	No	No
Year FE	Yes	No	No	No
County \times Year FE	No	Yes	Yes	Yes
Granular FE	No	No	No	Yes
Controls	No	No	Yes	No
Observations (Billions)	1.3	1.3	1.3	1.3

- ▶ *First-time Founder* equals one for individuals who **establish a firm for the first time**
- ▶ About **three quarters of the effect** is explained by individuals starting a firm for the first time

Robustness

- Alternative measure of gig worker based on receiving gig income in the [previous year](#) Gig Worker in Previous Year
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 - ▶ Gig workers for both types are more likely to create a new firm, though the effect is larger for non-transportation

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- Use the staggered availability of gig work based on at least 30 gig workers in a particular county (Jackson (2022)) Staggered Availability of Gig Work

Who Responds?

- Examine the **characteristics of individuals** in the gig economy who respond by becoming entrepreneurs
 1. **Income:** Downside of experimentation might be relatively limited for lower-income individuals (Salgado, 2020)
 2. **Age:** Lifecycle considerations play a critical role in entrepreneurial choice (Azoulay et al., 2020; Bernstein et al., 2022)
 3. **Flexibility:** Gig economy allows time-constrained individuals to experiment with entrepreneurship

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- **Specification:**

$$Y_{cit} = \alpha_{c \times t} + \beta \cdot \text{Gig Worker}_{i,t-1} \cdot \text{Characteristic}_{i,t-1} \\ + \delta \cdot \text{Gig Worker}_{i,t-1} + \theta \cdot \text{Characteristic}_{i,t-1} + \varepsilon_{cit}$$

- ▶ $\text{Characteristic}_{i,t-1}$ is characteristic of individual i in year $t - 1$
- ▶ $\text{Gig Worker}_{i,t-1}$ is an indicator variable equal to one if an individual received gig income at any point prior to year t

Heterogeneity in Entry into Entrepreneurship

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	Founder		
	(1)	(2)	(3)
Gig Worker × Characteristic	0.054*** (0.016)	-0.294*** (0.035)	0.233*** (0.029)
Characteristic	Low Income	Log Age	Single with Dependents
County × Year FE	Yes	Yes	Yes
Observations (Billions)	1.3	1.3	1.3

- Higher probability for **(i)** lower-income individuals, **(ii)** younger individuals, and **(iii)** individuals who value flexibility to participate in the gig economy and enter entrepreneurship

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- **Mechanisms**
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Mechanisms

- First paper to directly link characteristics and performance of newly created firms with presence and sources of gig income received by individuals

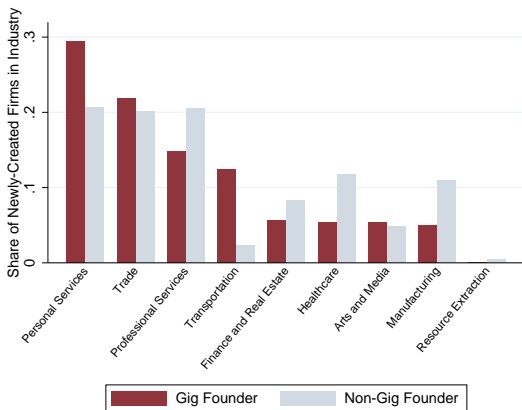
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- **Sample for Firm Analyses:**
 - ▶ Universe of Firms Established from 2012 to 2021
 - ▶ *Gig Founders* are entrepreneurs who participated in the gig economy prior to establishing a firm

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 - ▶ Universe of Firms Established from 2012 to 2021
 - ▶ *Gig Founders* are entrepreneurs who participated in the gig economy prior to establishing a firm
- **Mechanisms:**
 1. **Learning** about entrepreneurship and gaining **industry-specific** experience
 2. **Experimenting** by establishing **riskier** firms

Industry Composition



- ▶ Gig founders create a disproportionate share of firms in sectors related to activities intermediated by the gig economy
- ▶ Consistent evidence when examining relation between gig activity type and industry of newly created firms Transitions of Gig Founders

