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

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**Abstract**

Platform intermediation of goods and services has considerably transformed the U.S. economy. We use administrative data on U.S. tax returns to study the role of the gig economy on entrepreneurship. We find that gig workers are more likely to become entrepreneurs, particularly those who are lower income, younger, and benefit from flexibility. We track all newly created firms and show that gig workers start firms in similar industries as their gig experience, which are less likely to survive and demonstrate higher performance. Overall, our findings suggest on-the-job learning promotes entrepreneurial entry and shifts the types of firms started by entrepreneurs.

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# 1 Introduction

Labor markets play a central role in an individual's decision to become an entrepreneur (Hombert et al. (2020), Gottlieb, Townsend, and Xu (2022), and Hacamo and Kleiner (2022)). Relying on recent technological advancements, the gig economy has disrupted labor markets and reshaped income opportunities for many individuals. There has been a correspondingly large take-up, with nearly 10 million people participating in the U.S. gig economy over the past decade. Characterized by relatively low entry costs and flexibility, the gig economy could reduce uncertainty and encourage experimentation, which are vital components of entrepreneurship (Manso (2011) and Kerr, Nanda, and Rhodes-Kropf (2014)). In this paper, we use novel data linking gig workers to their newly created firms and provide the first evidence about how the gig economy alters the profiles of new entrepreneurial ventures.

Uncertainty is an inherent element of entrepreneurship. The gig economy might influence the risks faced by potential entrepreneurs in several ways. First, opportunities in the gig economy could mirror the experiences of an entrepreneur, allowing individuals to learn about entrepreneurship and accumulate industry-specific experience. Second, the costs of experimentation impact innovative activities (Ewens, Nanda, and Rhodes-Kropf (2018)). The gig economy may reduce these costs and provide an additional source of startup capital. Third, it lowers downside risk by providing entrepreneurs with the ability to smooth income. By encouraging learning and supporting risk taking by prospective founders, the gig economy may facilitate the creation of firms that eventually grow larger and disproportionately contribute to economic growth.

To study the interaction between the gig economy and entry into entrepreneurship, we use administrative data from federal tax returns filed with the Internal Revenue Service (IRS) on the universe of firms and individuals in the United States. For every year in our sample from 2012 to 2021, the micro-level information allows us to observe income received in the gig economy for each individual linked with entrepreneurial entry.[1] We also track firms at founding and their subsequent performance over time, in addition to the characteristics of entrepreneurs. Using these novel data, we seek to understand how the gig economy influences the types of new firms started by gig workers and offer insights about mechanisms spurring new firm creation.

In our first set of analyses, we study the effect of the gig economy on entry into entrepreneurship. We compare the likelihood of starting a new firm for all individuals in the U.S. aged 25 to 65 who previously received income from the gig economy relative to those who have not participated in it. We find that gig workers are 1.0 percentage points more likely to create a new firm. This estimate holds across a variety of specifications, where the strictest model absorbs time-varying local economic conditions and saturates the model with granular fixed effects for individual characteristics to account for differences in income and age, in addition to other controls. We also separately examine entrepreneurs who start a firm for the first time and show that they account for about three-quarters of the effect of the gig economy on entrepreneurial entry.

Though we include a rich set of individual-level controls, there could be a potential concern about omitted variables that might be correlated both with working in the gig economy and entry into entrepreneurship. To strengthen our evidence, we leverage plausibly exogenous variation in the availability of the gig economy both geographically and over time following the methodology of Jackson (2022). This approach relies on the staggered availability of gig work across counties over time. Using this empirical design, we find that gig workers remain 1.0 percentage points more likely to start a new firm, which is also statistically quite similar. We continue to use this methodology in the following analyses. We also evaluate the potential influence of omitted variables following the approach of Oster (2019). The Oster test indicates that the bias-adjusted coefficients are quite close to the

[1] We observe an individual's income from the gig income using information returns filed by those firms operating in the gig economy. We measure firm creation in tax returns using the most common type of firms, which are sole proprietorships. Sections 2.2 and 3.1 explain how we construct data on gig income and firms, respectively. We exclude firms that are mechanically created due to tax reporting requirements.

baseline estimates. The stability of the estimated coefficients across specifications and the findings from the Oster test suggest that it is unlikely an omitted variable drives the result.

We continue our individual-level analyses by evaluating the characteristics of gig workers who respond by creating new firms. We investigate the role of capital constraints, lifecycle considerations, and flexibility in spurring entrepreneurial entry. We find that individuals who participate in the gig economy and have relatively lower incomes are more likely to start new firms. We measure income using adjusted gross income, income distribution in a particular county-year, and whether an individual received an income-related tax credit. We also show that the propensity to become an entrepreneur is higher for younger gig workers. Further, the gig economy is expected to particularly benefit individuals who value flexibility. To proxy for individuals who might benefit from flexibility, we examine all individuals with dependents as well as single filers with dependents. We find that both groups are significantly more likely to become entrepreneurs when participating in the gig economy. Taken together, the first set of results links gig workers with entrepreneurial entry, highlighting shifts in the profile of responsive individuals.

Next, we study the universe of firms created in the United States from 2012 to 2021. For each firm, we determine whether an entrepreneur participated in the gig economy before the firm was created ("gig founder") or if the individual did not receive gig income prior to starting the firm ("non-gig founder"). This distinction allows us to evaluate how firms started by entrepreneurs with previous experience in the gig economy differ from other firms. To our knowledge, this is the first paper that links individuals deriving income from the gig economy with the firms that they create.

We start our firm analyses by asking two related research questions. First, how does the industry composition of firms created by gig founders compare to non-gig founders? For all firms in our sample, we determine the share of newly created firms in a particular industry separately for gig- and non-gig-founded firms. We find that gig workers create a higher share of firms in personal services, trade, and transportation. We corroborate the industry composition of gig-founded firms by exploring the transition of gig workers into entrepreneurship based on their experience in the gig economy. In this approach, we calculate the proportion of gig workers who start a firm in a particular industry based on the type of gig firm from which they received income. We show that gig founders often transition from the gig economy into similar industries. Second, what is the role of prior work experience for entrepreneurs? Using the universe of earnings for salaried employees and independent contractors, we find that entrepreneurs are significantly more likely to start a firm in an industry where they have prior work experience. We separately examine the importance of experience in the gig economy and show that it remains elevated for gig workers. Combined, this evidence suggests that learning might be an important mechanism in the gig economy for facilitating entry into entrepreneurship.

In the next set of analyses, we investigate firm-level characteristics at founding and subsequent performance. We find that gig-founded firms are significantly larger, both in terms of revenues and number of employees, relative to firms created by individuals not participating in the gig economy. These estimates hold when we include county-year fixed effects to absorb time-varying local differences and industry fixed effects to compare firms created in the same industries.

We now turn to evaluating firm performance. For each firm in our sample, we track whether the firm survives to a particular year and, conditional on surviving to this period, we determine its performance using profitability and employment. We construct these measures for years one to three after founding because many firms are recently created. We find that the likelihood of survival for gig-founded firms is 2.6 to 3.3 percentage points lower relative to the probability of survival for non-gig founded firms, which is a 3.8% to 7.3% decrease relative to the respective sample mean. These estimates continue to include county-year and industry fixed effects. When we examine measures of performance, we show that the profitability of gig-founded firms is about 39.4% to 46.9% higher relative to firms with a founder who did not participate in the gig economy. Additionally, gig-founded firms are both more likely to have employees and to operate firms with a relatively high number of employees, defined as having at least five employees.

Overall, the firm-level evidence offers insights into the role of the gig economy on entrepreneurship through experimentation and learning. When gig workers establish a new firm, they might bear more risk by starting larger firms. Consistent with experimentation, these firms appear to be riskier as they survive for shorter periods of time, yet they realize higher performance. Shorter survival, on average, is also consistent with gig founders learning about the prospects of their firms more quickly and shutting down less promising firms sooner. These findings indicate that gig workers might learn on-the-job and relate to recent literature highlighting the importance of experimentation in entrepreneurial endeavors (Manso (2011) and Kerr, Nanda, and Rhodes-Kropf (2014)).

We also examine the employment decisions and capital structure of firms started by gig workers. The administrative data on U.S. tax returns allow us to track the number of workers at a firm and whether employees are salaried workers or independent contractors. For every firm in our sample, we measure the extensive margin based on whether a firm has any independent contractors and the intensive margin using the number of independent contractors employed. Similar to our previous analyses, we track employment for one to three years after founding. On the extensive margin, we find that gig-founded firms are 9.5% to 18.2% more likely to use independent contractors relative to firms with a non-gig founder. We also evaluate the intensive margin and show economically large increases in the number of independent contractors hired by gig-founded firms. These findings further highlight that gig workers may learn by transferring their knowledge and experience from the gig economy to the new firms that they create.

In the final set of firm-level analyses, we explore the capital structure of newly created firms. We use reported information on a firm's interest expense to measure whether a firm has debt by a particular year after founding. We find that the likelihood of having debt is significantly higher for gig-founded firms. In economic terms, there is a 10.2% to 17.9%

increase in the probability of a gig-founded firm having debt. This suggests that the gig economy might enable gig workers, particularly those who are capital constrained, to access capital markets.

We conclude our analyses by evaluating how gig founders fare after starting a new firm. Prior papers highlight that entrepreneurs may start firms for non-pecuniary reasons (Moskowitz and Vissing-Jørgensen (2002)), though there is substantial real option value embedded in the decision to create firms (Manso (2016)). In this analysis, we evaluate the effect of being a gig worker on a founder's subsequent income. We track both whether a founder's income increases in the years after founding and if a founder's rank in the income distribution changes. We find that gig founders have higher subsequent income compared to founders who did not participate in the gig economy. We also show that their rank in the income distribution is more likely to rise. This highlights that gig founders are better off than other entrepreneurs in terms of income.

In sum, we use administrative data on U.S. tax returns to study gig workers and the firms that they create. Gig income appears to facilitate entry into entrepreneurship and might allow gig workers to learn about becoming entrepreneurs. The outcomes at newly created firms started by gig founders suggest that gig workers experiment with new ideas. Our findings are related to the growing literature on the factors impacting entrepreneurial entry by demonstrating the crucial interactions between labor markets and entrepreneurship. Furthermore, this work provides tax administration with a foundational understanding of the potential service needs of newly created firms and how these needs may differ based on firm characteristics.

Our paper broadly contributes to the literature on entrepreneurship. Newly created firms support economic growth and spur new jobs (Haltiwanger, Jarmin, and Miranda (2013)). Accordingly, there has been a large focus on factors influencing entrepreneurial entry. Capital constraints often limit new firm creation (e.g., Evans and Jovanovic (1989), Hurst and Lusardi (2004), Cagetti and De Nardi (2006), and Bianchi and Bobba (2013)). A related stream of papers shows that cash windfalls often lead to more entrepreneurs (Bellon et al. (2021) and Cespedes, Huang, and Parra (2023)). Regulations reduce entrepreneurship (Klapper, Laeven, and Rajan (2006)), while banking deregulation spurs creative destruction (Kerr and Nanda (2009)). Entrepreneurship, using similar data as in this paper, increases with higher credit limits and credit scores (Herkenhoff, Phillips, and Cohen-Cole (2021)). Government programs frequently target entrepreneurial activity, though they can be unsuccessful (Denes et al. (2023)). A connected set of papers argues that experimentation is a key ingredient of entrepreneurship (Manso (2011) and Kerr, Nanda, and Rhodes-Kropf (2014)), and that lower costs increase innovation (Ewens, Nanda, and Rhodes-Kropf (2018)). Additionally, the option value of entrepreneurship plays an important role in experimentation (Manso (2016) and Catherine (2022)). We link gig workers with their newly created ventures to highlight the importance of labor markets in supporting entrepreneurship through learning and how this might promote experimentation.

Our paper is most closely related to Barrios, Hochberg, and Yi (2022) and Mao et al. (2023), which study aggregate measures of entrepreneurship following the entry of a gig firm.[2] Barrios, Hochberg, and Yi (2022) show that the launch of ride-hailing services is associated with an increase in new business registrations and internet searches about entrepreneurship. Mao et al. (2023) find that the introduction of short-term rentals is positively related to new firm creation. We corroborate their findings and differ in several important dimensions. First, we use granular administrative data from U.S. tax returns to track individuals participating in the gig economy and the firms that they start, overcoming prior limitations to connecting gig income with entrepreneurial entry. Second, and related, this allows us to provide suggestive evidence on mechanisms that could support the creation of new firms, which might include learning by gig workers who could experiment by starting riskier firms. Third, we study the universe of firms and individuals using the gig economy in the U.S.,

[2] Burtch, Carnahan, and Greenwood (2018) is an earlier paper about a ride-hailing service from 2012 to 2015, and explores its relationship with self-employment based on crowdfunding activity in Kickstarter and the Current Population Survey. They report a negative association between these measures and the availability of a ride-hailing service.

capturing a wide range of gig firms and corresponding economic activity.

More generally, we also add to the growing literature on the gig economy. A relatively early group of papers documented the size of the gig economy using survey and administrative data (Abraham et al. (2021), Collins et al. (2019), and Lim et al. (2019)). A series of recent papers examine how unemployed individuals use the gig economy (Jackson (2022) and Fos et al. (2024)). Flexibility is often valuable for gig workers (Hall and Krueger (2018) and Chen et al. (2019)). Additionally, access to financing impacts participation at ride-hailing gig firms (Buchak (2024)).

Our findings are also related to work at the intersection of finance and labor. One strand of this literature studies how financial distress affects an individual's decision to start a firm (Babina (2020) and Hacamo and Kleiner (2022)). Further, labor-related regulation can influence entrepreneurial entry through increases in different types of employment insurance (Hombert et al. (2020) and Gottlieb, Townsend, and Xu (2022)). We focus on the effect of the gig economy, which is a major disruption to labor markets, and its role in newly created firms by gig workers.

# 2 Gig Economy

In this section, we describe the gig economy in the United States and how we measure it using U.S. tax returns. Section 2.1 provides information on the platforms in the gig economy that we study in our analyses. Section 2.2 details how income from gig work is observed for all individuals in the United States. Section 2.3 provides summary statistics on economic activity in the gig economy.

## 2.1 Gig Economy in the United States

The gig economy typically refers to short-term income opportunities. While this part of the economy existed long before the 2000s, this paper specifically studies recent technological advancements that substantially expanded the size of this market. Mobile devices allow platforms to match customers with workers across numerous goods and services. This has disrupted many industries and altered the income opportunities for an increasingly large number of individuals. Throughout the paper, we refer to the "gig economy" to capture these recent changes, including the related platforms ("gig firms") and individuals receiving income from these arrangements ("gig workers").

In the United States, many gig firms were founded in the first decade of the 2000s. However, the corresponding economic activity started to rise in the following decade. In Section 2.3, we show that more than a million individuals received income from gig firms in 2015. We focus on gig firms that broadly fall into four categories. First, we include platforms offering transportation services to customers. Second, we incorporate gig firms that allow individuals to monetize their assets. Third, we add marketplaces providing opportunities for individuals to sell goods. Fourth, we include gig firms where individuals can provide short-term services that generally require specific skills.

As the gig economy continues to grow, so has the debate surrounding its benefits and costs. In this paper, we study whether the gig economy enables gig workers to become entrepreneurs and evaluate the firms that they create. If gig workers are better off by pursuing entrepreneurial entry, which we examine in Section 6, then new firm creation could be considered a benefit, along with the flexibility afforded by the gig economy. Yet it is also important to highlight costs that might be borne by gig workers. These include the loss of worker protections because gig workers are independent contractors (Ravenelle (2019)) and negative spillovers, such as driving fatalities (Barrios, Hochberg, and Yi (2023)).

## 2.2 Measuring the Gig Economy

We use administrative data from U.S. tax returns to measure participation in the gig economy. This allows us to directly observe income received by individuals in the U.S. from firms operating in the gig economy. This section describes how we construct an individual's income from the gig economy for each year. We primarily use information returns provided to the IRS by gig firms supplemented with data from tax returns of individuals.

We manually compile a list of gig firms in the U.S. We begin with a list developed by previous researchers using tax returns to study different aspects of the gig economy (Collins et al. (2019)), which contains about 50 gig firms. We conduct extensive internet searches to expand the coverage of the gig economy. We classify each gig firm into one of the following categories: leasing, selling, services, and transportation. Due to confidentiality reasons, we cannot identify specific firms in the underlying data. The combined lists include a total of 174 gig firms. Appendix Figure A1 shows the distribution of gig firms in our sample. About half of gig firms are in the services sector. Almost 50 firms are operating in the transportation sector. The remaining gig firms are equally in the leasing and selling sectors.

We observe an individual's participation in the gig economy using information returns provided to the IRS by gig firms. Specifically, we use Forms 1099-MISC, 1099-NEC, and 1099-K to measure income received by an individual from gig firms.[3] Though tax returns can be filed jointly, information returns identify the exact individual who received income from a gig firm. We construct a dataset of gig income using the list of 174 gig firms matched to the universe of Forms 1099-MISC, 1099-NEC, and 1099-K. We augment these data by using individual tax returns. Gig workers generally file a Schedule C as part of Form 1040 to report income derived from the gig economy. This schedule includes a description of the activity related to its filing. If this description includes the name of a gig firm in our list, we add it to the dataset on gig income. The combined dataset using Forms 1099-MISC, 1099-NEC, and 1099-K, in addition to Schedule C, allows us to track the gig income that is received by an individual over time.

While U.S. tax returns offer novel insights into individuals participating in the gig

[3]There are thresholds for reporting information using these forms. Gig firms are required to report when individuals receive at least $600 in non-employee compensation. Form 1099-NEC replaced Form 1099-MISC for reporting non-employee compensation in 2020. Form 1099-K is used by certain gig firms classified as third-party networks and has higher thresholds. It is based on transactions and required when the total income from these transactions is higher than $20,000 and there are more than 200 transactions.

economy, a caveat should be mentioned about the data. We primarily rely on information returns provided to the IRS by gig firms to observe gig income. The requirement to provide this information is generally based on the amount of income or the number of transactions paid to an individual. Accordingly, we do not observe gig income below these thresholds unless gig firms voluntarily provide the information to the IRS. The vast majority of gig firms only provide information returns to the IRS if required. However, it is also important to note that we rely on information returns provided by gig firms to the IRS, rather than individuals reporting gig income on Form 1040.[4]

[Insert Figure 1 Here]

Figure 1 maps participation in the gig economy from 2012 to 2021. For each state, we determine the number of individuals who participated in the gig economy during the sample period relative to the state's labor force in 2021. Darker blue shading represents a larger share of participation in the gig economy. The map highlights that there has been substantial participation in the gig economy during the past decade. At the top quartile of states, 9% to 20% of individuals have received income from the gig economy. These states are largely represented by coastal states and Illinois. In sum, there has been striking and broad participation in the gig economy throughout the United States.

