The "Great Reshuffling" and Entrepreneurship[†]

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Abstract

The recent pandemic accelerated a paradigm shift in labor markets towards non-traditional employment arrangements, with flexibility increasingly developing into a critical differentiating factor. We study the impact of the "Great Reshuffling" on transitions into entrepreneurship using administrative data from U.S. tax returns. We find a large increase in entry to entrepreneurship, particularly for women and women with dependents. We examine the role of childcare disruptions, remote work availability, and displacement, finding support in favor of the pandemic-driven increase in childcare responsibilities as a primary factor. We show that transitions are persistent and lead to higher income for women. The pandemic shifted the composition of firms in the economy towards digital retail stores. Firms started by women survive more and have higher profitability. Overall, the results indicate that the pandemic shifted individuals' preferences towards work.

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1 Introduction

The recent pandemic accelerated a paradigm shift in labor markets towards non-traditional employment arrangements, with flexibility increasingly developing into a critical differentiating factor (Barrero, Bloom, and Davis (2023)). Following a period of unprecedented uncertainty and contraction in economic activity, millions of individuals reevaluated career paths and workplace preferences, instigating a long-lasting period of staggering reallocation in labor markets (Barrero et al. (2021))–a phenomenon dubbed as the "Great Reshuffling." The dramatic post-pandemic shifts in employment patterns coincided with a surge in business applications and entrepreneurial entry, contrasting a long-run decline in business dynamism (Fazio et al. (2021), Decker and Haltiwanger (2023)). To the extent that the pandemic catalyzed advancements in labor markets that transformed individuals' employment preferences towards entrepreneurship, there might be a potentially permanent shift in the entrepreneurial landscape and the types of newly created firms, with significant implications for long-term employment and productivity growth (Decker et al. (2014), Decker et al. (2016))).

Despite the sheer magnitude of the shift, there is limited evidence quantifying reshuffling in labor markets and characterizing the channels through which the pandemic transformed individuals' decisions to enter entrepreneurship. Moreover, little is known about whether this shift is temporary or persists. Although previous studies provide important insights into the impact of the pandemic on entrepreneurial activity, limitations with respect to measurement and data availability render drawing broader conclusions from existing evidence challenging. First, prior analysis is restricted to aggregate evidence on business applications or registrations. While business applications are informative of a business' intent to engage in future economic activity, only a fraction corresponds to subsequent business formation that reports economic activity or employment creation (Bayard et al. (2018)). Likewise, while business registrations to a larger extent are able to capture entrepreneurial entry, there is no information on firms' subsequent survival, profitability, and growth, thus preventing

researchers from evaluating the economic effects and persistence of business creation. Second, there is a dearth of information on the characteristics of individuals who decide to enter entrepreneurship. Any existing evidence is restricted on indirect aggregate demographic and income data based on the location where the business is registered.

We overcome limitations in the previous studies by drawing evidence from administrative data from U.S. tax returns that allows us to paint an exhaustive picture of the reallocation process of tax filers in the post-pandemic period. Our dataset consists of the universe of tax filers and firms in the U.S., thus providing detailed information on tax filers' demographic and income characteristics along with comprehensive measures of firms' performance over time. Specifically, we are able to follow tax filers' sources of income over time and characterize the extent and direction of any post-pandemic labor market outcomes. Importantly, by combining information on firms' founders and performance, we are able to explicitly isolate the characteristics of tax filers that transition to entrepreneurship and measure newly created firms' subsequent growth trajectory and the direct impact of post-pandemic transitions on tax filers' earnings.

Consequently, our study is the first to establish novel systematic evidence on the reallocation of economic activity towards entrepreneurship following the pandemic. Are post-pandemic entrepreneurial transitions permanent or temporary? Which groups of individuals enter entrepreneurship? Is the post-pandemic increase in business dynamism associated with newly created firms that grow and create employment at a higher rate? Characterizing the magnitude, heterogeneous effects, and persistence of post-pandemic labor market shifts is critical for policy and has important macroeconomic implications with respect to the long-term fragility of labor market shifts and the subsequent distributional consequences. Importantly, leveraging information on tax filers' demographic and income characteristics allows us to draw inferences about potential motivations and changes in individuals' preferences towards entrepreneurship.

We start our analysis by studying individuals' propensity to transitions into entrepreneur-

ship in the post-pandemic period, which allows us to evaluate the extent to which the "Great Reshuffling" shifted an individual's choice between salaried and non-salaried employment, with a particular emphasis on the likelihood of creating a firm. Theoretically, the effect of a prolonged and severe economic downturn on entrepreneurial entry is unclear. On the one hand, the distinct features of the recent pandemic, including limited in-person work, potentially could increase individuals' willingness to use flexible employment arrangements as an income source and experiment with entrepreneurship. On the other hand, the shift to remote work and the availability of unemployment benefits during the pandemic could discourage individuals from participating in the labor market, including becoming entrepreneurs. A distinct feature of our setting relative to existing literature is that we are able to examine employment decisions *at the individual level* by relying on the *universe of individuals* in the U.S. Our primary finding is that there has been a substantial increase in the probability of an individual establishing a firm, that persists in both 2020 and 2021. Our findings are consistent with previous literature that has emphasized the critical role of labor market conditions and features in an individual's decision to enter entrepreneurship (Hombert et al. (2020), Gottlieb, Townsend, and Xu (2022)). In times of distress, the opportunity cost to engage in entrepreneurship potentially decreases (Babina (2020)), motivating individuals with entrepreneurial potential to create firms (Hacamo and Kleiner (2022)). Given the outsize role of employer firms in facilitating economic and employment growth, particularly in times of economic downturns, we highlight that our results are unchanged when we repeat our analysis focusing only on newly created firms that have at least one employee within a year of founding.