Entrepreneurship and Previous Work Experience

$$Y_{cjt} = \alpha_c + \alpha_t + \beta \cdot \text{Gig Worker}_{j,t-1} + \varepsilon_{cjt}$$

	Repeat Sector	Repeat Sector Gig
	(1)	(2)
Gig Worker	4.066*** (0.283)	1.194*** (0.038)
County FE	Yes	Yes
Year FE	Yes	Yes
R ²	0.018	0.012
Observations	9,910,507	9,910,507

- ▶ Gig founders 4.1 p.p. more likely to create a firm in a sector where they have **prior experience**
- ▶ Particularly in sectors with **prior gig experience**

Firms at Founding

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \varepsilon_{ckst}$$

	Revenues	Employees
	(1)	(2)
Gig Worker	19.463*** (1.522)	33.392*** (5.009)
County FE	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
R ²	0.047	0.046
Observations	9,910,495	9,910,495

- ▶ Revenues is 21.5% higher and employees is 39.4% higher at gig-founded firms
- ▶ Suggests that gig founders **bear more risk** by starting larger firms at founding
- ▶ Similar estimates using **Controls**, **Staggered Gig Work Availability**, and **Firms with at Least 1 Employee**
- ▶ Differences based on who responds for **Revenues** and **Employees**

Firm Survival

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \varepsilon_{ckst}$$

	Survival After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	-2.633*** (0.133)	-3.037*** (0.178)	-3.279*** (0.197)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
R ²	0.012	0.013	0.013
Observations	8,694,911	7,487,494	6,387,217

- ▶ Survival decreases by 3.8% to 7.3% relative to sample mean
- ▶ Similar findings using **Controls**, **Staggered Gig Work Availability**, and **Firms with at Least 1 Employee**
- ▶ Differences based on who responds for **Survival Three Years After Founding**

Firm Performance

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \varepsilon_{ckst}$$

	Profitability After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	31.465*** (2.216)	37.450*** (2.394)	34.406*** (2.649)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
R ²	0.067	0.064	0.061
Observations	5,458,589	3,625,446	2,557,360

- ▶ Profitability increases by 37% to 45.4% at gig-founded firms
- ▶ Evidence is consistent with [experimentation](#) and [higher risk-taking](#) since gig-founded firms are less likely to survive, yet they realize higher performance
- ▶ Similar results using [Controls](#), [Staggered Gig Work Availability](#), and [Firms with at Least 1 Employee](#)
- ▶ Differences based on who responds for [Profitability Three Years After Founding](#)

Additional Firm Evidence

- Independent Contractors Independent Contractors
 - ▶ Examine [use of independent contractors](#) at newly created firms
 - ▶ Find gig founders are more likely to use independent contractors along both the extensive and intensive margins, consistent with [knowledge transfer](#)

Additional Firm Evidence

- Independent Contractors Independent Contractors
 - ▶ Examine [use of independent contractors](#) at newly created firms
 - ▶ Find gig founders are more likely to use independent contractors along both the extensive and intensive margins, consistent with [knowledge transfer](#)
- Access to Credit Capital Structure
 - ▶ Gig economy may improve access to [external financing](#) (Buchak (2023))
 - ▶ Document a higher probability in the [use of debt](#) at gig-founded firms

Plan for the Presentation

- Gig Economy
- Data on U.S. Tax Returns
- Effect on Entrepreneurship
- Mechanisms
- **Are Gig Founders Better Off?**

Income Trajectory of Entrepreneurs

- **Puzzle in Entrepreneurship Literature:**

Why individuals start new firms if they appear to receive less income and bear more risk (Hamilton, 2000; Moskowitz and Vissing-Jørgensen, 2002)?