## 2.3 Summary Statistics on the Gig Economy

This section provides summary statistics on the gig economy in the United States. We use administrative data from U.S. tax returns described in Section 2.2. The sample period goes from 2012 until 2021. We start in 2012 since gig activity prior to this year is minimal. We end in 2021 since this is the last year when data are currently available.

[Insert Figure 2 Here]

[4]There can be underreporting or no reporting of gig income by a tax filer on Form 1040. Consequently, it is important to use Forms 1099-MISC, 1099-NEC, and 1099-K to capture a substantial share of activity in the gig economy.

In Figure 2, Panel A shows the cumulative number of individuals who have worked in the gig economy by a particular year. We focus on the cumulative number to capture the extent of participation in the gig economy over the past decade. We find that the number of U.S. individuals who received income in the gig economy has markedly increased, starting at less than one million individuals in the first few years to about 10 million in the last year of the sample. Panel B provides the total amount of income in billions of dollars received by gig workers in a particular year. We adjust this to real terms by converting to dollars in 2012. We show that gig income follows a similar trajectory, growing from less than $10 billion at the beginning of the sample period to almost $120 billion in 2021. Overall, this figure demonstrates the substantial rise of the gig economy in the United States.

[Insert Table 1 Here]

Table 1 provides summary statistics on the U.S. gig economy. Panel A tabulates the number of individuals participating in the gig economy each year and shows information on their income. We find that the number of gig workers exceeds one million individuals in 2015 and mostly rises in subsequent years.[5] Mean gig income is winsorized at the 1% level in each tail to reduce the influence of outliers and converted to dollars in 2012. It ranges from $8,000 to $20,000 over the sample period. Due to confidentiality reasons, all income values reported in the paper are rounded to thousands. We also show that gig income received by individuals is often substantial, with about a quarter of gig workers earning more than $10,000 and at least 10% obtaining more than $20,000 in every year of the sample.

Panel B shows the characteristics of individuals in the first year they received gig income. *Adjusted Gross Income* (AGI) is a gig worker's adjusted gross income converted to dollars in 2012 and *W-2 Income* is a gig worker's W-2 income converted to dollars in 2012. *Receives EITC* is an indicator variable equaling one if a gig worker receives an Earned

[5] The number of gig workers declines in the middle of the sample since some gig firms no longer submitted information returns that they were not required to file with the IRS. This also explains why mean gig income is relatively lower in 2015 and 2016.

Income Tax Credit. The means of these variables suggest that gig workers are often lower-income individuals. The average age of gig workers is 39 and the majority of gig workers are male. Gig workers are usually single and just under half have dependents.

Last, we examine differences in the number of gig workers by type of gig firm. Appendix Figure A2 plots U.S. participation in the gig economy from 2012 to 2021 based on gig firms classified as transportation relative to non-transportation, which includes leasing, selling, and services. Panel A shows the cumulative number of individuals working in the gig economy and Panel B provides the total amount of income in billions of dollars received by gig workers in a particular year, which is converted to dollars in 2012. The lighter gray bars show participation in the gig economy for gig firms categorized as transportation. The darker red bars indicate participation in the gig economy for gig firms categorized as non-transportation. While the trends are similar for both types of gig firms, the number of gig workers and gig income have grown at a higher rate for transportation gig firms.

# 3 Data from U.S. Tax Returns

This section details how we use U.S. tax returns to study entrepreneurship. These data allow us to overcome several challenges with linking new firm creation to participation in the gig economy, which is described in Section 2. First, comprehensive data on every new firm in the economy is generally not provided in publicly available datasets. Second, it can be difficult to observe the performance of new firms at and following their creation. Third, the characteristics of founders, their prior labor income, and employees at their firms are usually unavailable. Federal tax returns represent a new and largely unexplored approach to studying entrepreneurship in the U.S. economy. Section 3.1 explains how we measure entrepreneurship. Section 3.2 provides information on additional data incorporated into the analyses and summary statistics.

## 3.1 Measuring Entrepreneurship

Our paper seeks to understand the role of the gig economy on entry into entrepreneurship. We use the universe of U.S. tax returns to determine when individuals start new firms. To measure entrepreneurial activity across a wide swath of potential entrepreneurs, we focus on sole proprietorships. This is motivated by several considerations. First, sole proprietorships are the most common type of firm in U.S. tax returns. Individuals participating in the gig economy are potentially more likely to form a sole proprietorship when starting a new firm relative to other firm types, which include partnerships and corporations. Second, focusing on one firm type allows us to construct standardized measures of firm outcomes. Third, we observe ownership of sole proprietorships and these types of firms are wholly owned by one individual.

In U.S. tax returns, sole proprietorships file Schedule C, which is part of a household's Form 1040. This schedule identifies the specific entrepreneur owning and operating the firm within a household. To construct a dataset on firms for our analyses, we start with the universe of Schedule C filings, which are available from 1997 to 2021. While the sample for our analyses is from 2012 to 2021, using data back to 1997 allows us to identify when individuals are first-time entrepreneurs. We restrict our attention to Schedule C filings that include an employer identification number (EIN) to focus on firms that are separate entities.[6] If a particular tax return is amended, we use the most recent filing available.[7]

An important aspect to consider when using Schedule C filings to measure entrepreneurship is alternative reasons why taxpayers might file this schedule. In the context of this paper, individuals participating in the gig economy are generally required to file a Schedule C to report gig income, which does not represent entrepreneurial activity. As mentioned in the

[6] The main requirement for firms to have an EIN is they file employment returns or have a qualified retirement plan. Additional details about requirements for having an EIN are available on the IRS website at: https://www.irs.gov/instructions/i1040sc.

[7] We also apply the following filters to construct the dataset. First, we only use Schedule C filings with valid zip codes. Second, we remove filings where the same EIN appears on a Schedule C for a different Form 1040 in the same year. Third, we drop filings where the EIN is the same as a social security number (SSN) or the SSN is used as an EIN.

preceding paragraph, we only use Schedule C filings with an EIN. This restriction will remove gig workers who file a Schedule C solely to report gig income and do not have an EIN. We incorporate two additional steps to eliminate Schedule C filings solely used to report gig income. First, using the data on gig income described in Section 2.2, we drop firms where the reported income is within a narrow band of the gig income. Specifically, we remove those Schedule C filings where the gross receipts or sales is within $100 of the gig income received by an individual in a particular year. Second, we remove Schedule C filings where the firm name matches the name of a gig firm. Overall, we implement several approaches to remove filings that stem from tax reporting requirements.

Next, we compare our measure of entrepreneurship to related papers using similar data. Our approach for defining entrepreneurship is closely related to Herkenhoff, Phillips, and Cohen-Cole (2021), who use Schedule C filings available through the U.S. Census Bureau to measure entrepreneurial activity. This definition of entrepreneurship focuses on unincorporated entrepreneurs. Their paper matches data at the individual-year level to a credit bureau and requires firms to exist in Census datasets, reporting a sample average of 0.4% for firm ownership with employees. Also related to our paper, Bellon et al. (2021) use data at the individual-year level from a credit bureau to measure self-employment, which captures unincorporated entrepreneurs, and business ownership, which includes incorporated entrepreneurs. In their paper, the sample mean for self-employed is 2.0%. Table 3 shows that 0.7% of our sample are founders, which is also at the individual-year level. Our sample mean for founders is below Bellon et al. (2021) since we require a Schedule C filing to have an EIN and remove these filings that stem from reporting gig income. Our average is above Herkenhoff, Phillips, and Cohen-Cole (2021) because we do not impose that firms have employees, or that they match to credit bureau data or Census datasets.

[Insert Figure 3 Here]

Figure 3 maps the geography of entrepreneurship in the United States from 2012 to

2021, which is the sample period for our analyses. We determine the number of new firms created in a state for a particular year relative to the total number of new firms created in the U.S. in a particular year. For each state, we average the share of new firms created in the state across years. Then, we determine the quartile ranking across states. Darker blue shading indicates a larger share of firms created in a particular state. New firm creation is highest in California, the East Coast, Florida, Illinois, and Texas. These patterns are broadly similar to aggregate patterns of entrepreneurship (Andrews et al. (2022)), supporting our measure of entrepreneurship using U.S. tax returns.

[Insert Figure 4 Here]

Figure 4 shows a map of the relationship between the gig economy and entrepreneurship across the United States. For each state, we determine the correlation between the yearly count of new firms created and the number of individuals participating in the gig economy during the previous year. Then, we determine the ranking across states. Darker blue shading indicates a higher positive correlation between new firm creation and participation in the gig economy in a particular state. The correlation is highest mainly in New York, Texas, and the Southeast, indicating areas of the United States where both the gig economy and entrepreneurship are comparatively larger.

## 3.2 Other Data and Summary Statistics

We incorporate additional data from U.S. tax returns for individuals and entrepreneurs. We use adjusted gross income, filing status, dependents, and Earned Income Tax Credit (EITC) from Form 1040. For adjusted gross income, we also construct income percentiles by county-year. Filing status indicates whether a taxpayer is a single or joint filer in a particular year. We add data on age and gender using information from the Social Security Administration.

We use data from Schedule C to construct firm outcomes at founding and subsequent performance. Since we focus on sole proprietorships with an EIN, we use this unique identifier to track firms over time. We construct variables to measure firm survival, revenues, employment, and profitability. We determine if a firm hires an independent contractor using the universe of Forms 1099-MISC, 1099-NEC, and 1099-K in a particular year. We do not focus specifically on gig firms since we cannot directly observe in tax returns if a firm hires a gig worker through a gig firm. We use interest expense to determine if a firm has debt.

[Insert Table 2 Here]

Table 2 provides summary statistics for variables used in our analyses. Panel A shows variables for individual analyses, which includes the universe of individuals in the U.S. from 2012 to 2021 aged 25 to 65 in the year of filing a tax return. We form this sample by splitting tax returns filed by a household with more than one person to separately include an observation for the primary filer and for the spouse. These variables include nearly 1.3 billion individual-years. About 1.4% of the sample are gig workers prior to year $t$. Almost 0.7% of individuals start a new firm in a particular year. Nearly 20% of the sample receives an Earned Income Tax Credit and half of individuals have dependents. Panel B includes variables for the cross-section of entrepreneurs. About 3.5% of founders are previously gig workers. Panel C has the variables for firm outcomes. More than half of firms do not survive three years after founding. Approximately 10% of firms use independent contractors in years one, two, and three following their opening.

# 4 Entrepreneurship and the Gig Economy

In this section, we use administrative data on the population of U.S. tax filers to study the role of the gig economy in facilitating entry into entrepreneurship. Section 4.1 provides univariate evidence on the connection between gig work and entrepreneurial activity. Section 4.2 evaluates the relationshop between prior work in the gig economy and entry into entrepreneurship. Section 4.3 examines the characteristics of individuals working in the gig economy who create new firms.

## 4.1 Univariate Evidence

We start by providing univariate evidence about the connection between gig work and entrepreneurial activity. A novel aspect of the tax administrative data is that we are able to identify and follow over time the population of individuals receiving gig income from a wide swath of gig firms. Additionally, we can observe when they start new firms. This allows us to link when individuals participate in the gig economy with new firms that they create over time.

We present univariate evidence on entrepreneurial activity and individual characteristics for different samples of our data. This analysis is at the individual-year level and the sample period is 2012 to 2021. *U.S. Population* includes all individuals filing taxes in the U.S. aged 25 to 65 in a particular year. *Gig Workers* contains those individuals in the *U.S. Population* who received gig income in a particular year. We also separate those founders receiving gig income before starting a firm (*Gig Founders*) from those who do not receive gig income prior to creating a firm (*Non-gig Founders*). We explore the following variables for these samples. *Founder* is an indicator variable equaling one if an individual starts a new firm in a particular year. *Adjusted Gross Income* is the adjusted gross income of an individual as reported on Form 1040 in a particular year. *Low Income* is an indicator variable equaling one if an individual's adjusted gross income is in the bottom tercile in a particular county-year. *Receives EITC* is an indicator variable equaling one if an individual receives an Earned Income Tax Credit in a particular year. *Single with Dependents* is an indicator variable equaling one if an individual's filing status on Form 1040 in a particular year is single and the individual has dependents attached to Form 1040. *Age* is an individual's age in a particular year.

[Insert Table 3 Here]

Table 3 shows the means for entrepreneurial activity and individual characteristics. We find that 2.5% of gig workers create new firms, which is significantly higher than the average in the population of 0.7%. This is an economically large difference, indicating that gig workers are, on average, 2.6 times more likely to start new firms. Gig workers have lower income and often are located in the bottom of the income distribution. We also find that gig workers are more likely to be single and have dependents, suggesting that gig workers are individuals who appear to have relatively less flexibility. Additionally, gig workers tend to be younger. We continue by examining differences between founders who are gig workers relative to those who are not. The average income for gig founders is about half relative to non-gig founders, which is further reflected in 43% of gig founders having low income. A significantly higher share of gig founders are single with dependents and gig founders are younger than non-gig founders.

Overall, based on the the univariate evidence, gig work might support entrepreneurship for those individuals who are capital constrained and who might require relatively more flexibility in their work arrangements. We provide regression evidence for the relationship between the gig economy and entry into entrepreneurship and which individuals respond in the following sections.

## 4.2 Entry into Entrepreneurship

We next study the role of participating in the gig economy on entry into entrepreneurship. On the one hand, the gig economy may ease barriers faced by an individual looking to start a new firm. Alternatively, the gig economy could substitute for entrepreneurial activity. Previous work has shown ride-hailing services (Barrios, Hochberg, and Yi (2022)) and monetizing an asset for short-term rentals (Mao et al. (2023)) are associated with increases in new firm creation at the aggregate level. Using the population of U.S. tax filers from 2012 to 2021 for a wide range of gig firms, we compare the likelihood of starting a new firm for individuals who previously received income from the gig economy relative to those who did not participate in the gig economy. A distinct feature of our data is that we directly estimate the impact of the gig economy on the propensity to enter into entrepreneurship at the individual level.

In Table 4, we estimate the following specification at the individual-year level in columns (1) to (4):

$$Y_{i(c),t} = \alpha_{c\times t} + \beta \cdot \text{Gig Worker}_{i,before\ t} + \gamma \cdot \text{X}_{i,t-1} + \varepsilon_{i(c),t}, \tag{1}$$

where $Y_{i(c),t}$ measures the incidence of new firm creation by individual $i$ located in county $c$ in year $t$. $Gig\ Worker_{i,before\ t}$ is an indicator variable equaling one if individual $i$ received gig income prior to year $t$. Section 2.2 describes how we identify individuals who received gig income using a manually compiled list of gig firms and primarily Forms 1099-MISC, 1099-NEC, and 1099-K. The vector $X_{i,t-1}$ includes log adjusted gross income, gender, filing status, whether an individual has any dependents, and log age. The specification includes county-year fixed effects ($\alpha_{c\times t}$) to absorb unobserved time-varying local differences, except in column (1) which includes county and year fixed effects. In our strictest specification, we include granular fixed effects for each category of our control variables. The inclusion of granular fixed effects allows us to compare entrepreneurial entry for individuals who differ in terms of participation in the gig economy and are the same across observable characteristics. Standard errors are clustered at the county level. The coefficient of interest is $\beta$, which estimates the marginal effect of participating in the gig economy on entrepreneurial entry.

[Insert Table 4 Here]

In Panel A, we measure new firm creation as $Founder$, which is an indicator variable equaling one if an individual starts a new firm in a particular year.[8] Based on column (1), we find that individuals participating in the gig economy are 1.0 percentage points more likely to create a new firm. The effect is statistically significant and economically substantial, representing more than a doubling in the propensity of starting a new firm relative to the sample mean of 0.7%. We include county fixed effects to absorb time-invariant heterogeneity across locations and year fixed effects to account for macroeconomic time trends. Using the

[8]A potential concern is that gig workers use Schedule C filings to report gig income, which might be interpreted as new firm creation. Accordingly, we carefully exclude all Schedule C filings used for this reason as described in Section 3.1.

population of U.S. individuals allows us to include increasingly stricter fixed effects to assess the robustness of our estimates. In column (2), we interact county and year for the fixed effects to absorb time-varying local economic activity. The estimate for the effect of gig work on entrepreneurial entry remains statistically and economically unchanged. Next, we use individual characteristics to account for differences in the composition of individuals who participate in the gig economy. In column (3), we find that the result is quite similar when we include the controls. In column (4), we augment our model by saturating it with granular fixed effects for each individual characteristic. Specifically, this model includes 100 fixed effects for each income percentile, which is determined using an individual's adjusted gross income in a particular county-year. It also has 41 fixed effects for each age from 25 to 65. Further, it includes indicator variables for gender, filing status, and having any dependents. The results remain unchanged.

Although the stricter specification in column (4) accounts for differences between the observed characteristics of individuals participating in the gig economy compared to those in the rest of the economy, there could be a potential concern about omitted variables. A common unobserved factor might be correlated both with working in the gig economy and entry into entrepreneurship. To strengthen our evidence about the relationship between the gig economy and entrepreneurship, we leverage plausibly exogenous variation in the availability of gig work both geographically and over time following the approach of Jackson (2022). In particular, gig firms rolled out their platforms sequentially across different regions at different periods.[9] This approach defines a county as treated starting in the first year when at least 30 individuals located in the county receive gig income.

In column (5), we estimate the following specification:

$$Y_{i(c),t} = \alpha_{c\times t} + \beta \cdot \text{Gig Worker Staggered}_{i,before\ t} + \gamma \cdot \mathrm{X}_{i,t-1} + \varepsilon_{i(c),t}, \tag{2}$$

[9] This approach is related to papers studying the impact of the gig economy by focusing on a particular gig firm (Burtch, Carnahan, and Greenwood (2018), Barrios, Hochberg, and Yi (2022), and Mao et al. (2023)). Due to confidentiality reasons, we cannot study the availability of gig work through a specific gig firm.

where $Y_{i(c),t}$ continues to measure the incidence of new firm creation by individual $i$ located in county $c$ in year $t$, similar to equation (1). $Gig\ Worker\ Staggered_{i,before\ t}$ is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. Note that the inclusion of county-year fixed effects absorbs the level effect of gig work availability. For this specification, we define $X$ as a vector of granular fixed effects for each category of our control variables, following column (4) in Table 4. In column (5), we show that the estimated coefficient using the methodology of Jackson (2022) remains quite similar and that gig workers are 1.0 percentage points more likely to start a new firm. The stability of the estimated coefficient across the specifications suggests that it is unlikely an omitted variable drives the result.