- ▶ Option to return to salaried employment without an income decline encourages individuals to experiment with entrepreneurship (Manso, 2016; Catherine, 2022)

Income Trajectory of Entrepreneurs

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- Evaluate **income trajectory** of individuals participating in the gig economy who enter into entrepreneurship

Income Trajectory of Entrepreneurs

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Why individuals start new firms if they appear to receive less income and bear more risk (Hamilton, 2000; Moskowitz and Vissing-Jørgensen, 2002)?

- ▶ Option to return to salaried employment without an income decline encourages individuals to experiment with entrepreneurship (Manso, 2016; Catherine, 2022)

- Evaluate **income trajectory** of individuals participating in the gig economy who enter into entrepreneurship

- Estimate the following specification:

$$Y_{cist} = \alpha_c + \alpha_s + \alpha_t + \beta \cdot \text{Gig Worker}_{i,t-1} + \varepsilon_{cist}$$

- ▶ Y_{cist} is an outcome that measures income changes for entrepreneur i who created a firm in year t , which is located in county c and industry s
- ▶ $\text{Gig Worker}_{i,t-1}$ is an indicator variable equaling one if individual i received gig income prior to year t

Are Gig Founders Better Off?

$$Y_{cit} = \alpha_{c \times t} + \beta \cdot \text{Gig Worker}_{i,t-1} + \gamma \cdot X_{i,t-1} + \varepsilon_{cit}$$

	Change in Income Relative to Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	2.954*** (0.530)	8.806*** (0.742)	11.998*** (1.041)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
R ²	0.002	0.002	0.003
Observations	8,070,197	6,745,459	5,626,284

- ▶ Gig founders earn 3% to 12.7% **higher income** relative to non-gig founders
- ▶ Similar results using change in the income distribution Income Distribution

Conclusion

- Platform intermediation of goods and services has considerably transformed the U.S. economy
- We find that:
 - ▶ Gig workers are **more likely to enter into entrepreneurship**, particularly those starting a firm for the **first time**
 - ▶ Gig economy facilitates **learning** by potential entrepreneurs who **experiment** with starting **riskier firms**
 - ▶ Gig founders are **better off** in terms of income
- Highlights interaction between entrepreneurship and labor markets with low entry costs and flexibility

Gig Work from 2012 to 2021

Year	Number of Gig Workers	Mean Gig Income (in \$2012)	Gig Income > \$10,000	Gig Income > \$20,000	Standard Deviation of Gig Income
2012	37,572	10,000	0.22	0.12	22,000
2013	148,348	12,000	0.28	0.16	23,000
2014	450,646	10,000	0.24	0.14	21,000
2015	1,155,501	8,000	0.18	0.11	20,000
2016	2,125,347	8,000	0.20	0.12	19,000
2017	1,488,755	14,000	0.30	0.24	26,000
2018	1,401,706	18,000	0.37	0.31	31,000
2019	1,962,557	20,000	0.41	0.33	31,000
2020	3,111,025	14,000	0.25	0.18	30,000
2021	4,959,749	14,000	0.26	0.18	30,000

- The table provides information on number of gig workers and measures of gig income by year

Measuring the Gig Economy

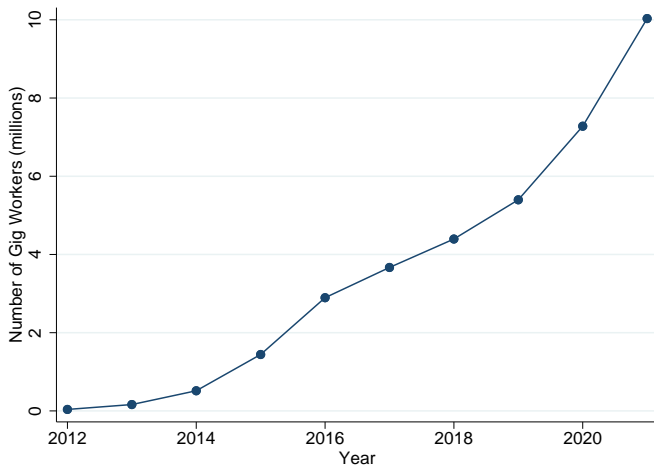
Characteristics of Gig Workers

	Number of Gig Workers	Mean	Median	Standard Deviation
AGI (in \$2012)	9,840,231	38,000	24,000	852,000
W2 Income (in \$2012)	9,840,231	28,000	18,000	129,000
Receives EITC	9,840,231	0.44	0.00	0.50
Age	9,840,231	39.35	37	10.53
Single	9,840,231	0.68	1.00	0.47
Has Dependents	9,840,231	0.44	0.00	0.50
Female	9,840,231	0.35	0.00	0.48

- Characteristics of gig workers during the sample period

Measuring the Gig Economy

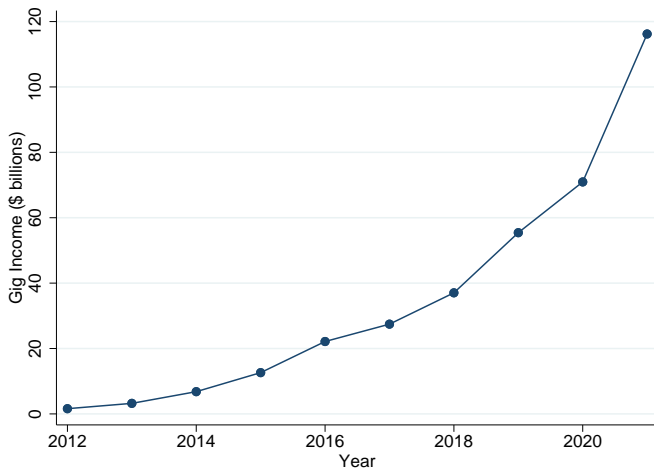
Cumulative Number of Gig Workers



- Marked rise in the number of gig workers during the sample period

Measuring the Gig Economy

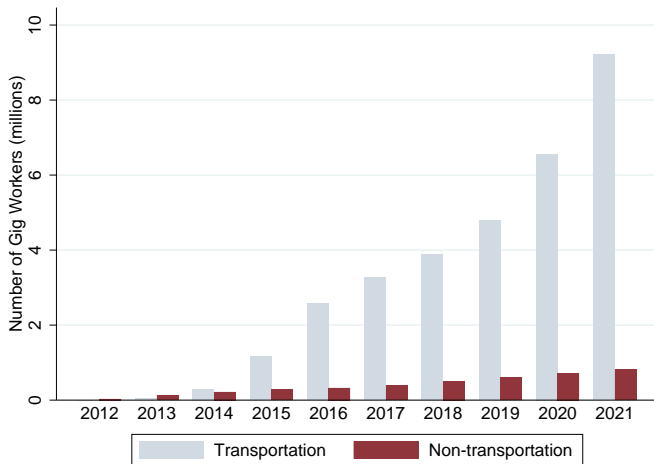
Gig Income (2012 \$)



- Large increase in gig income (2012 \$) over our sample period

Measuring the Gig Economy

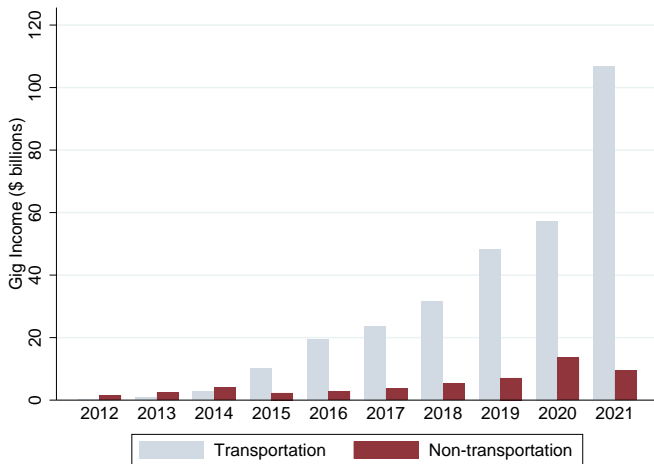
Cumulative Number of Gig Workers by Gig Firm Type