To further evaluate the potential influence of omitted variables, we use the approach of Oster (2019) to formally test for this bias. For the Oster test, we focus on the strictest specification using controls in column (4) and the staggered availability of gig work in column (5). The test calculates the potential influence of omitted variables by comparing the coefficient and $R^2$ for a particular specification with the same regression excluding all controls. The adjusted coefficient ($\beta_{adj}$) is defined by Oster (2019) as:

$$\beta_{adj} = \beta_c - \delta\left(\beta_u - \beta_c\right)\frac{R^2_{max} - R^2_c}{R^2_c - R^2_u}, \tag{3}$$

where $\beta_c$ is the coefficient from the specification that includes controls and $\beta_u$ is the coefficient excluding all controls. The $R^2$ values are also from the specifications with and without controls. The parameter $\delta$ is the level of selection on unobservables relative to observed controls. The parameter $R^2_{max}$ is the hypothetical $R^2$ from a regression including the observed and unobserved controls. Following Mian and Sufi (2014), Hebert (2023), and Hu and Ma (2024) and the guidance in Oster (2019), we set $\delta$ to 1 and $R^2_{max}$ equal to $\min(2.2 \cdot R^2_c, 1)$.

Table A1 reports the results for the Oster test. Panel A provides the inputs and findings for the regression in column (4) and Panel B shows them for the regression in column (5). For the strictest specification with controls, we find that the estimate of $\beta_{adj}$ is 0.749. We also show that the estimate of $\beta_{adj}$ is 0.746 for the specification using the staggered availability of gig work. Both of these estimates are close to the corresponding estimates in Table 4, Panel A. The identified set is defined by Oster (2019) as the interval from $\beta_{adj}$ to $\beta_c$. The interval for both specifications is relatively narrow from [0.749, 0.981] and [0.746, 0.980] for columns (4) and (5), respectively. Accordingly, the Oster test rejects the null hypothesis that the estimated coefficient is zero after accounting for the potential influence of omitted variables. The last column in each panel estimates the $\delta$ such that the $\beta_{adj}$ is zero. These estimates show that the null hypothesis continues to be rejected when the level of selection on unobservables relative to observed controls is up to 422.8% and 417.9% for the specifications in columns (4) and (5), respectively. This level of explanatory power for the unoservables would be quite high. Oster (2019) argues that 100%, which implies a $\delta$ of 1, is a reasonable value since researchers focus on the most relevant observed controls (Angrist and Pischke (2010)). An important caveat is that we cannot completely rule out omitted variables. The approach in Oster (2019) allows us to test for potential bias under reasonable parameterizations and quantify the magnitude of omitted variables needed to account for the baseline estimates.

In Panel B, we turn to separately studying the effect of the gig economy on starting a new firm for the first time by defining $First\text{-}time\ Founder$ as an indicator variable equaling one if an individual starts a new firm in a particular year and has not previously created a firm. This allows us to understand the role of the gig economy in facilitating entry into entrepreneurship for individuals who have not previously created a firm. Column (1) shows that gig workers are 0.8 percentage points more likely to start a new firm, which includes county and year fixed effects. Comparing this estimate to the corresponding model in Panel A, we find that about 74% of the effect of the gig economy on entrepreneurial entry is explained by individuals creating a firm for the first time. We include increasingly stricter fixed effects or controls as in Panel A. We continue to find nearly identical estimates in columns (2) to (4). The results remain similar in column (5), where we exploit the staggered availability of gig work.

We provide several extensions of the baseline analysis. First, we consider alternative measurements of an individual's participation in the gig economy. Note that the variable of interest, $Gig\ Worker_{i,before\ t}$, in the baseline specification includes the effect of working in the gig economy in $t$-1 and also the effect of working in the gig economy before $t$-1. In Table A2 of the Appendix, we define $Gig\ Worker\ Previous\ Year$ as an indicator variable equaling one if an individual received gig income in year $t$-1. We also construct the analogous variable for the staggered availability of gig work ($Gig\ Worker\ Staggered\ Previous\ Year$). Across the same specifications as in Table 4, we find that participating in the gig economy in the previous year increases an individual's likelihood of starting a new firm by 0.9 percentage points. Notably, this estimate is close to the baseline estimate of a 1.0 percentage point increase in the propensity to start a new firm. This suggests that the effect of the gig economy on entrepreneurship is primarily driven by recent gig work.

Next, we examine the extent of prior experience in the gig economy. We construct $Gig\ Worker\ Number\ of\ Years$ as the number of years that an individual received gig income prior to year $t$. We continue to construct the similar variable for the staggered availability of gig work ($Gig\ Worker\ Staggered\ Number\ of\ Years$). In Table A2, Panel B shows that a one year increase in the number of years an individual received gig income increases the propensity of starting a new firm by 0.5 percentage points. This indicates that additional years of experience in the gig economy increase the propensity to start a new firm.

In Table A3, we also differentiate between the source of gig income as transportation, leasing, selling, and services as defined in Section 2.2. Based on the strictest specification using the staggered availability of gig work in column (5), we find that transportation gig work increases the likelihood of starting a new firm by 0.8 percentage points, while leasing, selling, and services gig work amplify the probability of creating a firm by 1.0, 1.3, and, 0.8 percentage points, respectively. These estimates suggest that the effects are somewhat larger for selling and leasing gig work.

We continue by evaluating if the estimates differ over the sample period. This might occur because there has been considerable growth in the gig economy from 2012 to 2021, as shown in Figure 2. In Table A4, we split the sample from 2012 to 2016 in Panel A and from 2017 to 2021 in Panel B. The estimates are broadly similar across the subsamples, suggesting that the relation between gig work and entrepreneurship has been stable over the sample period.

Do financial constraints play a role in the effect of the gig economy on entrepreneurship? We construct a proxy of fixed costs of starting a new firm across industries by measuring a firm's assets in its founding year. We use data on assets available for partnerships and corporations (Forms 1065, 1120, and 1120-S). Note that Schedule C does not include information on a firm's assets. We calculate the average assets across firms in a sector based on two-digit North American Industry Classification System (NAICS) codes during our sample period. We split sectors into high versus low fixed costs based on the median. This approach splits the outcome variable of $Founder$ into two parts: firms started in high fixed cost industries and those formed in low fixed cost industries. In Table A5, Panel A provides the results for firms started in high fixed cost industries and Panel B shows the estimates for firm created in low fixed cost industries. There is a 0.7 percentage point increase in the likelihood of starting a new firm in a high fixed cost industry if an individual previously worked in the gig economy across each specification, while the estimate is a 0.3 percentage point increase for the comparable coefficient in a low fixed cost industry for all columns. Comparing the same column in Panels A and B, we find that the coefficients are statistically significantly different. The larger estimates in high fixed cost industries are consistent with gig work mitigating financial constraints in entering entrepreneurship and connect our findings to the related literature (e.g., Evans and Jovanovic (1989), Hurst and Lusardi (2004), and Robb and Robinson (2014)).

Taken together, we provide the first micro-level evidence about the relationship between the gig economy and new firm creation across the entire U.S. population for a large array of gig firms. The set of results in this section suggest that individuals with prior experience in the gig economy are substantially more likely to start new firms and new firm creation is driven by those with no prior entrepreneurial experience. These estimates are consistent with aggregate evidence provided by Barrios, Hochberg, and Yi (2022) and Mao et al. (2023) for specific gig firms. They also build on prior literature about levers influencing entry into entrepreneurship (e.g., Evans and Jovanovic (1989), Kerr and Nanda (2009), Hombert et al. (2020), and Gottlieb, Townsend, and Xu (2022)).

## 4.3 Who Responds?

We next examine the characteristics of individuals in the gig economy who respond by creating new firms. Detailed information on individuals available in U.S. tax returns allows us to explore differential responses based on specific traits. We extend our baseline specification for the staggered availability of gig work by interacting an individual's particular characteristic with $Gig\ Worker\ Staggered_{i,before\ t}$ as follows:

$$\begin{aligned} Y_{i(c),t} = \alpha_{c\times t} &+ \beta_1 \cdot \text{Gig Worker Staggered}_{i,before\ t} \cdot \text{Characteristic}_{i,t-1} \\ &+ \beta_2 \cdot \text{Gig Worker Staggered}_{i,before\ t} + \beta_3 \cdot \text{Characteristic}_{i,t-1} \\ &+ \beta_4 \cdot \text{Gig Availability}_{c,t} \times \text{Characteristic}_{i,t-1} + \varepsilon_{i(c),t}. \end{aligned} \tag{4}$$

We focus on all newly created firms as the outcome in this section ($Founder$). We continue to define $Gig\ Worker\ Staggered_{i,before\ t}$ as an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. The variable $Characteristic_{i,t-1}$ is the characteristic of individual $i$ in year $t$-1. We include county-year fixed effects ($\alpha_{c\times t}$). The coefficient of interest is $\beta_1$, which captures the marginal effects of having a specific characteristic and previously participating in the gig economy on entrepreneurial entry. The specification also includes terms for the direct effects of participation in the gig economy and the specific individual trait, in addition to the interaction between $Gig\ Availability_{c,t}$ and the individual characteristic. We also provide the results following equation (1) in Table A6 and show that the estimates are similar.

We broadly investigate three categories of individual characteristics. First, we evaluate the differential response by individuals with lower income. Since the downside of entrepreneurship is relatively smaller for this group, they might be more willing to experiment with a new idea (Salgado (2020)). Gig income might also mitigate liquidity constraints faced by low-income individuals entering into entrepreneurship. Second, we explore heterogeneity in entrepreneurial entry by age. This characteristic relates to the potential importance of lifecycle considerations in entrepreneurial choice (Azoulay et al. (2020) and Bernstein et al. (2022)). Third, gig workers generally can decide when to participate in the gig economy. This flexibility might be particularly valuable for time-constrained gig workers, especially compared to other income opportunities such as salaried employment. We explore the importance of flexibility in facilitating entrepreneurial entry for individuals who potentially face relatively higher time constraints. By entering the gig economy, these individuals might be more likely to experiment through entrepreneurial activities.

[Insert Table 5 Here]

Table 5 presents the results. In column (1), we start with log adjusted gross income (*Log AGI*) as the characteristic and find that gig workers with lower income are more likely to start new firms. Similarly, columns (2) and (3) show that gig workers who are in the bottom of the income distribution or claim income-related tax credits, respectively, are more likely to create new firms. These estimates are about 4.5% of the overall effect reported in Table 4. We also continue to report throughout the estimates in this table that gig workers are more likely to become entrepreneurs, which is consistent with Section 4.2.

We continue by evaluating the role of lifecycle considerations. In column (4), we find that the propensity to become entrepreneurs is significantly higher for relatively younger gig workers. Last, we explore the role of flexibility using two measures. In column (5), we proxy for individuals with relatively higher time constraints as those with dependents (*Has Dependents*) and show that gig workers with dependents are 0.1 percentage points more likely to start new firms. In column (6), we focus on gig workers with dependents and whose filing status is single to measure individuals facing particularly elevated time constraints. The likelihood of becoming an entrepreneur for gig workers who are single with dependents increases by 0.2 percentage points. In sum, our results highlight the role of individual heterogeneity in the responsiveness to entrepreneurial entry. Gig workers who are lower income, are relatively younger, and who might benefit from flexibility are substantially more likely to create new firms.

# 5 Firms Created by Gig Workers

This section studies newly created firms linked to individuals receiving income from the gig economy over time. Using all firms in the U.S. during the sample period, we evaluate firms at founding and their subsequent performance. In Section 5.1, we examine the industry composition of firms and its relation to an entrepreneur's previous work experience. Section 5.2 turns to assessing the characteristics of firms created by gig workers at founding and their subsequent performance. Section 5.3 explores the employment of independent contractors and capital structure at firms started by gig workers.

## 5.1 Industry Composition and Previous Work Experience

This section uses data on the universe of firms in the United States described in Section 3.1 from 2012 to 2021. For each firm, we determine whether an entrepreneur participated in the gig economy before the firm was started ("gig founder") or if the individual did not receive gig income prior to founding ("non-gig founder"). This allows us to precisely link individuals deriving income from the gig economy with the firms that they create.

We begin our firm-level analyses by evaluating how the industry composition of firms started by gig founders compares to those created by non-gig founders. We extract information on the industry classification of newly created firms from the two-digit NAICS code reported in firms' tax returns. We aggregate each two-digit NAICS sector in parentheses to nine broad industries using the following classification: Arts and Media (51, 71), Finance and Real Estate (52, 53, 55), Healthcare (62), Manufacturing (23, 31, 32, 33), Personal Services (61, 72, 81), Professional Services (54, 56), Resource Extraction (11, 21, 22), Trade (42, 44, 45), and Transportation (48, 49). We exclude firms with no industry reported and those in sector 92 (Public Administration). For all firms in the sample, we construct the share of newly created firms in a particular industry for gig founders. We also separately determine these shares for firms with non-gig founders.

[Insert Figure 5 Here]

Figure 5 provides the share of new firms started in industries split by gig and non-gig founders. The darker red bars show the proportion of firms in a particular industry for founders receiving gig income before creating a firm. The lighter gray bars display the share of firms formed in a particular industry for non-gig founders. Note that we exclude Schedule C filings that are used to report gig income as described in Section 3.1. We find that a substantial amount of entrepreneurship is concentrated in personal and professional services and trade across all firms. There is also large variation in industries based on gig versus non-gig founders. Gig founders tend to create more firms in personal services, transportation, and trade. Further, we show that non-gig founders start a relatively higher share of firms in healthcare, manufacturing, and professional services.

Next, we examine the transition into entrepreneurship based on the type of gig firm from which a gig worker received income. For this analysis, we restrict our attention to entrepreneurs who previously participated in the gig economy and classify an entrepreneur's experience in the gig economy based on gig firm type. As in Section 2.2, each gig firm is classified into four categories based on the tasks intermediated by the specific platform: leasing, selling, services, and transportation. Then, we estimate the share of individuals receiving gig income and starting new firms in a particular industry across the different gig firm categories.

[Insert Table 6 Here]

Panel A of Table 6 reports the transitions from gig firm type to the industry of newly created firms. We broadly find evidence that entrepreneurs transition from the gig economy into similar industries. For example, 67.2% of entrepreneurs with experience in selling through the gig economy operate in the trade industry. Likewise, about half of entrepreneurs participating in the services sector of the gig economy operate in personal and professional services.

We continue by comparing the likelihood of creating a firm in a sector where an entrepreneur has been previously employed for gig and non-gig founders. Specifically, we employ the following specification for our sample of entrepreneurs:

$$Y_{j(c),t} = \alpha_{c\times t} + \beta \cdot \text{Gig Worker Staggered}_{j,before\ t} + \varepsilon_{j(c),t}, \tag{5}$$

where $Y_{j(c),t}$ is the outcome variable equaling one if entrepreneur $j$ located in county $c$ starts a firm in year $t$ in the same sector as any prior employment. $Gig\ Worker\ Staggered_{i,before\ t}$ is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. We include county-year fixed effects ($\alpha_{c\times t}$) to absorb unobserved time-varying county-level variation. Standard errors are clustered at the county level.

Panel B of Table 6 provides the results. We separately investigate whether this is overlap in an entrepreneur's newly created firm with any prior experience in a sector and, specifically, experience in the gig economy. In column (1), the outcome variable (*Repeat Sector*) is an indicator variable equaling one if an entrepreneur starts a new firm in the same sector as prior work experience based on W-2 and 1099 income. This measure of experience includes any W-2 and 1099 income received before starting a new firm, both from gig and non-gig firms. We find entrepreneurs who previously participated in the gig economy are 4.1 percentage points more likely to create a firm in a sector where they have prior experience. The effect is statistically significant at the 1% level and economically large, representing an 8.1% increase relative to the sample mean. We also examine the role of the gig economy by defining *Repeat Sector Gig* as an indicator variable equaling one if an entrepreneur's newly started firm is in the same sector as any prior gig experience. In column (2), we show that entrepreneurs who previously participated in the gig economy are 1.2 percentage points more likely to create a firm in the sector where they have prior gig experience. Additionally, Table A7 provides the estimates for the analogous specification where the variable of interest is $Gig\ Worker$, which we refer to as the controls approach. We show that the estimates are statistically and economically similar.

To sum up, this section provides evidence suggesting that gig workers often start new firms in industries that are related to the type of gig firm from which they received income, as well as in industries related to their overall past work experience. A natural interpretation of these results is that the gig economy, in addition to past work experience, could act as a pathway to entrepreneurship by allowing individuals to learn about a specific industry. This is also consistent with our results on who responds by entering into entrepreneurship after working in the gig economy: those individuals who are lower income, relatively younger, and value flexibility are likely potential entrepreneurs with a higher marginal benefit from on-the-job learning. By learning from prior work experiences, entrepreneurs might be able to alleviate information frictions associated with the uncertainty of entrepreneurship, allowing them to accumulate industry-specific knowledge and business-related acumen.

## 5.2 Firms at Founding and Performance

In this section, we investigate firm-level characteristics at founding and subsequent performance. We compare firm outcomes for entrepreneurs who have previously participated in the gig economy with founders who have not received gig income using the following specification:

$$Y_{k(cs),t} = \alpha_{c\times t} + \alpha_s + \beta \cdot \text{Gig Worker Staggered}_{k,before\ t} + \varepsilon_{k(cs),t}, \tag{6}$$

where $Y_{k(cs),t}$ is an outcome for firm $k$ located in county $c$, operating in industry $s$, and founded in year $t$. We measure outcomes at founding in the year a firm is created. We also examine performance in years one to three after a firm is started. $Gig\ Worker\ Staggered_{i,before\ t}$ is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. We include county-year fixed effects ($\alpha_{c\times t}$) to absorb unobserved time-varying county-level variation. We use industry ($\alpha_s$) fixed effects to capture time-invariant industry heterogeneity. Standard errors are clustered at the county level. The coefficient of interest, $\beta$, estimates the marginal effect of participating in the gig economy by an entrepreneur on a firm outcome.

[Insert Table 7 Here]

In Table 7, we first examine the size of newly created firms at founding for entrepreneurs with and without prior experience in the gig economy using equation (6). We use two measures of firm size. First, we use revenues reported on a firm's Schedule C, which has nonnegative values. Since it can be zero and is a continuous variable, we define *Revenues* as the log of one plus revenues for a firm. Second, we construct *Employees* as a count of the number of employees at a firm, which includes both salaried employees and independent contractors. In column (1), we find that firms started by gig workers have revenues that are 22.9% higher than those founded by entrepreneurs who have not participated in the gig economy.[10] In column (2), we use a Poisson model since the outcome is a count variable (Cohn, Liu, and Wardlaw (2022)). We show that the number of employees at gig-founded firms is 39.3% higher at firms started by gig workers. These results suggest that entrepreneurs with prior experience in the gig economy tend to create larger firms at founding.

We provide several extensions to assess the robustness of these results. First, we include the following controls in equation (6): log adjusted gross income, gender, filing status, an indicator for having dependents, and log age. In Table A8, we continue to find that firms started by gig workers have higher revenue and more employees at founding. We also examine the differential response based on the founders' characteristics by estimating the coefficients for subsamples based on income, flexibility, and age. In Figure A3, Panels A and B provide the estimates for revenues and employees at founding, respectively. We generally find that most estimates are similar to the baseline coefficients. Second, Table A9 presents the estimates using the controls approach where the variable of interest is $Gig\ Worker$ and reports similar findings. Last, we condition the sample to include firms with at least one employee within the first five years of founding. In Table A10, we continue to show that firms started by gig workers have higher revenue and more employees. Combined, we broadly find consistent evidence that gig workers form larger firms in their founding year.

Next, we evaluate firm outcomes in the years following creation. We construct the following firm outcomes in years one to three after a firm is established. To capture the likelihood of survival, we define $Survival$ as an indicator variable equaling one if a firm is observed in a particular year after founding. We also construct $Profitability$ as the inverse hyperbolic sine of a firm's gross profits as reported in a firm's Schedule C for a particular year after a firm is started.

[Insert Table 8 Here]

Table 8 provides the results for firm performance. Panel A shows the estimates for the

[10] When the outcome is a natural logarithm, we report the exponentiated coefficient minus one in the text. The tables contain the raw coefficients.

effect of participating in the gig economy on firm survival. Note that the number of observations decreases across specifications since recently created firms do not yet have survival measures for future years. We find that firms started by gig founders are significantly less likely to survive in the one to three years following their creation relative to firms formed by non-gig founders. These effects are present in both the short and long run. Gig-founded firms are 2.6 percentage points less likely to survive in the first year after founding, which rises to 3.2 percentage points three years following creation. Relative to the respective sample means, this is a decrease of 3.7% to 7.1% in the likelihood of survival. Since firms enter our sample in the first year that we observe them in the tax returns data, an alternative interpretation of these findings is that the initial gig period could be considered a soft launch of the business and, accordingly, gig-founded firms might not have a lower likelihood of survival compared to firms started by non-gig founders when including this initial period. Panel B examines firm profitability for years one to three after founding. Since firm performance is only available for existing firms, it is necessarily conditional on survival. For firm profitability, we find that firms started by gig workers have 39.4% to 46.9% higher profits.

We examine the robustness of the estimates for firm performance. In Table A11, we include controls for income, gender, filing status, dependents, and age, and report similar estimates. Figure A3 provides the estimates for subsamples based on income, flexibility, and age. Panels C and D show the estimates for survival and profitability three years after founding, respectively. We largely show that the estimates are close to the baseline coefficients. Table A12 provides the results using the controls approach where the variable of interest is $Gig\ Worker$ and finds similar estimates. In Table A13, we reestimate the results for firms with at least one employee within the first five years of founding and report broadly consistent findings.

[Insert Table 9 Here]

In the last set of analyses for this section, we provide additional evidence about the performance of gig-founded firms by examining the evolution of employment in newly created firms. Table 9 presents the estimates. In Panel A, the outcome is an indicator variable equaling one if a firm has any employees in a particular year (*Has Employees*). We find that gig-founded firms are 0.9 to 2.1 percentage points more likely to have employees, which is a 5.7% to 12.3% increase relative to the respective sample means. Panel B reports estimates where the outcome is an indicator variable equaling one if a firm has at least five employees in a particular year after founding (*At Least Five Employees*). We show that gig-founded firms tend to have a significantly higher number of employees. In particular, firms started by gig workers are 0.5 to 1.2 percentage points more likely to employ at least five individuals, which is a 7.6% to 16.1% rise compared to the respective sample means. We also provide the estimates using the controls approach where the variable of interest is *Gig Worker* in Table A14 and show that the estimates are similar. These findings indicate that gig-founded firms are more likely to have employees and operate firms with a relatively high number of employees in the years following their founding.

Paired with the results in Section 5.1, this section provides novel evidence on the characteristics of firms started by gig workers. When they start new firms, gig workers appear to bear more risk by creating larger new ventures that are less likely to survive. However, surviving firms realize higher performance and grow larger over time. Prior literature highlights that experimentation plays a key role in entrepreneurship (Manso (2011) and Kerr, Nanda, and Rhodes-Kropf (2014)). If the gig economy lowers the costs of entry into entrepreneurship, it could allow founders to experiment and take greater risks. Then, newly created firms would exhibit more extreme outcomes, including higher exit rates and better performance at surviving firms. An interpretation of our findings is that firms started by gig founders display greater experimentation and increased risk taking. Shorter average survival is also consistent with gig founders learning about the prospects of their firm more quickly and shutting down sooner.

## 5.3 Independent Contractors and Capital Structure

We conclude our firm-level analyses by offering additional evidence on the employment decisions and capital structure of firms started by gig workers. The administrative data on U.S. tax returns allow us to separately track salaried workers, based on receiving a W-2, and independent contractors, based on information returns provided by firms to the IRS. For every firm in our sample, we construct an extensive margin measure based on whether a firm employs independent contractors ($Has\ Contractors$). We also define an intensive margin proxy using the number of independent contractors employed in a particular year ($Number\ of\ Contractors$). Similar to our previous analyses, we track employment of independent contractors for one to three years after founding.

[Insert Table 10 Here]

Table 10 presents the results. Panel A shows the extensive margin. We find that gig-founded firms are significantly more likely to employ independent contractors relative to firms with a non-gig founder in the one to three years after founding. The increases are statistically significant at the 1% level and economically substantial. The likelihood of hiring an independent contractor is 9.5% to 18.2% higher at gig-founded firms relative to ones with a non-gig founder compared to the respective sample means. Panel B provides the intensive margin, which is estimated using a Poisson model because the outcome is a count variable. There is an economically large increase of 25.3% to 44.7% in the number of independent contractors hired by gig-founded firms. Table A15 presents the results using the controls approach where the variable of interest is $Gig\ Worker$ and reports broadly consistent estimates.

In the final set of firm-level analyses, we evaluate the capital structure of firms started by gig workers. Participation in the gig economy might allow entrepreneurs to earn additional income, subsequently increasing liquidity and the likelihood of accessing external credit. Additionally, the gig economy often relies on the provision of an individual's physical capital

(Buchak (2024)), which may improve access to external financing for gig founders who can use this capital as collateral. We use information on a firm's interest expense as reported in Schedule C to measure whether a firm has debt in a window after founding. We define *Has Debt* as an indicator variable if a firm has debt by a particular year after founding based on reporting interest expense.

[Insert Table 11 Here]

Table 11 provides the results on capital structure. We find that there is a sizable increase in access to external credit for gig founders relative to firms started by entrepreneurs who have not received gig income. In the first year after a firm is started, a gig founder is 1.2 percentage points more likely to use debt. The estimate rises to 3.4 percentage points by year three. In economic terms, there is a 10.2% to 17.9% increase in the probability of a gig-founded firm having debt one to three years after creating a new firm relative to the respective sample means. We also present the estimates in Table A16 using the controls approach where the variable of interest is $Gig\ Worker$ and show that the estimates are similar.

In sum, this section presents results suggesting that firms started by gig workers employ more independent contractors. They are consistent with evidence in Sections 5.1 and 5.2 about the gig economy potentially supporting learning and experimentation by entrepreneurs. To the extent that experience in the gig economy acts as a vehicle for learning, gig founders might rely relatively more on independent contractors to accelerate firm growth and more flexibly respond to unexpected shocks. Additionally, if the gig economy encourages experimentation by entrepreneurs, gig-founded firms could use more independent contractors to explore the prospects of new entrepreneurial ventures. The findings also indicate that gig founded firms have more debt, suggesting that the gig economy might enable gig workers to access capital markets.

# 6 Are Gig Founders Better Off?

A longstanding puzzle in the entrepreneurship literature is why individuals start new firms if they appear to receive less income and bear more risk (Hamilton (2000) and Moskowitz and Vissing-Jørgensen (2002)). An explanation is the option to return to a job may encourage individuals to experiment with entrepreneurship (Manso (2016) and Catherine (2022)). Motivated by this literature, this section evaluates the income of individuals participating in the gig economy who enter into entrepreneurship. Based on the results in Section 5, the effect on entrepreneurs' income is not necessarily clear as survivorship is lower for gig-founded firms, while performance is generally higher.

We compare changes in income for entrepreneurs who participate in the gig economy prior to starting a firm relative to those who have not received gig income using the following specification:

$$Y_{j(cs),t} = \alpha_c + \alpha_s + \alpha_t + \beta \cdot \text{Gig Worker}_{j,before\,t} + \varepsilon_{j(cs),t}, \tag{7}$$

where $Y_{j(cs),t}$ is an outcome that measures income changes for entrepreneur $j$ whose firm is located in county $c$, operating in industry $s$, and founded in year $t$. $Gig\ Worker_{j,before\,t}$ is an indicator variable equaling one if entrepreneur $j$ received gig income prior to year $t$. We continue to include county ($\alpha_c$) and industry ($\alpha_s$) fixed effects to capture time-invariant heterogeneity in the local economy and industry, respectively. We use founding-year fixed effects to absorb time trends in firm creation ($\alpha_t$). Standard errors are clustered at the county level.

Using the administrative data on U.S. tax returns, we track income dynamics using adjusted gross income for all entrepreneurs over time, which we can observe regardless of a firm's survival. We construct two measures of an entrepreneur's income. First, we define *Change in Income* as the difference in the log of an entrepreneur's adjusted gross income in a particular year relative to the firm's founding year. This variable provides an estimate of the growth in a founder's income since starting a firm. Second, we form

*Increase in Income Percentile* as an indicator variable equaling one if an entrepreneur's income percentile in a particular year increases relative to the firm's founding year. Income percentiles are based on adjusted gross income within a county-year.

[Insert Table 12 Here]

Table 12 presents the results. In Panel A, we evaluate the change in an entrepreneur's income relative to founding. Column (1) shows that gig founders earn 3.2% higher adjusted gross income in the year after they start a firm relative to entrepreneurs who have not participated in the gig economy. The wedge between gig and non-gig founders is persistent and gradually grows over time, increasing to 9.5% and 13.1% two and three years after founding, respectively (columns (2) and (3)). In Panel B, we report the estimates for the change in an entrepreneur's income percentile relative to a firm's founding year. This approach allows us to compare the ranking of an entrepreneur in the income distribution in a specific geography and at a particular time. We show that gig founders are more likely to rise in the income distribution relative to non-gig founders. Column (1) shows that there is a 1.1 percentage point increase in the likelihood of rising in the income distribution one year after founding, which grows to 1.9 and 2.0 percentage points two and three years after founding, respectively (columns (2) and (3)). Economically, this represents a 2.1% to 3.2% increase compared to the respective sample means. Table A17 provides the estimates using the controls approach where the variable of interest is $Gig\ Worker$, and shows that the results are statistically and economically similar.

Overall, our findings suggest that gig workers who start new firms are better off in terms of their income. This is also consistent with the gig economy benefiting workers through higher future income from opportunities beyond the gig job itself. An important caveat for these results is that we compare gig founders to entrepreneurs, which might not be an appropriate reference group for a gig worker's income trajectory. However, this group likely has a higher income trajectory relative to many gig workers.

# 7 Conclusion

The gig economy has grown considerably in the U.S. economy over the past decade. We use detailed administrative data on U.S. tax returns for the universe of firms and individuals from 2012 to 2021 to study the effect of the gig economy on entrepreneurial entry. We find that individuals who previously received income from the gig economy are significantly more likely to start new firms. We also show that first-time entrepreneurs account for three-quarters of this effect. We further investigate the role of capital constraints, lifecycle considerations, and flexibility in spurring entrepreneurial entry by exploring heterogeneity in terms of individual characteristics. We find that the effect is amplified for individuals with lower income, who are relatively younger, and who might benefit from flexibility.

We track the universe of firms created in the United States during our sample period linked to individuals participating in the gig economy. This allows us to study firms at founding and evaluate their subsequent performance. We find that gig workers generally start firms in industries similar to the gig firms from which they received income. Entrepreneurs who had participated in the gig economy create larger new ventures at founding. Following these firms over time, we show that gig-founded firms are less likely to survive. However, surviving firms realize higher performance and grow larger relative to firms started by non-gig founders. Overall, an interpretation of these results is that experience in the gig economy allows individuals to learn about entrepreneurship and experiment through their newly created firms.

Labor market disruptions can play a role in the profile of entrepreneurial endeavors. As the gig economy grows, much attention has been paid to its benefits and costs. We provide evidence that the gig economy can provide a pathway to entrepreneurship and show that gig workers appear to be better off. Future research can expand our understanding of transitions between the gig economy and other labor markets. There are also open questions about how the gig economy might reduce or amplify shocks faced by individuals and firms.

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Figure 1: Gig Economy in the United States

This figure provides a map of the gig economy in the United States from 2012 to 2021. For each state, we construct the number of individuals who participated in the gig economy during the sample period relative to the state's labor force in 2021. Then, we determine the quartile ranking across states. Darker blue shading represents a larger share of individuals participated in the gig economy for a particular state. Section 2.2 describes the data on the gig economy using federal tax returns.

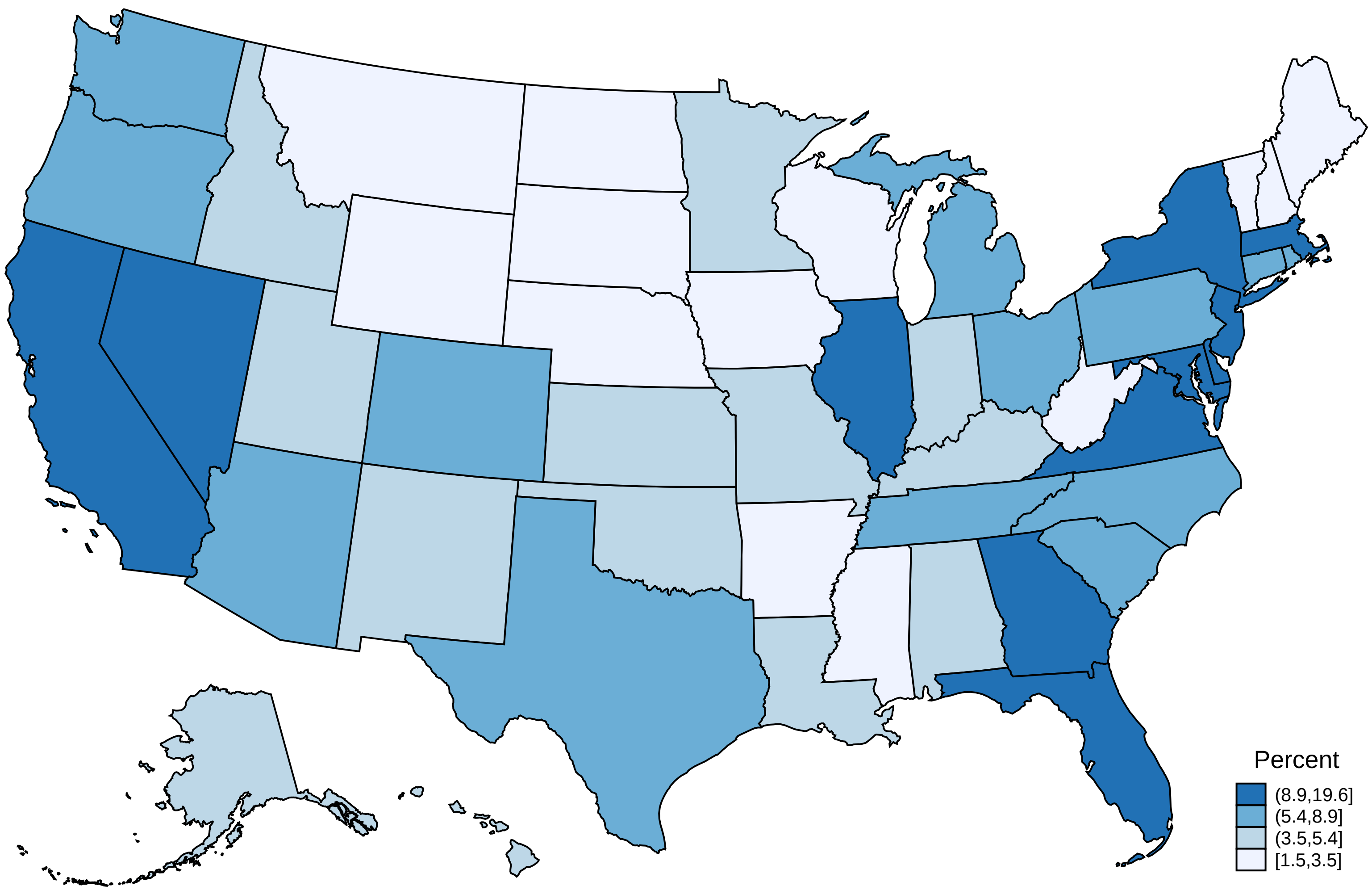
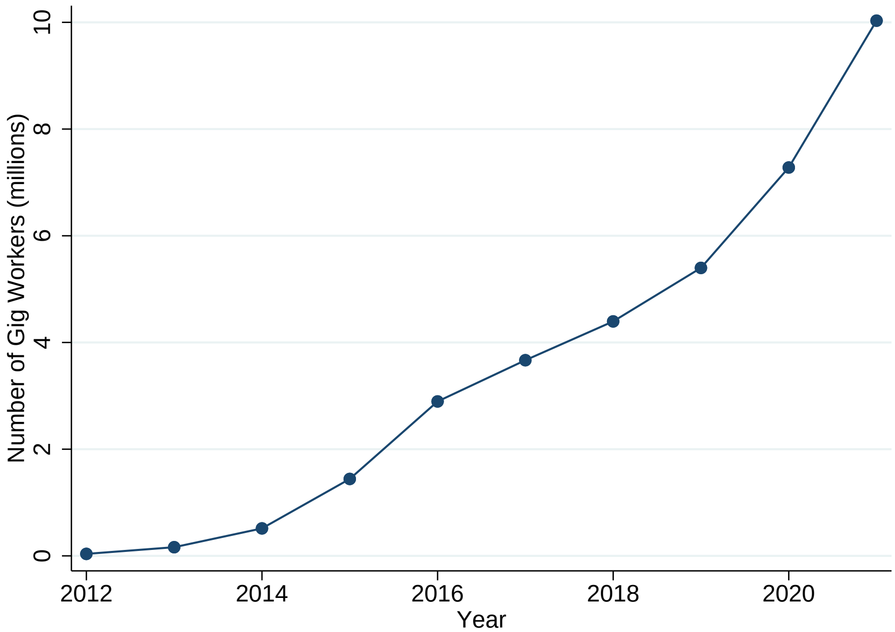


Figure 2: Gig Economy from 2012 to 2021

This figure plots U.S. participation in the gig economy from 2012 to 2021. Panel A shows the cumulative number of individuals who have worked in the gig economy by a particular year. Panel B provides the total amount of income in billions of dollars received by gig workers in a particular year, which is converted to dollars in 2012.