- Relatively larger share of gig workers in transportation by count

Measuring the Gig Economy

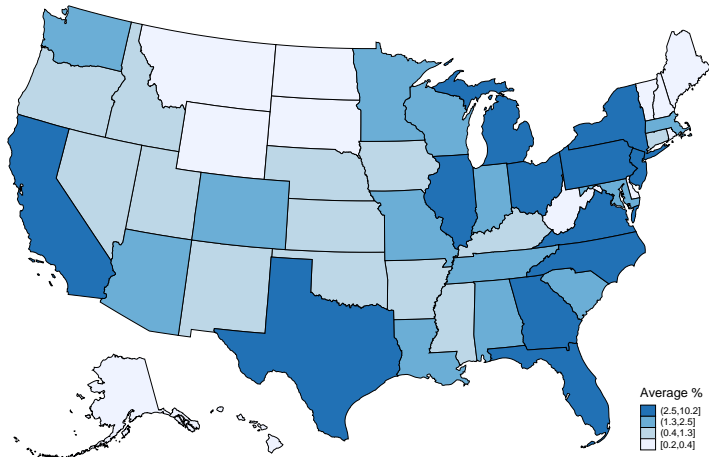
Gig Income (2012 \$) by Gig Firm Type



- Relatively larger share of gig workers in transportation by income

Measuring the Gig Economy

Entrepreneurship in the U.S.



- Ranks states based on average number of newly created firms in a state for a particular year relative to the total number of firms created

Gig Work in Previous Year

$$Y_{cit} = \alpha_{c \times t} + \beta \cdot \text{Gig Worker}_{i,t-1} + \gamma \cdot X_{i,t-1} + \varepsilon_{cit}$$

	Founder			
	(1)	(2)	(3)	(4)
Gig Worker Previous Year	0.938*** (0.034)	0.934*** (0.033)	0.883*** (0.032)	0.881*** (0.031)
County FE	Yes	No	No	No
Year FE	Yes	No	No	No
County \times Year FE	No	Yes	Yes	Yes
Granular FE	No	No	No	Yes
Controls	No	No	Yes	No
Observations (Billions)	1.3	1.3	1.3	1.3

Robustness

Number of Years of Gig Work

$$Y_{cit} = \alpha_{c \times t} + \beta \cdot \text{Gig Worker}_{i,t-1} + \gamma \cdot X_{i,t-1} + \varepsilon_{cit}$$

	Founder			
	(1)	(2)	(3)	(4)
Gig Worker Number of Years	0.482*** (0.023)	0.478*** (0.022)	0.463*** (0.021)	0.461*** (0.021)
County FE	Yes	No	No	No
Year FE	Yes	No	No	No
County \times Year FE	No	Yes	Yes	Yes
Granular FE	No	No	No	Yes
Controls	No	No	Yes	No
Observations (Billions)	1.3	1.3	1.3	1.3

Robustness

Type of Gig Firm

$$Y_{cit} = \alpha_{c \times t} + \beta \cdot \text{Gig Worker}_{i,t-1} + \gamma \cdot X_{i,t-1} + \varepsilon_{cit}$$

	Founder			
	(1)	(2)	(3)	(4)
Gig Worker	0.980***	0.969***	0.932***	0.934***
Transportation	(0.040)	(0.037)	(0.037)	(0.036)
Gig Worker	1.292***	1.291***	1.229***	1.198***
Non-transportation	(0.023)	(0.022)	(0.020)	(0.021)
County FE	Yes	No	No	No
Year FE	Yes	No	No	No
County \times Year FE	No	Yes	Yes	Yes
Granular FE	No	No	No	Yes
Controls	No	No	Yes	No
Observations (Billions)	1.3	1.3	1.3	1.3