Panel A: Cumulative Number of Gig Workers




Panel B: Gig Income ($ 2012)

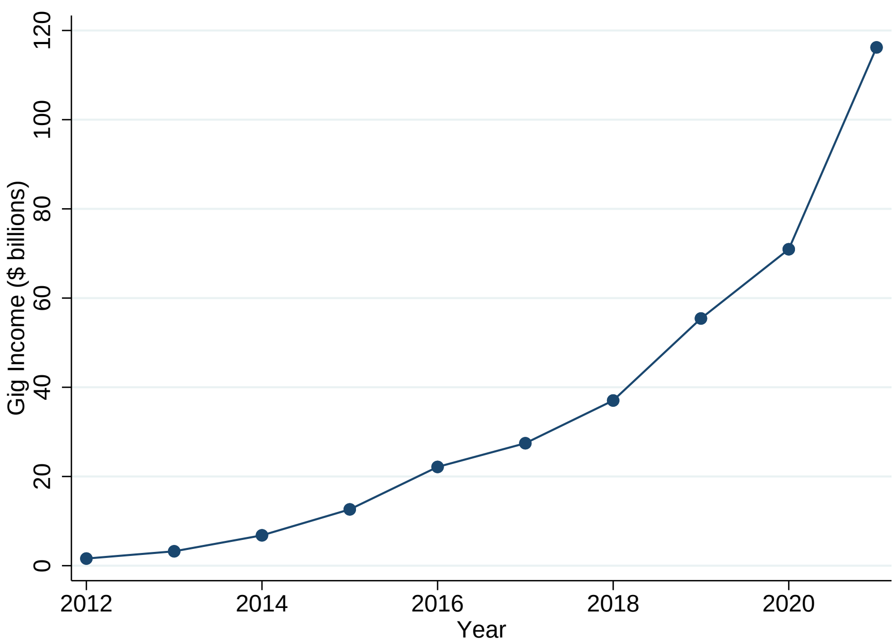


Figure 3: Entrepreneurship in the United States

This figure provides a map of new firms created in the United States from 2012 to 2021. We determine the number of new firms created in a state for a particular year relative to the total number of new firms created in the U.S. in a particular year. For each state, we average the share of new firms created in the state across years. Then, we determine the quartile ranking across states. Darker blue shading indicates a larger share of firms created in a particular state. Section 3.1 describes how new firm creation is measured using federal tax returns.

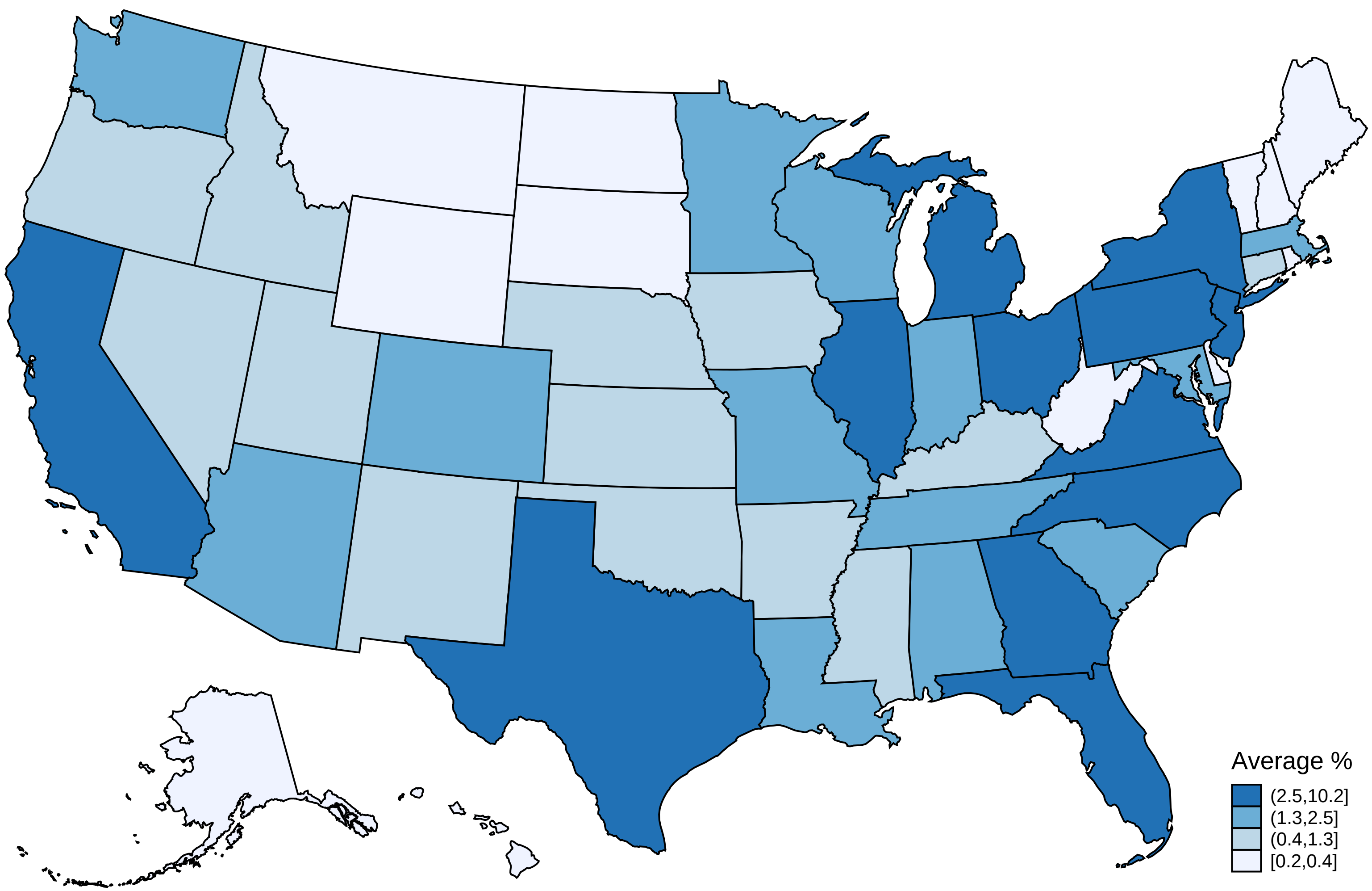


Figure 4: Relationship between the Gig Economy and Entrepreneurship

This figure shows the relationship between the gig economy and new firm creation in the United States from 2012 to 2021. For each state, we determine the correlation between the yearly count of new firms created and the number of individuals participating in the gig economy during the previous year. Then, we determine the ranking across states. Darker blue shading indicates a higher positive correlation between participation in the gig economy and new firm creation in a particular state. Section 2.2 describes the data on the gig economy and Section 3.1 explains how new firm creation is measured using federal tax returns.

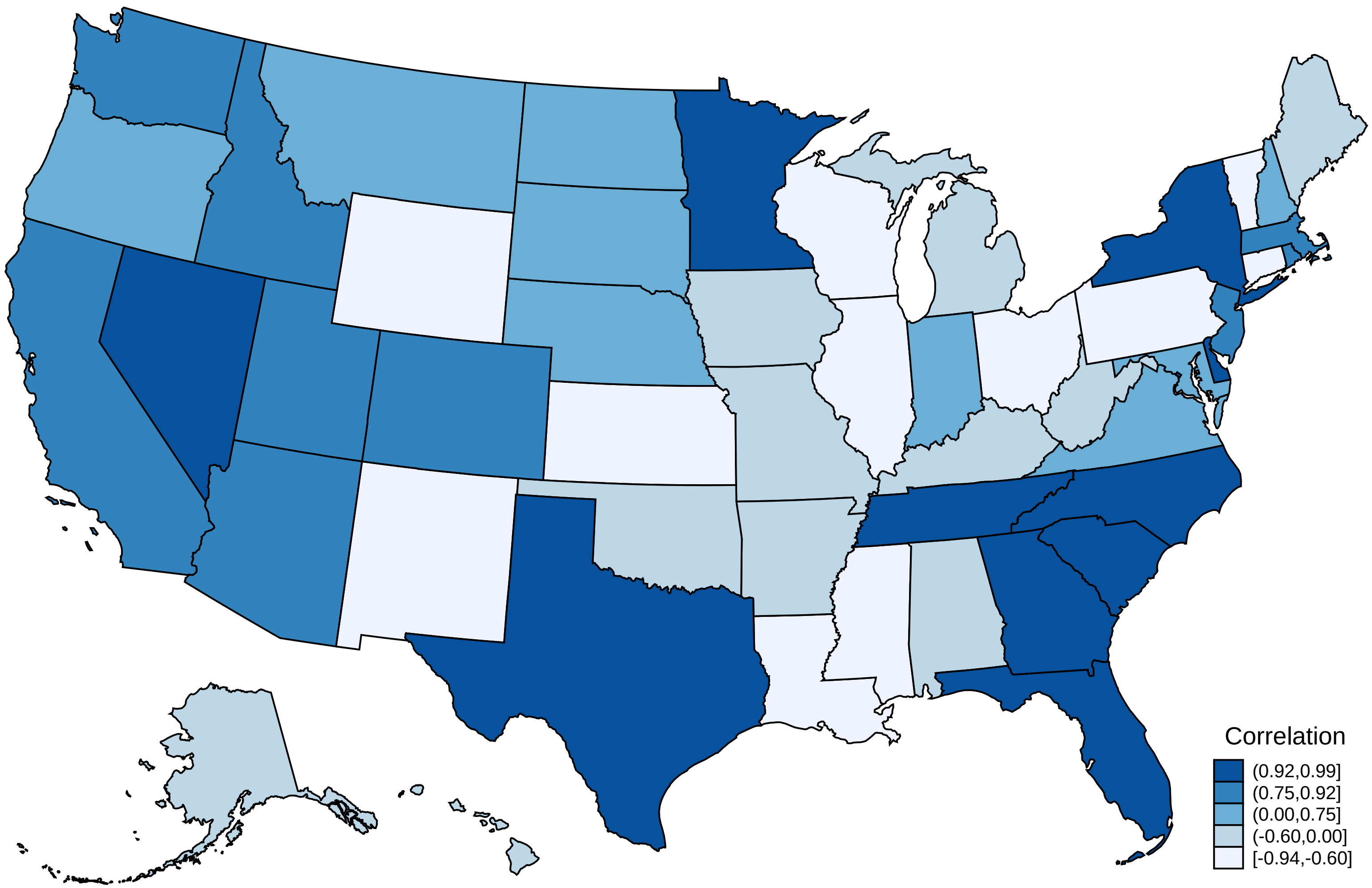


Figure 5: Industry Composition of New Firms

This figure provides the industry composition of new firms created from 2012 to 2021. The industries are based on groupings of two-digit NAICS codes as defined in Section 5.1. The darker red bars show the share of firms created in a particular industry by founders receiving gig income before starting a firm. The lighter gray bars display the share of firms started in a particular industry by founders who did not receive gig income before starting a firm. The shares sum to one for firms started by gig founders and also sum to one for firms created by non-gig founders. Section 2.2 describes the data on the gig economy and Section 3.1 explains how new firm creation is measured using federal tax returns.

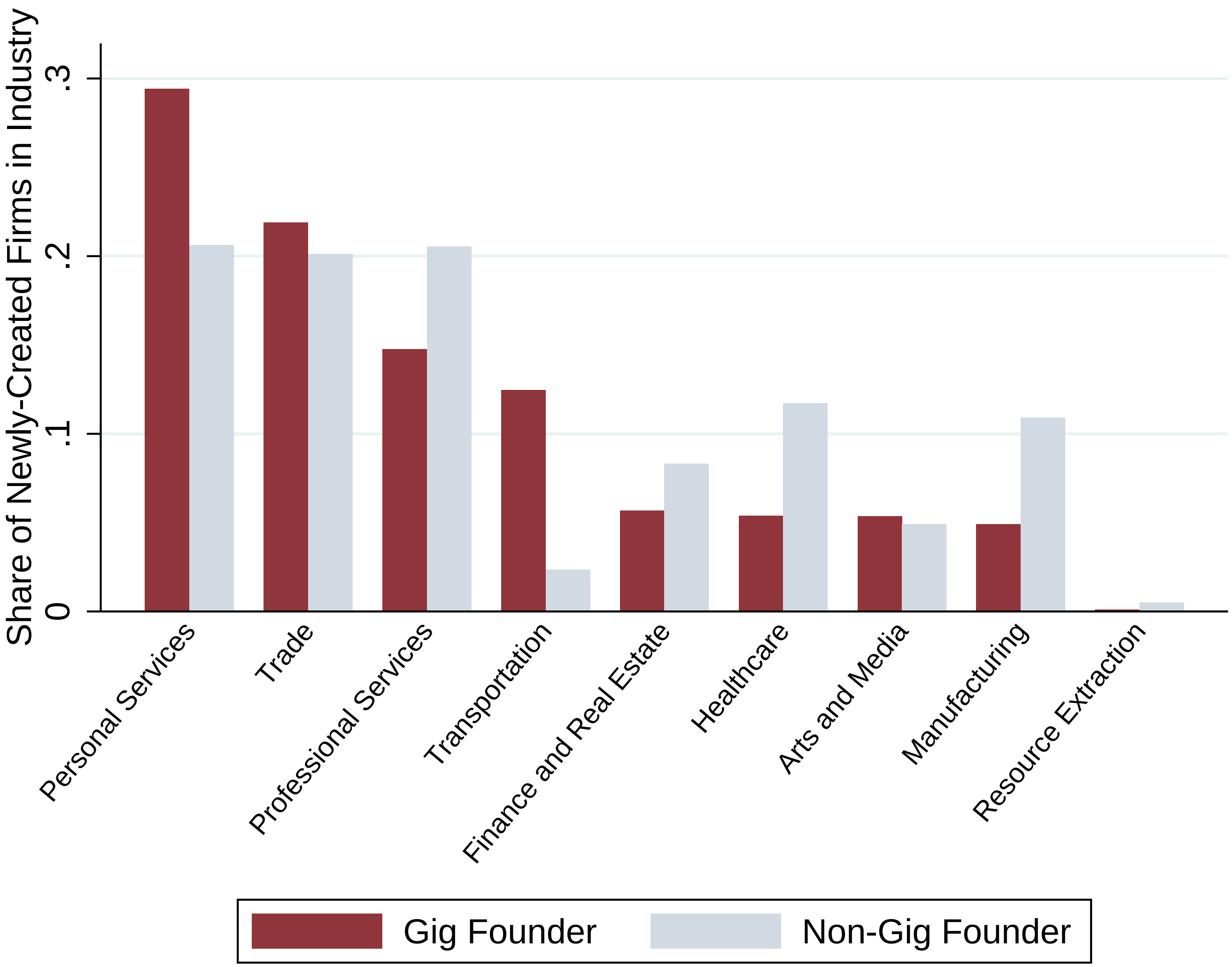


Table 1: Gig Economy in the United States

The table provides summary statistics on the gig economy in the United States from 2012 to 2021. Panel A tabulates the number of individuals participating in the gig economy each year. Gig income is the total income received by a worker from gig firms defined in Section 2.2. All measures of gig income in this panel are converted to dollars in 2012. Panel B shows the characteristics of individuals in the first year they received gig income. *Adjusted Gross Income* is a gig worker's adjusted gross income converted to dollars in 2012. *W-2 Income* is a gig worker's W-2 income converted to dollars in 2012. *Receives EITC* is an indicator variable equaling one if a gig worker received an Earned Income Tax Credit. *Age* is a gig worker's age. *Single* is a gig worker's filing status. *Has Dependents* is an indicator variable equaling one if a gig worker has any dependents based on Form 1040. *Female* is an indicator variable equaling one if a gig worker is female. Gig income, adjusted gross income, and W-2 income are rounded due to confidentiality reasons. Appendix A provides additional details on variable definitions.

Panel A: 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 | 0.218 | 0.124 | 22,000 |
| 2013 | 148,348 | 12,000 | 0.280 | 0.164 | 23,000 |
| 2014 | 450,646 | 10,000 | 0.237 | 0.139 | 21,000 |
| 2015 | 1,155,501 | 8,000 | 0.178 | 0.107 | 20,000 |
| 2016 | 2,125,347 | 8,000 | 0.199 | 0.116 | 19,000 |
| 2017 | 1,488,755 | 14,000 | 0.303 | 0.236 | 26,000 |
| 2018 | 1,401,706 | 18,000 | 0.369 | 0.305 | 31,000 |
| 2019 | 1,962,557 | 20,000 | 0.410 | 0.333 | 31,000 |
| 2020 | 3,111,025 | 14,000 | 0.251 | 0.176 | 30,000 |
| 2021 | 4,959,749 | 14,000 | 0.255 | 0.181 | 30,000 |

Panel B: 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 | 0.440 | 0.000 | 0.496 |
| Age | 9,840,231 | 39.351 | 37 | 10.532 |
| Single | 9,840,231 | 0.682 | 1.000 | 0.465 |
| Has Dependents | 9,840,231 | 0.443 | 0.000 | 0.496 |
| Female | 9,840,231 | 0.348 | 0.000 | 0.476 |

Table 2: Summary Statistics

This table provides summary statistics for variables used in our analyses. Panel A shows variables for individual analyses, which are conducted at the individual-year level. Panel B includes variables for the cross-section of entrepreneurs. Panel C has firm outcomes. The sample period is 2012 to 2021. All variables are defined in Appendix A.