Robustness

Staggered Availability of Gig Work

$$Y_{cit} = \alpha_{c \times t} + \beta \cdot \text{Gig Worker}_{i,t-1} + \gamma \cdot X_{i,t-1} + \varepsilon_{cit}$$

	Founder		First-time Founder	
	(1)	(2)	(3)	(4)
Gig Worker	1.024*** (0.034)	0.983*** (0.033)	0.752*** (0.022)	0.00714*** (0.021)
County \times Year FE	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes
R ²	0.001	0.002	0.001	0.002
Observations (billions)	1.3	1.3	1.3	1.3

Entry into Entrepreneurship: Robustness

Transitions from Gig Work to Newly Created Firms

	Arts & Media	Finance & Real Estate	Healthcare	Manufacturing	Personal Services
Leasing	12.8	16.3	9.8	3.7	17.3
Selling	11.2	2.5	2.2	2.6	7.0
Services	8.1	5.3	12.1	8.7	27.1
Transportation	6.5	10.0	7.1	6.5	22.6

	Professional Services	Resource Extraction	Trade	Transportation
Leasing	22.8	0.3	16.4	0.7
Selling	6.8	0.2	67.2	0.4
Services	22.4	0.2	14.8	1.2
Transportation	17.6	0.2	23.0	6.6

- ▶ Each row represents **share** of firms started by entrepreneur in industry
- ▶ For example, 27.1% of entrepreneurs receiving gig income from a gig firm in services start a new firm in a personal services industry
- ▶ Each row sums to $\approx 100\%$

Firms at Founding with Controls

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \gamma \cdot X_{k,t-1} + \varepsilon_{ckst}$$

	Revenues	Employees
	(1)	(2)
Gig Worker	12.167*** (1.525)	18.157*** (4.898)
County FE	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
Controls	Yes	Yes
R ²	0.057	0.070
Observations	9,294,788	9,294,491

Firms at Founding: Staggered Gig Work Availability

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta_1 \cdot \text{Gig Worker}_{k,t-1} + \beta_2 \cdot \text{Gig Work Availability}_{ct} + \varepsilon_{ckst}$$

	Revenues	Employees
	(1)	(2)
Gig Worker	19.658*** (1.521)	33.206*** (5.065)
Gig Work Availability	8.383*** (1.094)	-5.220 (4.163)
County FE	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
R ²	0.047	0.046
Observations	9,910,495	9,910,178

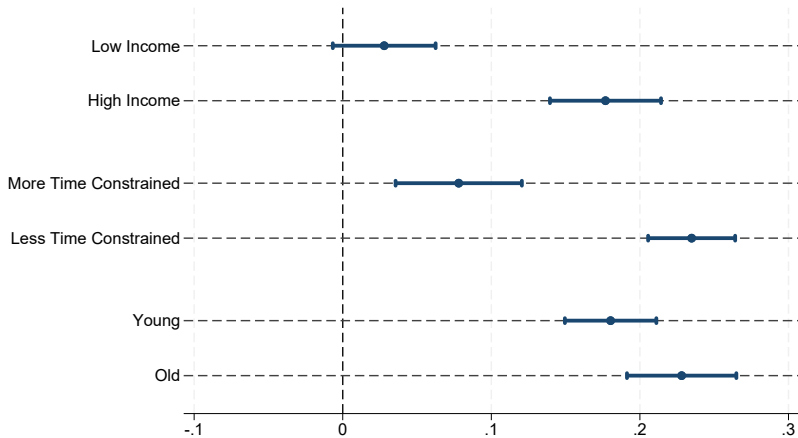
Firms at Founding with At Least 1 Employee

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \varepsilon_{ckst}$$

	Revenues	Employees
	(1)	(2)
Gig Worker	2.584 (1.690)	22.298*** (4.955)
County FE	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
R ²	0.050	0.054
Observations	1,799,656	1,799,647