Panel A: Individual-Year Variables

| Variable | Number of Observations | Mean | Median | Standard Deviation |
|---|---|---|---|---|
| Gig Worker | 1,265,172,170 | 0.014 | 0.000 | 0.119 |
| Gig Worker Staggered | 1,265,172,170 | 0.014 | 0.000 | 0.118 |
| Founder | 1,265,172,170 | 0.007 | 0.000 | 0.081 |
| First-time Founder | 1,265,172,170 | 0.005 | 0.000 | 0.073 |
| Log AGI | 1,265,172,170 | 10.758 | 10.968 | 1.647 |
| Low Income | 1,265,172,170 | 0.325 | 0.000 | 0.469 |
| Receives EITC | 1,265,172,170 | 0.197 | 0.000 | 0.398 |
| Has Dependents | 1,265,172,170 | 0.505 | 1.000 | 0.400 |
| Single with Dependents | 1,265,172,170 | 0.143 | 0.000 | 0.350 |
| Log Age | 1,265,172,170 | 3.750 | 3.784 | 0.273 |

Panel B: Entrepreneur Variables

| Variable | Number of Observations | Mean | Median | Standard Deviation |
|---|---|---|---|---|
| Gig Worker | 9,805,806 | 0.035 | 0.000 | 0.183 |
| Gig Worker Staggered | 9,805,806 | 0.035 | 0.000 | 0.183 |
| Change in Income in One Year | 7,988,688 | 0.075 | 0.095 | 1.942 |
| Change in Income in Two Years | 6,681,572 | 0.153 | 0.168 | 2.120 |
| Change in Income in Three Years | 5,575,492 | 0.211 | 0.223 | 2.208 |
| Increase in Income Percentile in One Year | 7,988,688 | 0.550 | 1.000 | 0.497 |
| Increase in Income Percentile in Two Years | 6,681,572 | 0.604 | 1.000 | 0.489 |
| Increase in Income Percentile in Three Years | 5,575,492 | 0.635 | 1.000 | 0.481 |

Table 2 (continued)

Panel C: Firm Variables

| Variable | Number of Observations | Mean | Median | Standard Deviation |
|---|---|---|---|---|
| Gig Worker | 9,910,508 | 0.035 | 0.000 | 0.184 |
| Gig Worker Staggered | 9,910,508 | 0.035 | 0.000 | 0.183 |
| Repeat Sector | 9,910,508 | 0.504 | 1.000 | 0.500 |
| Repeat Sector Gig | 9,910,508 | 0.000 | 0.000 | 0.021 |
| Log Revenue at Founding | 9,910,508 | 8.006 | 8.700 | 3.297 |
| Number of Employees at Founding | 9,910,508 | 2.636 | 0.000 | 81.475 |
| Survival One Year After Founding | 8,694,929 | 0.694 | 1.000 | 0.461 |
| Survival Two Years After Founding | 7,487,511 | 0.550 | 1.000 | 0.498 |
| Survival Three Years After Founding | 6,387,234 | 0.452 | 0.000 | 0.498 |
| Profitability in One Year | 5,458,610 | 8.294 | 9.999 | 4.977 |
| Profitability in Two Years | 3,625,469 | 8.517 | 10.204 | 4.854 |
| Profitability in Three Years | 2,557,390 | 8.700 | 10.309 | 4.745 |
| Log Revenue in One Year | 5,458,610 | 8.854 | 9.547 | 3.241 |
| Log Revenue in Two Years | 3,625,469 | 9.105 | 9.741 | 3.266 |
| Log Revenue in Three Years | 2,557,390 | 9.105 | 9.798 | 3.249 |
| Has Employees in One Year | 5,458,610 | 0.154 | 0.000 | 0.361 |
| Has Employees in Two Years | 3,625,469 | 0.164 | 0.000 | 0.370 |
| Has Employees in Three Years | 2,557,390 | 0.167 | 0.000 | 0.373 |
| At Least Five Employees in One Year | 5,458,610 | 0.069 | 0.000 | 0.253 |
| At Least Five Employees in Two Years | 3,625,469 | 0.073 | 0.000 | 0.260 |
| At Least Five Employees in Three Years | 2,557,390 | 0.074 | 0.000 | 0.262 |
| Has Contractors in One Year | 5,458,610 | 0.094 | 0.000 | 0.292 |
| Has Contractors in Two Years | 3,625,469 | 0.099 | 0.000 | 0.298 |
| Has Contractors in Three Years | 2,557,390 | 0.099 | 0.000 | 0.299 |
| Number of Contractors in One Year | 5,458,610 | 0.589 | 0.000 | 9.092 |
| Number of Contractors in Two Years | 3,625,469 | 0.584 | 0.000 | 7.149 |
| Number of Contractors in Three Years | 2,557,390 | 0.591 | 0.000 | 13.951 |
| Debt in One Year | 5,458,610 | 0.121 | 0.000 | 0.327 |
| Debt in Two Years | 3,625,469 | 0.163 | 0.000 | 0.369 |
| Debt in Three Years | 2,557,390 | 0.190 | 0.000 | 0.392 |

Table 3: Entrepreneurship and Gig Work: Univariate Evidence

This table provides univariate evidence on entrepreneurship and gig work. The sample is at the individual-year level from 2012 to 2021. *U.S. Population* includes all individuals in the U.S. aged 25 to 65 in the year of filing taxes. *Gig Workers* are individuals in the *U.S. Population* who received gig income in a particular year. *Gig Founders* are individuals in the *U.S. Population* who have received gig income prior to starting a new firm. *Non-gig founders* are individuals in the *U.S. Population* who have not received gig income prior to starting a new firm. *Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year. *Adjusted Gross Income* is the adjusted gross income of an individual as reported on Form 1040 in a particular year and rounded due to confidentiality reasons. *Low Income* is an indicator variable equaling one if an individual's adjusted gross income is in the bottom tercile in a particular county-year. *Receives EITC* is an indicator variable equaling one if an individual received any Earned Income Tax Credit in a particular year. *Single with Dependents* is an indicator variable equaling one if an individual's filing status on Form 1040 in a particular year is single and the individual has any dependents based on Form 1040. *Age* is the age an individual turns in a particular year. Appendix A provides additional details on variable definitions. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively, for t-tests of differences between the *U.S. Population* who are not gig workers and *Gig Workers*, and *Non-gig Founders* and *Gig Founders*.

| Sample | U.S. Population | Gig Workers | Non-gig Founders | Gig Founders |
|---|---|---|---|---|
| Founder | 0.007 | 0.025*** | 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*** |
| Total Observations | 1,265,172,170 | 10,406,449 | 8,167,949 | 262,739 |

Table 4: Entry into Entrepreneurship and the Gig Economy

This table studies the effect of the gig economy on entry into entrepreneurship. Panel A examines all newly created firms and Panel B focuses on first-time firm creation. *Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year. *First-time Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year and has not previously created a firm. *Gig Worker* is an indicator variable equaling one if an individual received gig income prior to year $t$. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. The controls are log adjusted gross income, gender, filing status, having any dependents, and log age. The granular fixed effects are indicators for each category of the controls. The sample includes all U.S. tax filers from 2012 to 2021 aged 25 to 65. The unit of observation is an individual-year. Appendix A provides additional details on variable definitions. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: All Newly Created Firms

| | Founder | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Gig Worker | 1.034*** | 1.025*** | 0.984*** | 0.981*** | |
| | (0.036) | (0.034) | (0.033) | (0.033) | |
| Gig Worker Staggered | | | | | 0.980*** |
| | | | | | (0.033) |
| County FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| County × Year FE | No | Yes | Yes | Yes | Yes |
| Granular FE | No | No | No | Yes | Yes |
| Controls | No | No | Yes | No | No |
| $R^2$ | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| Observations | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 |

Table 4 (continued)

Panel B: First-Time Entrepreneurship

| | First-time Founder | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Gig Worker | 0.760*** | 0.752*** | 0.713*** | 0.712*** | |
| | (0.024) | (0.022) | (0.021) | (0.021) | |
| Gig Worker Staggered | | | | | 0.712*** |
| | | | | | (0.022) |
| County FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| County $\times$ Year FE | No | Yes | Yes | Yes | Yes |
| Granular FE | No | No | No | Yes | Yes |
| Controls | No | No | Yes | No | No |
| $R^2$ | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| Observations | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 |

Table 5: Who Responds in the Gig Economy?

This table evaluates the role of characteristics in the effect of the gig economy on entry into entrepreneurship. *Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Gig Availability* is an indicator equaling one starting in the first year when at least 30 individuals located in the county $c$ receive gig income. *Log AGI* is log adjusted gross income. *Low Income* is an indicator variable equaling one if an individual's adjusted gross income is in the bottom tercile in a particular county-year. *Receives EITC* is an indicator variable equaling one if an individual received any Earned Income Tax Credit in a particular year. *Log Age* is the log of an individual's age in a particular year. *Has Dependents* is an indicator variable equaling one if a gig worker has any dependents based on Form 1040. *Single with Dependents* is an indicator variable equaling one if an individual's filing status in a particular year is single and the individual has any dependents based on Form 1040. Appendix A provides additional details on variable definitions. For ease of interpretation, the coefficients and standard errors are multiplied by 100. All models include county-year fixed effects. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

| | Founder | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Gig Worker Staggered | -0.044*** | 0.045*** | 0.049* | -0.279*** | 0.066*** | 0.219*** |
| × Characteristic | (0.004) | (0.016) | (0.027) | (0.033) | (0.018) | (0.028) |
| Gig Worker Staggered | 1.463*** | 1.005*** | 0.995*** | 1.977*** | 0.993*** | 0.986*** |
| | (0.072) | (0.032) | (0.028) | (0.149) | (0.028) | (0.030) |
| Characteristic | -0.002*** | -0.076*** | 0.034*** | -0.591*** | 0.199*** | -0.169*** |
| | (0.000) | (0.001) | (0.002) | (0.004) | (0.002) | (0.002) |
| Gig Availability | -0.013*** | 0.054*** | 0.057*** | -0.077*** | -0.015*** | 0.095*** |
| × Characteristic | (0.001) | (0.006) | (0.008) | (0.013) | (0.010) | (0.011) |
| Characteristic | Log AGI | Low Income | Receives EITC | Log Age | Has Dependents | Single with Dependents |
| County × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| $R^2$ | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Observations | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 |

Table 6: Previous Work Experience and the Gig Economy

This table examines previous work experience of entrepreneurs and its relation to the gig economy. Panel A shows the transition from type of gig firm to the industry of newly created firms. Additional details are provided in Section 5.1. Panel B evaluates the relationship between prior work experience and new firm creation. The sample for this panel is individuals creating new firms from 2012 to 2021. *Repeat Sector* is an indicator variable equaling one if an entrepreneur's newly started firm is in the same sector as any prior W-2 or 1099 experience. *Repeat Sector Gig* is an indicator variable equaling one if an entrepreneur's newly started firm is in the same sector as any prior gig experience. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. Appendix A provides additional details on variable definitions. All models include county $\times$ year fixed effects. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

Panel A: Transitions from Gig Work to Newly Created Firms

| | Arts & Media | Finance & Real Estate | Healthcare | Manufacturing | Personal Services | Professional Services | Resource Extraction | Trade | Transportation |
|---|---|---|---|---|---|---|---|---|---|
| Leasing | 12.8 | 16.3 | 9.8 | 3.7 | 17.3 | 22.8 | 0.3 | 16.4 | 0.7 |
| Selling | 11.2 | 2.5 | 2.2 | 2.6 | 7.0 | 6.8 | 0.2 | 67.2 | 0.4 |
| Services | 8.1 | 5.3 | 12.1 | 8.7 | 27.1 | 22.4 | 0.2 | 14.8 | 1.2 |
| Transportation | 6.5 | 10.0 | 7.1 | 6.5 | 22.6 | 17.6 | 0.2 | 23.0 | 6.6 |

Panel B: Entrepreneurship and Previous Work Experience

| | Repeat Sector | Repeat Sector Gig |
|---|---|---|
| | (1) | (2) |
| Gig Worker Staggered | 4.070*** | 1.195*** |
| | (0.278) | (0.038) |
| County $\times$ Year FE | Yes | Yes |
| $R^2$ | 0.021 | 0.013 |
| Observations | 9,910,324 | 9,910,324 |

Table 7: Firms at Founding

This table studies the role of the gig economy on firms at founding. The sample includes all firms created by individuals in the year of founding. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Revenues* is the log of one plus revenues for a firm. *Employees* is a count of the number of employees at a firm. Appendix A provides additional details on variable definitions. All models include county $\times$ year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

| | Revenues | Employees |
|---|---|---|
| | (1) | (2) |
| Gig Worker Staggered | 20.583*** | 33.176*** |
| | (1.449) | (5.189) |
| County $\times$ Year FE | Yes | Yes |
| Industry FE | Yes | Yes |
| $R^2$ | 0.049 | 0.088 |
| Observations | 9,910,312 | 9,899,970 |

Table 8: Firm Performance

This table evaluates the performance of firms started by entrepreneurs who have received gig income prior to founding. Panel A examines firm survival and Panel B studies firm profitability. The sample tracks all firms created by individuals in the three years following founding. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Survival* is an indicator variable equaling one if a firm files taxes in a particular year after founding. *Profitability* is the inverse hyperbolic sine of a firm's gross profits in a particular year. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

Panel A: Firm Survival

| | Survival After Founding | | |
|---|---|---|---|
| | One Year (1) | Two Years (2) | Three Years (3) |
| Gig Worker Staggered | -2.565*** | -2.942*** | -3.201*** |
| | (0.134) | (0.178) | (0.200) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.015 | 0.016 | 0.016 |
| Observations | 8,694,751 | 7,487,349 | 6,387,091 |

Panel B: Firm Profitability

| | Profitability After Founding | | |
|---|---|---|---|
| | One Year (1) | Two Years (2) | Three Years (3) |
| Gig Worker Staggered | 33.225*** | 38.428*** | 35.143*** |
| | (2.159) | (2.419) | (2.705) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.072 | 0.070 | 0.068 |
| Observations | 5,458,294 | 3,625,006 | 2,556,887 |

Table 9: Employment at Firms

This table examines employment at firms started by entrepreneurs who have participated in the gig economy prior to founding. Panel A studies total employees and Panel B focuses on firms with relatively high employment. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Has Employees* is an indicator variable equaling one if a firm has any employees in a particular year. *At Least Five Employees* is an indicator variable equaling one if a firm has at least five employees in a particular year. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Employment

| | Has Employees After Founding | | |
|---|---|---|---|
| | One Year | Two Years | Three Years |
| | (1) | (2) | (3) |
| Gig Worker Staggered | 0.880*** | 1.204*** | 2.055*** |
| | (0.140) | (0.171) | (0.210) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.061 | 0.064 | 0.066 |
| Observations | 5,458,294 | 3,625,006 | 2,556,887 |

Panel B: High Employment

| | At Least Five Employees After Founding | | |
|---|---|---|---|
| | One Year | Two Years | Three Years |
| | (1) | (2) | (3) |
| Gig Worker Staggered | 0.523*** | 0.740*** | 1.189*** |
| | (0.094) | (0.121) | (0.139) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.056 | 0.059 | 0.061 |
| Observations | 5,458,294 | 3,625,006 | 2,556,887 |

Table 10: Employment of Contractors

This table studies the employment of contractors at firms founded by entrepreneurs participating in the gig economy prior to founding. Panel A examines the extensive margin and Panel B evaluates the intensive margin. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Has Contractors* is an indicator variable if a firm employed any independent contractors in a particular year. *Number of Contractors* is the number of contractors hired by a firm in a particular year. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Employment of Contractors

| | Has Contractors After Founding | | |
|---|---|---|---|
| | One Year | Two Years | Three Years |
| | (1) | (2) | (3) |
| Gig Worker Staggered | 0.892*** | 1.237*** | 1.805*** |
| | (0.121) | (0.162) | (0.188) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.027 | 0.028 | 0.031 |
| Observations | 5,458,294 | 3,625,006 | 2,556,887 |

Panel B: Number of Contractors

| | Number of Contractors After Founding | | |
|---|---|---|---|
| | One Year | Two Years | Three Years |
| | (1) | (2) | (3) |
| Gig Worker Staggered | 31.360*** | 22.522*** | 36.950*** |
| | (7.541) | (3.455) | (10.710) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.073 | 0.074 | 0.085 |
| Observations | 5,418,130 | 3,587,734 | 2,520,643 |

Table 11: Capital Structure

This table evaluates the use of debt at firms started by entrepreneurs who have received gig income prior to founding. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Has Debt* is an indicator variable if a firm has debt by a particular year after founding based on reporting interest expense. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

| | Has Debt After Founding | | |
|---|---|---|---|
| | One Year | Two Years | Three Years |
| | (1) | (2) | (3) |
| Gig Worker Staggered | 1.236*** | 2.293*** | 3.409*** |
| | (0.123) | (0.189) | (0.270) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.043 | 0.050 | 0.055 |
| Observations | 5,458,294 | 3,625,006 | 2,556,887 |

Table 12: Founder Income

This table examines the role of the gig economy on the income for entrepreneurs. Panel A evaluates entrepreneurs' change in income and Panel B focuses on whether entrepreneurs rise in the income distribution. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Change in Income* is the difference in the log of an entrepreneur's adjusted gross income in a particular year relative to the firm's founding year. *Increase in Income Percentile* is an indicator variable equaling one if an entrepreneur's income percentile in a particular year increases relative to the firm's founding year. Income percentiles are based on adjusted gross income in a county-year. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

Panel A: Income Change

| | Change in Income Relative to Founding | | |
|---|---|---|---|
| | One Year (1) | Two Years (2) | Three Years (3) |
| Gig Worker Staggered | 3.118*** | 9.105*** | 12.326*** |
| | (0.529) | (0.738) | (1.032) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.005 | 0.006 | 0.007 |
| Observations | 8,070,012 | 6,745,290 | 5,626,131 |

Panel B: Income Distribution

| | Increase in Income Percentile After Founding | | |
|---|---|---|---|
| | One Year (1) | Two Years (2) | Three Years (3) |
| Gig Worker Staggered | 1.149*** | 1.861*** | 2.027*** |
| | (0.116) | (0.142) | (0.173) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.008 | 0.010 | 0.011 |
| Observations | 8,070,967 | 6,745,833 | 5,626,378 |

# Appendix A Variable Definitions

This appendix provides variable definitions.

- *Adjusted Gross Income* is the adjusted gross income of an individual as reported on Form 1040 in a particular year and rounded due to confidentiality reasons.
- *Age* is the age an individual turns in a particular year.
- *Change in Income* is the difference in the log of an entrepreneur's adjusted gross income in a particular year relative to the firm's founding year.
- *Employees* is a count of the number of employees at a firm.
- *Female* is an indicator variable equaling one if is a gig worker is female.
- *First-time Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year and has not previously created a firm.
- *Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year.
- *Gig Worker* is an indicator variable equaling one if an individual received gig income prior to year $t$.
- *Gig Availability* is an indicator variable equaling one if when there are at least 30 individuals located in the county receiving gig income by a particular year.
- *Gig Worker Number of Years* is the number of years that an individual received gig income in any year up to and including $t$-1.
- *Gig Worker Previous Year* is an indicator variable equaling one if an individual received gig income in year $t$-1.
- *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$.

- *Gig Worker Staggered Transportation* is an indicator variable equaling one if an individual received gig income in any year prior to year $t$ from a gig firm classified as transportation and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. The variables for leasing, selling, and services are similarly defined for gig income from a gig firm classified as leasing, selling, or services, respectively.

- *Gig Worker Transportation* is an indicator variable equaling one if an individual received gig income in any year up to and including $t$-1 from a gig firm classified as transportation. The variables for leasing, selling, and services are similarly defined for gig income from a gig firm classified as leasing, selling, or services, respectively.