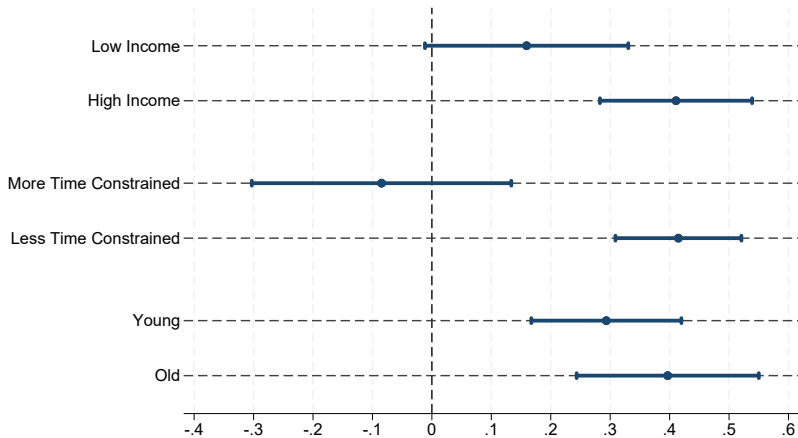
Firms at Founding

Revenue at Founding: Characteristics



Firms at Founding

Employees at Founding: Characteristics



Firms at Founding

Firm Survival with Controls

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \gamma \cdot X_{k,t-1} + \varepsilon_{ckst}$$

	Survival After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	-1.969*** (0.121)	-2.161*** (0.182)	-2.446*** (0.202)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
R ²	0.014	0.016	0.016
Observations	8,140,370	6,997,132	5,978,124

Firm Survival: Staggered Gig Work Availability

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta_1 \cdot \text{Gig Worker}_{k,t-1} + \beta_2 \cdot \text{Gig Work Availability}_{ct} + \varepsilon_{ckst}$$

	Survival After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	-2.633*** (0.00134)	-3.029*** (0.00179)	-3.280*** (0.00198)
Gig Work Availability	0.401*** (0.100)	0.442*** (0.115)	0.431*** (0.121)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
R ²	0.012	0.013	0.013
Observations	8,694,911	7,487,494	6,387,217

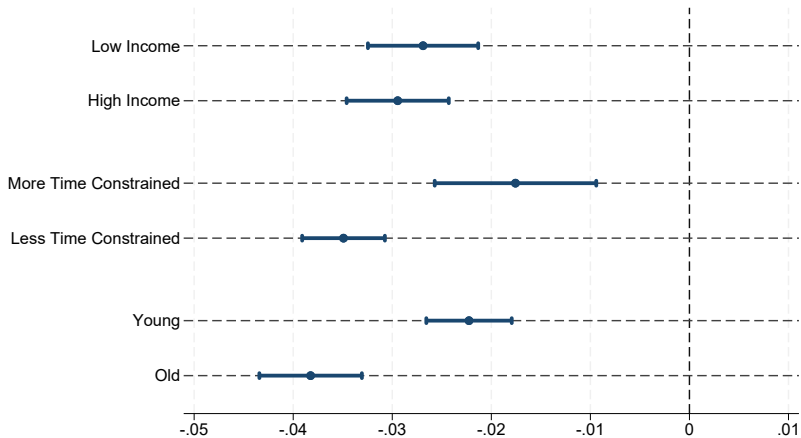
Firm Survival with At Least 1 Employee

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \varepsilon_{ckst}$$

	Survival After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	-2.790*** (0.280)	-3.597*** (0.328)	-3.754*** (0.379)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
R ²	0.027	0.029	0.031
Observations	1,671,482	1,493,112	1,300,108

Firm Survival

Survival Three Years After Founding: Characteristics



Firm Performance with Controls

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \gamma \cdot X_{k,t-1} + \varepsilon_{ckst}$$

	Profitability After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	11.094*** (2.263)	15.683*** (2.532)	12.690*** (2.811)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
R ²	0.085	0.083	0.080
Observations	5,172,984	3,433,575	2,422,141