- *Has Contractors* is an indicator variable if a firm employed any independent contractors in a particular year.

- *Has Debt* is an indicator variable if a firm has debt by a particular year after founding based on reporting interest expense.

- *Has Dependents* is an indicator variable equaling one if a gig worker has any dependents based on Form 1040.

- *Increase in Income Percentile* is an indicator variable equaling one if an entrepreneur's income percentile in a particular year increases relative to the firm's founding year. Income percentiles are based on adjusted gross income in a county-year.

- *Low Income* is an indicator variable equaling one if an individual's adjusted gross income is in the bottom tercile in a particular county-year.

- *Number of Contractors* is the number of contractors hired by a firm in a particular year.

- *Profitability* is the inverse hyperbolic sine of a firm's gross profits in a particular year.

- *Receives EITC* is an indicator variable equaling one if an individual received any Earned Income Tax Credit in a particular year.

- *Repeat Sector* is an indicator variable equaling one if an entrepreneur's newly started firm is in the same sector as any prior W-2 or 1099 experience.
- *Repeat Sector Gig* is an indicator variable equaling one if an entrepreneur's newly started firm is in the same sector as any prior gig experience.
- *Revenues* is the log of one plus revenues for a firm in a particular year.
- *Single* is a gig worker's filing status.
- *Single with Dependents* is an indicator variable equaling one if an individual's filing status on Form 1040 in a particular year is single and the individual has any dependents based on Form 1040.
- *Survival* is an indicator variable equaling one if a firm files taxes in a particular year after founding.

Figure A1: Type of Gig Firms

This figure provides the distribution of gig firms in the United States from 2012 to 2021. Each gig firm is classified into one of the following categories: leasing, selling, services, and transportation. The bars show the count of gig firms in a particular category.

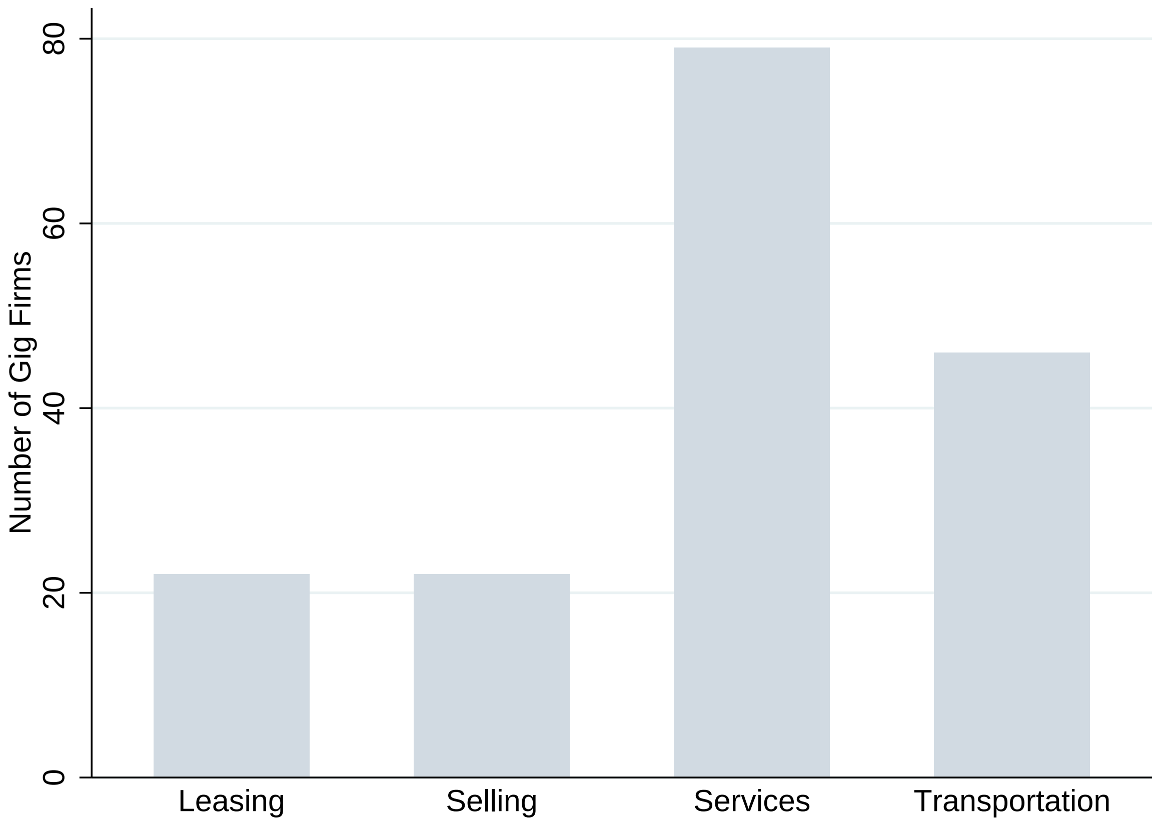
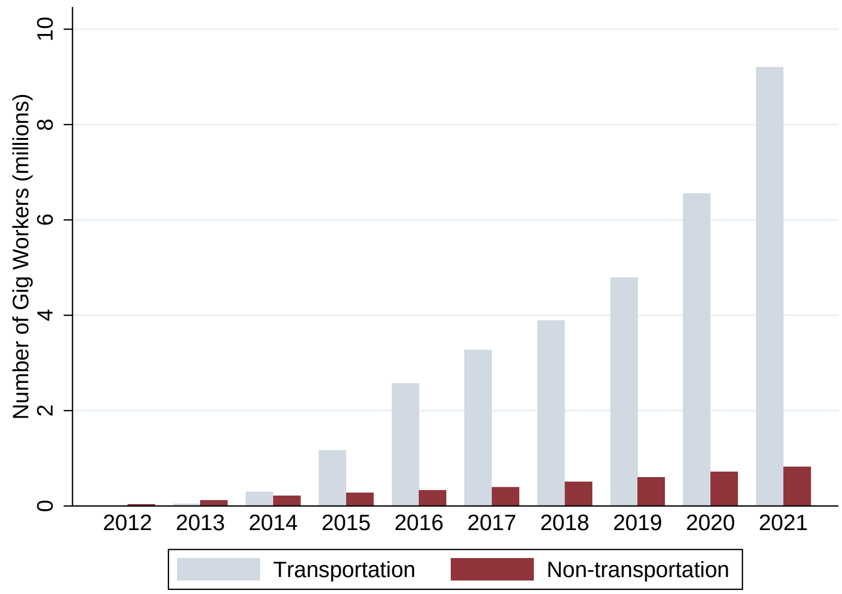


Figure A2: Gig Economy: Transportation and Non-Transportation

This figure plots the U.S. participation in the gig economy from 2012 to 2021 based on the type of gig firm. Panel A shows the cumulative number of individuals working in the gig economy. Panel B provides the total amount of income in billions of dollars received by gig workers in a particular year, which is converted to dollars in 2012. The gray bars show participation in the gig economy for gig firms categorized as transportation. The red bars indicate participation in the gig economy for gig firms categorized as non-transportation, which includes leasing, selling, and services as described in Section 2.2 and shown in Figure A1.

Panel A: Cumulative Number of Gig Workers




Panel B: Gig Income ($ 2012)

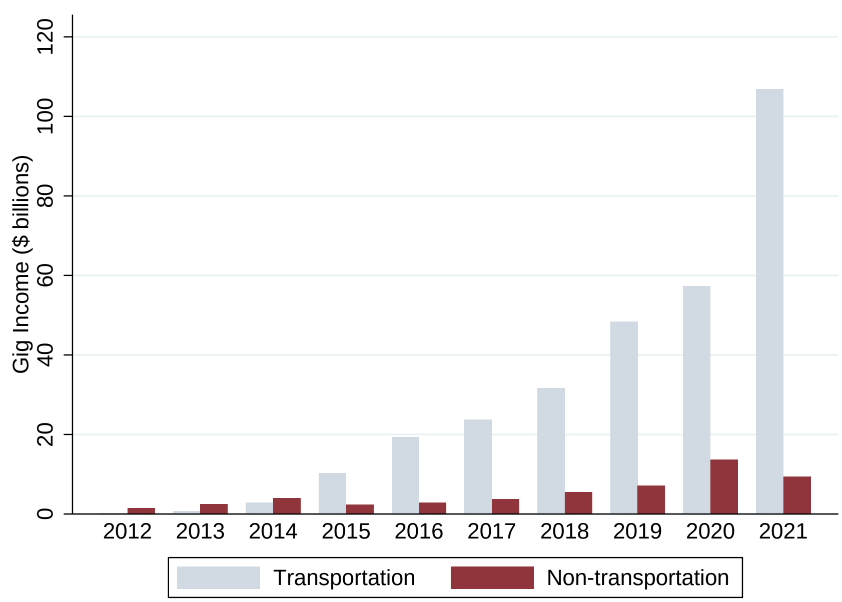


Figure A3: Mechanisms: Who Responds in the Gig Economy

This figure provides the coefficients and 95% confidence intervals for subsamples based on founders' characteristics. Panels A and B plot the estimates for revenues and employees at founding, respectively. Panels C and D show the estimates for survival and profitability three years after founding, respectively. The characteristics are income, flexibility, and age. *Low* (*High*) *Income* is based on below (above) bottom tercile income in a particular county-year. *More Time Constrained* is defined as individuals who are single with dependents. *Less Time Constrained* are individuals who are not single with dependents. *Young* (*Old*) is constructed as below (above) median age.

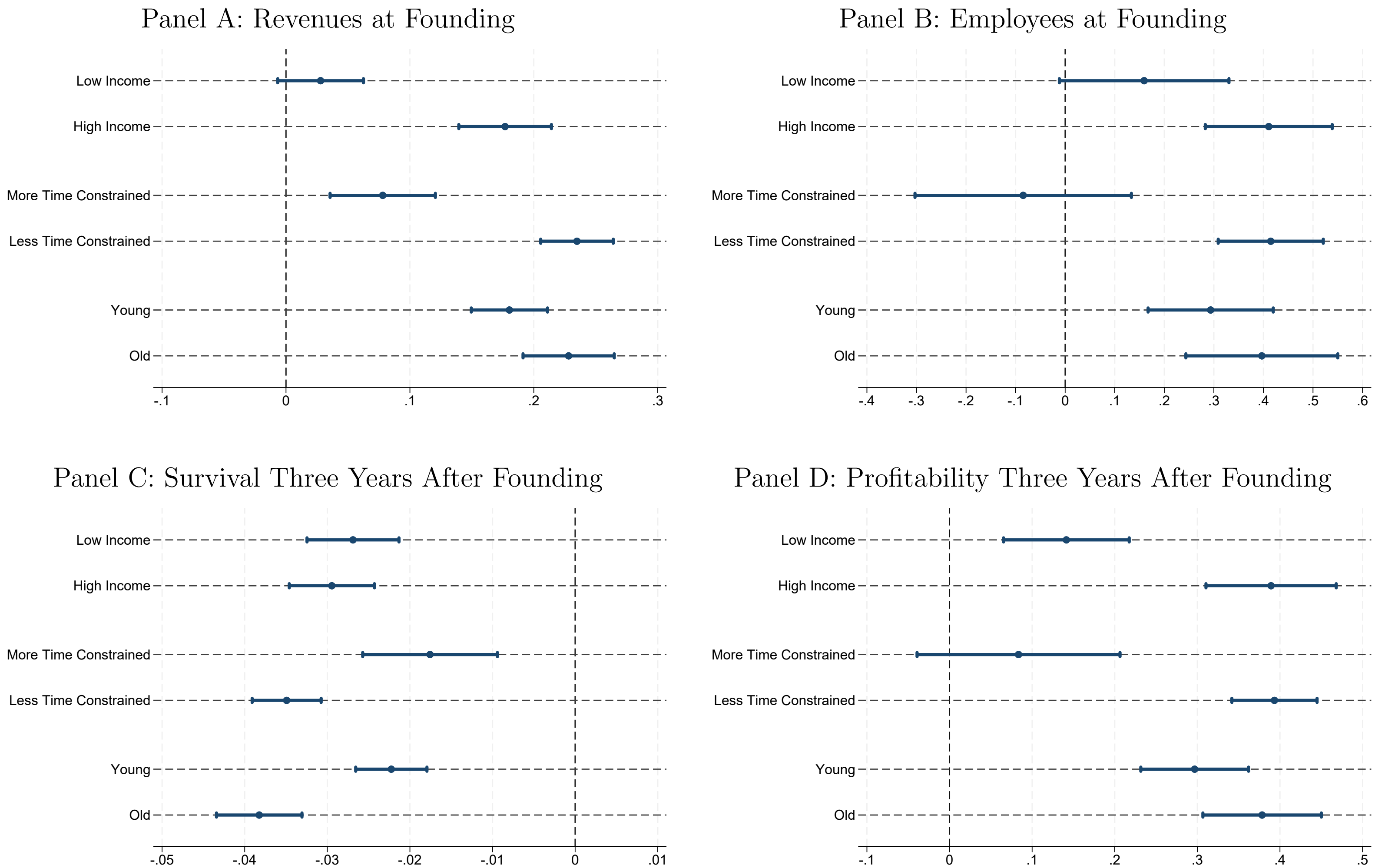


Table A1: Entry into Entrepreneurship and the Gig Economy: Oster Test

This table reports the results for the Oster test. Panel A provides the Oster test inputs and findings for the regression in Table 4, Panel A, Column (4). Panel B shows the Oster test inputs and results for the specification in Table 4, Panel A, Column (5). $\beta_{adj}$ is the adjusted coefficient as defined in Section 4.2. The identified set represents the bounds on the coefficient incorporating the potential influence of omitted variables. The null hypothesis is that $\beta = 0$. The last column provides the value of $\delta$ such that $\beta_{adj} = 0$.

Panel A: Oster Test for Table 4, Panel A, Column (4)

| Excluding Controls | | Including Controls | | | | | |
|---|---|---|---|---|---|---|---|
| $\beta_u$ | $R^2_u$ | $\beta_c$ | $R^2_c$ | $\beta_{adj}$ | Identified Set | Reject Null? | $\delta$ s.t. $\beta_{adj} = 0$ |
| 1.146 | 0.000280 | 0.981 | 0.001910 | 0.749 | [0.749, 0.981] | Yes | 4.228 |

Panel B: Oster Test for Table 4, Panel A, Column (5)

| Excluding Controls | | Including Controls | | | | | |
|---|---|---|---|---|---|---|---|
| $\beta_u$ | $R^2_u$ | $\beta_c$ | $R^2_c$ | $\beta_{adj}$ | Identified Set | Reject Null? | $\delta$ s.t. $\beta_{adj} = 0$ |
| 1.147 | 0.000277 | 0.980 | 0.001905 | 0.746 | [0.746, 0.980] | Yes | 4.179 |

Table A2: Entry into Entrepreneurship and the Gig Economy: Robustness to Measure of Gig Work

This table evaluates robustness of the baseline estimates for the effect of the gig economy on entry into entrepreneurship using different measures of gig work. *Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year. *Gig Worker Previous Year* is an indicator variable equaling one if an individual received gig income in year $t-1$. *Gig Worker Staggered Previous Year* is an indicator variable equaling one if an individual received gig income in year $t-1$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Gig Worker Number of Years* is the number of years that an individual received gig income in any year prior to year $t$. *Gig Worker Staggered Number of Years* is the number of years that an individual received gig income in any year prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. The controls are log adjusted gross income, gender, filing status, dependents, and log age. The granular fixed effects are indicators for each category of the controls. The sample includes all U.S. tax filers from 2012 to 2021 aged 25 to 65. The unit of observation is an individual-year. Appendix A provides additional details on variable definitions. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Gig Work in Previous Year

| | Founder | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Gig Worker | 0.938*** | 0.934*** | 0.883*** | 0.881*** | |
| Previous Year | (0.034) | (0.033) | (0.032) | (0.031) | |
| Gig Worker Staggered | | | | | 0.878*** |
| Previous Year | | | | | (0.032) |
| County FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| County × Year FE | No | Yes | Yes | Yes | Yes |
| Granular FE | No | No | No | Yes | Yes |
| Controls | No | No | Yes | No | No |
| $R^2$ | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| Observations | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 |

Table A2 (continued)

Panel B: Number of Years of Gig Work

| | Founder | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Gig Worker Number of Years | 0.482*** | 0.478*** | 0.463*** | 0.461*** | |
| | (0.023) | (0.022) | (0.021) | (0.021) | |
| Gig Worker Staggered Number of Years | | | | | 0.460*** |
| | | | | | (0.021) |
| County FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| County × Year FE | No | Yes | Yes | Yes | Yes |
| Granular FE | No | No | No | Yes | Yes |
| Controls | No | No | Yes | No | No |
| $R^2$ | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| Observations | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 |

Table A3: Entry into Entrepreneurship and the Gig Economy: Robustness for Type of Gig Firm

This table provides robustness of the baseline estimates for the effect of the gig economy on entry into entrepreneurship using variation in type of gig work. *Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year. *Gig Worker Transportation* is an indicator variable equaling one if an individual received gig income in any year prior to year $t$ from a gig firm classified as transportation. *Gig Worker Staggered Transportation* is an indicator variable equaling one if an individual received gig income in any year prior to year $t$ from a gig firm classified as transportation and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. The variables for leasing, selling, and services are similarly defined for gig income from a gig firm classified as leasing, selling, or services, respectively. The controls are log adjusted gross income, gender, filing status, dependents, and log age. The granular fixed effects are indicators for each category of the controls. The sample includes all U.S. tax filers from 2012 to 2021 aged 25 to 65. The unit of observation is an individual-year. Appendix A provides additional details on variable definitions. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

| | Founder | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Gig Worker Transportation | 0.875*** | 0.863*** | 0.831*** | 0.833*** | |
| | (0.039) | (0.037) | (0.036) | (0.035) | |
| Gig Worker Leasing | 1.092*** | 1.094*** | 1.108*** | 1.048*** | |
| | (0.038) | (0.038) | (0.036) | (0.035) | |
| Gig Worker Selling | 1.426*** | 1.430*** | 1.340*** | 1.312*** | |
| | (0.039) | (0.039) | (0.038) | (0.038) | |
| Gig Worker Services | 0.942*** | 0.939*** | 0.845*** | 0.835*** | |
| | (0.019) | (0.019) | (0.018) | (0.017) | |
| Gig Worker Staggered Transportation | | | | | 0.834*** |
| | | | | | (0.036) |
| Gig Worker Staggered Leasing | | | | | 1.048*** |
| | | | | | (0.035) |
| Gig Worker Staggered Selling | | | | | 1.323*** |
| | | | | | (0.040) |
| Gig Worker Staggered Services | | | | | 0.837*** |
| | | | | | (0.018) |
| County FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| County × Year FE | No | Yes | Yes | Yes | Yes |
| Granular FE | No | No | No | Yes | Yes |
| Controls | No | No | Yes | No | No |
| $R^2$ | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| Observations | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 |