Firms Performance: Staggered Gig Work Availability

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta_1 \cdot \text{Gig Worker}_{k,t-1} + \beta_2 \cdot \text{Gig Work Availability}_{ct} + \varepsilon_{ckst}$$

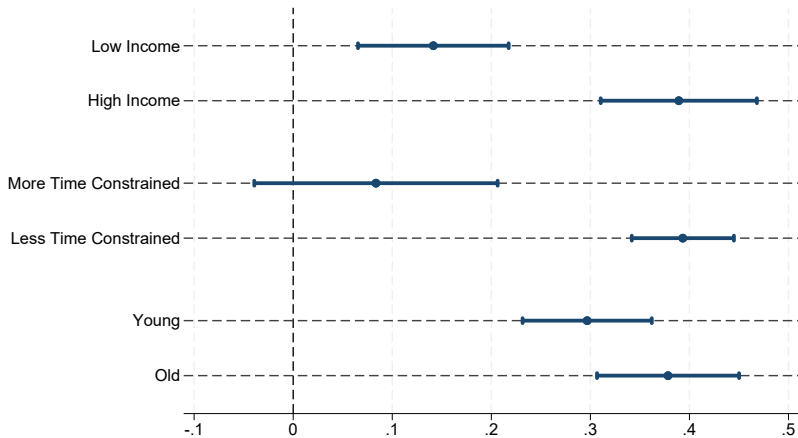
	Profitability After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	31.294*** (2.227)	37.407*** (2.414)	34.102*** (2.681)
Gig Work Availability	6.321*** (1.551)	5.592*** (1.8940)	4.811** (2.078)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
R ²	0.067	0.064	0.061
Observations	5,458,589	3,625,446	2,557,360

Firm Performance with At Least 1 Employee

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \varepsilon_{ckst}$$

	Profitability After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	8.953*** (2.649)	8.954*** (2.891)	8.606** (4.153)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
R ²	0.045	0.040	0.039
Observations	1,165,900	861,151	638,995

Profitability Three Years After Founding: Characteristics



Firm Performance

Independent Contractors: Extensive Margin

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \varepsilon_{ckst}$$

	Has Contractors After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	0.875*** (0.117)	1.254*** (0.153)	1.843*** (0.182)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	5,458,589	3,625,446	2,557,360

- ▶ Likelihood of hiring an independent contractors rises by 9.6% to 18.6% at gig-founded firms

Additional Firm Evidence

Independent Contractors: Intensive Margin

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \varepsilon_{ckst}$$

	Has Contractors After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	0.875*** (0.117)	1.254*** (0.153)	1.843*** (0.182)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	5,458,589	3,625,446	2,557,360

- ▶ 24.1% to 41.9% increase in number of independent contractors at gig-founded firms relative to sample mean

Additional Firm Evidence

Access to Credit

$$Y_{ckst} = \alpha_c + \alpha_t + \alpha_s + \beta \cdot \text{Gig Worker}_{k,t-1} + \varepsilon_{ckst}$$

	Has Debt After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	1.205*** (0.121)	2.239*** (0.186)	3.388*** (0.265)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	5,458,589	3,625,446	2,557,360

- ▶ 10% to 20.5% increases in probability of having debt at gig-founded firm relative to sample mean

Additional Firm Evidence

Income Distribution

$$Y_{cit} = \alpha_{c \times t} + \beta \cdot \text{Gig Worker}_{i,t-1} + \gamma \cdot X_{i,t-1} + \varepsilon_{cit}$$

	Increase in Income Percentile After Founding		
	One Year (1)	Two Years (2)	Three Years (3)
Gig Worker	1.123*** (0.118)	1.777*** (0.143)	1.908*** (0.173)
County FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
R ²	0.004	0.006	0.007
Observations	8,070,197	6,745,459	5,626,284

- ▶ Gig founders 2% to 3% more likely to move up in the income distribution relative to sample mean

Are Gig Founders Better Off?