Table A4: Entry into Entrepreneurship and the Gig Economy: Robustness to Early versus Late

This table evaluates robustness of the baseline estimates to splitting the sample period to early versus late. Panel A presents the estimates from 2012 to 2016 and Panel B shows the results from 2017 to 2021. *Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year. *First-time Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year and has not previously created a firm. *Gig Worker* is an indicator variable equaling one if an individual received gig income prior to year $t$. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. The controls are log adjusted gross income, gender, filing status, having any dependents, and log age. The granular fixed effects are indicators for each category of the controls. The sample includes all U.S. tax filers during the respective sample period aged 25 to 65. The unit of observation is an individual-year. Appendix A provides additional details on variable definitions. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Early Years (2012−2016)

| | Founder | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Gig Worker | 1.009*** | 1.010*** | 0.987*** | 0.983*** | |
| | (0.035) | (0.034) | (0.034) | (0.034) | |
| Gig Worker Staggered | | | | | 0.979*** |
| | | | | | (0.035) |
| County FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| County × Year FE | No | Yes | Yes | Yes | Yes |
| Granular FE | No | No | No | Yes | Yes |
| Controls | No | No | Yes | No | No |
| $R^2$ | 0.000 | 0.000 | 0.001 | 0.001 | 0.001 |
| Observations | 556,320,761 | 556,320,761 | 556,320,761 | 556,320,761 | 556,320,761 |

Table A4 (continued)

Panel B: Late Years (2017−2021)

| | Founder | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Gig Worker | 1.029*** | 1.026*** | 0.971*** | 0.968*** | |
| | (0.035) | (0.035) | (0.033) | (0.033) | |
| Gig Worker Staggered | | | | | 0.967*** |
| | | | | | (0.033) |
| County FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| County × Year FE | No | Yes | Yes | Yes | Yes |
| Granular FE | No | No | No | Yes | Yes |
| Controls | No | No | Yes | No | No |
| $R^2$ | 0.001 | 0.001 | 0.002 | 0.002 | 0.002 |
| Observations | 708,851,409 | 708,851,409 | 708,851,409 | 708,851,409 | 708,851,409 |

Table A5: Entry into Entrepreneurship and the Gig Economy: Heterogeneity in Financial Constraints

This table provides heterogeneity by financial constraints for the effect of the gig economy on entry into entrepreneurship. Panel A examines firms started in industries with high fixed costs and Panel B evaluates firms started in industries with low fixed costs. $Founder$ is an indicator variable equaling one if an individual starts any new firms in a particular year. $Gig\ Worker$ is an indicator variable equaling one if an individual received gig income prior to year $t$. $Gig\ Worker\ Staggered$ is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. The controls are log adjusted gross income, gender, filing status, having any dependents, and log age. The granular fixed effects are indicators for each category of the controls. The sample includes all U.S. tax filers from 2012 to 2021 aged 25 to 65. The unit of observation is an individual-year. Appendix A provides additional details on variable definitions. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

Panel A: High Fixed Cost

| | Founder in High Fixed Cost Industry | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Gig Worker | 0.713*** | 0.709*** | 0.672*** | 0.670*** | |
| | (0.027) | (0.025) | (0.025) | (0.025) | |
| Gig Worker Staggered | | | | | 0.712*** |
| | | | | | (0.027) |
| County FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| County × Year FE | No | Yes | Yes | Yes | Yes |
| Granular FE | No | No | No | Yes | Yes |
| Controls | No | No | Yes | No | No |
| $R^2$ | 0.000 | 0.001 | 0.001 | 0.001 | 0.000 |
| Observations | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 |

Table A5 (continued)

Panel B: Low Fixed Cost

| | Founder in Low Fixed Cost Industry | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Gig Worker | 0.299*** | 0.295*** | 0.290*** | 0.289*** | |
| | (0.010) | (0.010) | (0.009) | (0.009) | |
| Gig Worker Staggered | | | | | 0.298*** |
| | | | | | (0.010) |
| County FE | Yes | No | No | No | No |
| Year FE | Yes | No | No | No | No |
| County × Year FE | No | Yes | Yes | Yes | Yes |
| Granular FE | No | No | No | Yes | Yes |
| Controls | No | No | Yes | No | No |
| $R^2$ | 0.000 | 0.000 | 0.001 | 0.001 | 0.000 |
| Observations | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 |

Table A6: Who Responds in the Gig Economy?

This table evaluates the role of characteristics in the effect of the gig economy on entry into entrepreneurship. *Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year. *Gig Worker* is an indicator variable equaling one if an individual received gig income in any year prior to year $t$. *Log AGI* is log adjusted gross income. *Low Income* is an indicator variable equaling one if an individual's adjusted gross income is in the bottom tercile in a particular county-year. *Receives EITC* is an indicator variable equaling one if an individual received any Earned Income Tax Credit in a particular year. *Log Age* is the log of an individual's age in a particular year. *Has Dependents* is an indicator variable equaling one if a gig worker has any dependents based on Form 1040. *Single with Dependents* is an indicator variable equaling one if an individual's filing status in a particular year is single and the individual has any dependents based on Form 1040. Appendix A provides additional details on variable definitions. For ease of interpretation, the coefficients and standard errors are multiplied by 100. All models include county-year fixed effects. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

| | Founder | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Gig Worker × Characteristic | -0.045*** | 0.054*** | 0.060** | -0.294*** | 0.065*** | 0.233*** |
| | (0.004) | (0.016) | (0.028) | (0.035) | (0.018) | (0.029) |
| Gig Worker | 1.484*** | 1.004*** | 0.994*** | 2.036*** | 0.995*** | 0.985*** |
| | (0.072) | (0.031) | (0.028) | (0.155) | (0.028) | (0.030) |
| Characteristic | -0.013*** | -0.032*** | 0.081*** | -0.655*** | 0.186*** | -0.089*** |
| | (0.001) | (0.005) | (0.006) | (0.010) | (0.009) | (0.009) |
| Characteristic | Log AGI | Low Income | Receives EITC | Log Age | Has Dependents | Single with Dependents |
| County × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| $R^2$ | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 | 0.001 |
| Observations | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 | 1,265,172,170 |

Table A7: Previous Work Experience and the Gig Economy: Controls Approach

This table provides robustness for the relationship between prior work experience and new firm creation. The sample is individuals creating new firms from 2012 to 2021. *Repeat Sector* is an indicator variable equaling one if an entrepreneur's newly started firm is in the same sector as any prior W-2 or 1099 experience. *Repeat Sector Gig* is an indicator variable equaling one if an entrepreneur's newly started firm is in the same sector as any prior gig experience. *Gig Worker* is an indicator variable equaling one if an individual received gig income in any year prior to year $t$. Appendix A provides additional details on variable definitions. All models include county × year fixed effects. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

| | Repeat Sector | Repeat Sector Gig |
|---|---|---|
| | (1) | (2) |
| Gig Worker | 4.089*** | 1.191*** |
| | (0.273) | (0.038) |
| County × Year FE | Yes | Yes |
| $R^2$ | 0.021 | 0.013 |
| Observations | 9,910,324 | 9,910,324 |

Table A8: Firms at Founding: Controls

This table examines robustness about the role of the gig economy on firms at founding. The sample includes all firms created by individuals in the year of founding. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Revenues* is the log of one plus revenues for a firm. *Employees* is a count of the number of employees at a firm. The controls are log adjusted gross income, gender, filing status, dependents, and log age. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

| | Revenues | Employees |
|---|---|---|
| | (1) | (2) |
| Gig Worker Staggered | 13.108*** | 17.990*** |
| | (1.468) | (5.108) |
| County × Year FE | Yes | Yes |
| Industry FE | Yes | Yes |
| Controls | Yes | Yes |
| $R^2$ | 0.060 | 0.113 |
| Observations | 9,294,588 | 9,283,567 |

Table A9: Firms at Founding: Controls Approach

This table examines robustness about the role of the gig economy on firms at founding. The sample includes all firms created by individuals in the year of founding. *Gig Worker* is an indicator variable equaling one if an individual received gig income in any year prior to year $t$. *Revenues* is the log of one plus revenues for a firm. *Employees* is a count of the number of employees at a firm. Appendix A provides additional details on variable definitions. All models include county $\times$ year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

| | Revenues | Employees |
|---|---|---|
| | (1) | (2) |
| Gig Worker | 20.749*** | 33.266*** |
| | (1.433) | (5.135) |
| County $\times$ Year FE | Yes | Yes |
| Industry FE | Yes | Yes |
| $R^2$ | 0.049 | 0.088 |
| Observations | 9,910,312 | 9,899,970 |

Table A10: Firms at Founding: At Least One Employee

This table studies the role of the gig economy on firms at founding. The sample includes all firms created by individuals in the year of founding and having at least one employee within the first five years of founding. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Revenues* is the log of one plus revenues for a firm. *Employees* is a count of the number of employees at a firm. Appendix A provides additional details on variable definitions. All models include county $\times$ year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

| | Revenues | Employees |
|---|---|---|
| | (1) | (2) |
| Gig Worker Staggered | 3.615** | 21.648*** |
| | (1.692) | (5.138) |
| County × Year FE | Yes | Yes |
| Industry FE | Yes | Yes |
| $R^2$ | 0.062 | 0.120 |
| Observations | 1,798,131 | 1,797,858 |

Table A11: Firm Performance: Controls

This table evaluates the performance of firms started by entrepreneurs who have received gig income prior to founding. Panel A examines firm survival and Panel B studies firm profitability. The sample tracks all firms created by individuals in the three years following founding. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Survival* is an indicator variable equaling one if a firm files taxes in a particular year after founding. *Profitability* is the inverse hyperbolic sine of a firm's gross profits in a particular year. The controls are log adjusted gross income, gender, filing status, dependents, and log age. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

Panel A: Firm Survival

| | Survival After Founding | | |
|---|---|---|---|
| | One Year (1) | Two Years (2) | Three Years (3) |
| Gig Worker Staggered | -1.931*** | -2.098*** | -2.386*** |
| | (0.123) | (0.181) | (0.206) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes |
| $R^2$ | 0.017 | 0.019 | 0.020 |
| Observations | 8,140,192 | 6,996,972 | 5,977,986 |

Panel B: Firm Profitability

| | Profitability After Founding | | |
|---|---|---|---|
| | One Year (1) | Two Years (2) | Three Years (3) |
| Gig Worker Staggered | 12.799*** | 16.566*** | 13.230*** |
| | (2.247) | (2.595) | (2.912) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| Controls | Yes | Yes | Yes |
| $R^2$ | 0.090 | 0.089 | 0.087 |
| Observations | 5,172,673 | 3,433,107 | 2,421,652 |

Table A12: Firm Performance: Controls Approach

This table evaluates the performance of firms started by entrepreneurs who have received gig income prior to founding. Panel A examines firm survival and Panel B studies firm profitability. The sample tracks all firms created by individuals in the three years following founding. $Gig\ Worker$ is an indicator variable equaling one if an individual received gig income in any year prior to year $t$. $Survival$ is an indicator variable equaling one if a firm files taxes in a particular year after founding. $Profitability$ is the inverse hyperbolic sine of a firm's gross profits in a particular year. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Firm Survival

| | Survival After Founding | | |
|---|---|---|---|
| | One Year<br>(1) | Two Years<br>(2) | Three Years<br>(3) |
| Gig Worker | -2.557***<br>(0.133) | -2.943***<br>(0.175) | -3.185***<br>(0.198) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.015 | 0.016 | 0.016 |
| Observations | 8,694,751 | 7,487,349 | 6,387,091 |

Panel B: Firm Profitability

| | Profitability After Founding | | |
|---|---|---|---|
| | One Year<br>(1) | Two Years<br>(2) | Three Years<br>(3) |
| Gig Worker | 33.516***<br>(2.128) | 38.681***<br>(2.382) | 35.796***<br>(2.659) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.072 | 0.070 | 0.068 |
| Observations | 5,458,294 | 3,625,006 | 2,556,887 |

Table A13: Firm Performance: At Least One Employee

This table evaluates the performance of firms started by entrepreneurs who have received gig income prior to founding. Panel A examines firm survival and Panel B studies firm profitability. The sample tracks all firms created by individuals in the three years following founding and having at least one employee within the first five years of founding. *Gig Worker Staggered* is an indicator variable equaling one if an individual received gig income prior to year $t$ and if there are at least 30 individuals located in the county receiving gig income prior to year $t$. *Survival* is an indicator variable equaling one if a firm files taxes in a particular year after founding. $Profitability$ is the inverse hyperbolic sine of a firm's gross profits in a particular year. Appendix A provides additional details on variable definitions. All models include county $\times$ year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

Panel A: Firm Survival

| | Survival After Founding | | |
|---|---|---|---|
| | One Year | Two Years | Three Years |
| | (1) | (2) | (3) |
| Gig Worker Staggered | -2.629*** | -3.370*** | -3.636*** |
| | (0.274) | (0.317) | (0.370) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.040 | 0.042 | 0.044 |
| Observations | 1,670,209 | 1,492,003 | 1,299,151 |

Panel B: Firm Profitability

| | Profitability After Founding | | |
|---|---|---|---|
| | One Year | Two Years | Three Years |
| | (1) | (2) | (3) |
| Gig Worker Staggered | 8.920*** | 8.934*** | 9.055** |
| | (2.709) | (3.012) | (4.237) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.064 | 0.062 | 0.063 |
| Observations | 1,164,074 | 859,175 | 637,010 |

Table A14: Employment at Firms: Controls Approach

This table examines employment at firms started by entrepreneurs who have participated in the gig economy prior to founding. Panel A studies total employees and Panel B focuses on firms with relatively high employment. *Gig Worker* is an indicator variable equaling one if an individual received gig income in any year prior to year $t$. *Has Employees* is an indicator variable equaling one if a firm has any employees in a particular year. *At Least Five Employees* is an indicator variable equaling one if a firm has at least five employees in a particular year. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Employment

| | Has Employees After Founding | | |
|---|---|---|---|
| | One Year<br>(1) | Two Years<br>(2) | Three Years<br>(3) |
| Gig Worker | 0.878***<br>(0.138) | 1.217***<br>(0.169) | 2.082***<br>(0.208) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.061 | 0.064 | 0.066 |
| Observations | 5,458,294 | 3,625,006 | 2,556,887 |

Panel B: High Employment

| | At Least Five Employees After Founding | | |
|---|---|---|---|
| | One Year<br>(1) | Two Years<br>(2) | Three Years<br>(3) |
| Gig Worker | 0.511***<br>(0.094) | 0.730***<br>(0.120) | 1.201***<br>(0.138) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.056 | 0.059 | 0.061 |
| Observations | 5,458,294 | 3,625,006 | 2,556,887 |

Table A15: Employment of Contractors: Controls Approach

This table studies the employment of contractors at firms founded by entrepreneurs participating in the gig economy prior to founding. Panel A examines the extensive margin and Panel B evaluates the intensive margin. *Gig Worker* is an indicator variable equaling one if an individual received gig income in any year prior to year $t$. *Has Contractors* is an indicator variable if a firm employed any independent contractors in a particular year. *Number of Contractors* is the number of contractors hired by a firm in a particular year. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. $^{***}$, $^{**}$, and $^{*}$ denote significance at 1%, 5%, and 10%, respectively.

Panel A: Employment of Contractors

| | Has Contractors After Founding | | |
|---|---|---|---|
| | One Year<br>(1) | Two Years<br>(2) | Three Years<br>(3) |
| Gig Worker | 0.890*** | 1.245*** | 1.818*** |
| | (0.120) | (0.159) | (0.185) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.027 | 0.028 | 0.031 |
| Observations | 5,458,294 | 3,625,006 | 2,556,887 |

Panel B: Number of Contractors

| | Number of Contractors After Founding | | |
|---|---|---|---|
| | One Year<br>(1) | Two Years<br>(2) | Three Years<br>(3) |
| Gig Worker | 31.339*** | 22.105*** | 35.830*** |
| | (7.448) | (3.436) | (10.583) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.073 | 0.074 | 0.085 |
| Observations | 5,418,130 | 3,587,734 | 2,520,643 |

Table A16: Capital Structure: Controls Approach

This table evaluates the use of debt at firms started by entrepreneurs who have received gig income prior to founding. *Gig Worker* is an indicator variable equaling one if an individual received gig income in any year prior to year $t$. *Has Debt* is an indicator variable if a firm has debt by a particular year after founding based on reporting interest expense. Appendix A provides additional details on variable definitions. All models include county $\times$ year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

| | Has Debt After Founding | | |
|---|---|---|---|
| | One Year<br>(1) | Two Years<br>(2) | Three Years<br>(3) |
| Gig Worker | 1.203***<br>(0.123) | 2.234***<br>(0.189) | 3.380***<br>(0.267) |
| County $\times$ Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.043 | 0.050 | 0.055 |
| Observations | 5,458,294 | 3,625,006 | 2,556,887 |

Table A17: Founder Income: Controls Approach

This table provides robustness for the role of the gig economy on the income for entrepreneurs. Panel A evaluates entrepreneurs' change in income and Panel B focuses on whether entrepreneurs rise in the income distribution. *Gig Worker* is an indicator variable equaling one if an individual received gig income prior to year $t$. *Change in Income* is the difference in the log of an entrepreneur's adjusted gross income in a particular year relative to the firm's founding year. *Increase in Income Percentile* is an indicator variable equaling one if an entrepreneur's income percentile in a particular year increases relative to the firm's founding year. Income percentiles are based on adjusted gross income in a county-year. Appendix A provides additional details on variable definitions. All models include county × year and industry fixed effects. Industries are defined at the four-digit NAICS code level. For ease of interpretation, the coefficients and standard errors are multiplied by 100. Standard errors are reported in parentheses and clustered at the county level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Income Change

| | Change in Income Relative to Founding | | |
|---|---|---|---|
| | One Year | Two Years | Three Years |
| | (1) | (2) | (3) |
| Gig Worker | 3.023*** | 8.960*** | 12.149*** |
| | (0.527) | (0.734) | (1.024) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.005 | 0.006 | 0.007 |
| Observations | 8,070,012 | 6,745,290 | 5,626,131 |

Panel B: Income Distribution

| | Increase in Income Percentile After Founding | | |
|---|---|---|---|
| | One Year | Two Years | Three Years |
| | (1) | (2) | (3) |
| Gig Worker | 1.128*** | 1.805*** | 1.977*** |
| | (0.116) | (0.140) | (0.171) |
| County × Year FE | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes |
| $R^2$ | 0.008 | 0.010 | 0.011 |
| Observations | 8,070,967 | 6,745,833 | 5,626,378 |