To understand the underlying economic mechanisms that plausibly explain the observed reallocation to entrepreneurial activity, we extend our analysis on post-pandemic labor market outcomes by focusing on different groups of employees. The pandemic expedited a recent shift in labor markets towards employment arrangements that are able to accommodate preferences for workplace flexibility and enhance work-life balance. Our paper is the

first to provide individual-level evidence that the effects of the pandemic on entrepreneurial entry are unequally distributed across different demographic groups based on preferences on flexibility. In particular, we hypothesize that women, especially those with dependents who disproportionately bear the cost of childcare (Aguiar, Hurst, and Karabarbounis (2013)), tend to value flexibility to a greater degree. To the extent that the pandemic substantially increased childcare responsibilities (Alon et al. (2022)), these constraints might have become more binding. Consistent with this, we find that women, particularly women with dependents, are substantially more likely to become entrepreneurs after the pandemic. Notably, we document that the effects are more pronounced for women with relatively younger dependents and in areas that had more childcare disruptions.

Next, we study the survival and performance of firms established in the United States from 2016 to 2021. These findings allow us to evaluate the quality of newly created firms and whether the increase in entrepreneurial activity is transitory. Since the effects are pronounced for women and women with dependents, we continue to examine whether the performance and survival differ for firms started by individuals with these characteristics. We find that firms started by women following the pandemic exhibit a higher likelihood of survival and tend to be more profitable in the year after founding. However, the effect on employment is only limited in magnitude, implying that women tend to create leaner firms in the post-pandemic period.

We conclude by investigating the household income of individuals who decide to enter entrepreneurship. The analysis allows us to evaluate if household incomes changed due to labor market disruptions during the pandemic relative to earlier transitions when the economy was stable and fared better. We focus on women tax filers who were salaried employees, that is received a Form W2, as the primary source of income in 2019. We form a panel of adjusted gross income (AGI) to measure household income from 2016 to 2021. We find that those who transitioned to entrepreneurship during the pandemic have relatively higher household income. This indicates that previously salaried women employees transitioning

into entrepreneurship were better off in terms of their income. Overall, our results are consistent with entrepreneurship positively impacting individuals as an employment source in times of adverse labor market conditions.

The paper contributes to several strands of the literature. Our paper adds to the literature examining the role of entrepreneurship in times of economic distress. Prior evidence documents that labor market declines (Hacamo and Kleiner (2022)) and firm-specific shocks (Babina (2020)) allow individuals to transition to entrepreneurship. We differentiate by investigating the labor market decisions of individuals during a period of unprecedented disruptions and demonstrating that the effects are amplified within particular demographic groups. Additionally, we track firms started during this period, allowing us to observe their survival and performance. Our paper also relates to the literature quantifying large shifts in the workplace following the pandemic (e.g., Alon et al. (2022)) and showing that it disproportionately affected women due to childcare responsibilities (Goldin (2022)). We provide novel micro-evidence that documents a reallocation towards entrepreneurship during this period. Moreover, we show that the effects were stronger for specific subgroups due to childcare responsibilities.

2 Data from U.S. Tax Returns

This section explains how we use U.S. tax returns to study the impact of the "Great Reshuffling" on entrepreneurship. Section 2.1 describes how we measure entrepreneurship. Section 2.2 provides information on additional data incorporated into the analyses.

2.1 Measuring Entrepreneurship

We seek to understand changes in entrepreneurial entry and the subsequent performance of newly created firms in the U.S. following disruptions in labor markets driven by the pandemic. Our data allow us to overcome a number of challenges associated with measuring

entrepreneurial activity in the U.S. First, comprehensive data on every newly created firm in the economy and every individual in the labor force are often not provided in publicly available datasets. Second, it is generally not possible to observe the characteristics of founders, their income trajectory, and employees at their firms. Third, it can be difficult to observe the performance of new firms at and following their creation. To overcome these challenges, we use the universe of U.S. tax returns to determine when individuals start new firms.[1] To measure entrepreneurial activity across a wide swath of potential entrepreneurs, we focus on sole proprietorships. This is motivated by several considerations. Sole proprietorships are the most common type of firm in U.S. tax returns.[2] Additionally, focusing on one firm type allows us to construct standardized measures of firm outcomes. We also 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.[3] We restrict our attention to Schedule C filings that include an employer identification number (EIN) to focus on firms that are separate entities.[4] If a particular tax return is amended, we use the most recent filing available.[5]

[1]We received access to the universe of U.S. tax returns through the Joint Statistical Research Program of the Statistics of Income Division of the IRS.

[2]The other firm types in U.S. tax returns are broadly partnerships and corporations. Partnerships file Form 1065, S corporations file Form 1120-S, and C corporations file Form 1120.

[3]The sample for our analyses is from 2016 to 2021. Using data back to 1997 allows us to identify when individuals are first-time entrepreneurs.

[4]The main requirement for firms to have an EIN is if 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.

[5]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.

2.2 Other Data

We incorporate additional data from U.S. tax returns for individuals and entrepreneurs. We use adjusted gross income and dependent status from Form 1040. 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, profitability, and employment.

[Insert Table 1 Here]

Table 1 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 2016 to 2021 aged 25 to 65 in the year of filing a tax return.[6] There are more than 0.9 billion individual-years. About 0.7% of individuals start a new firm in a particular year. The majority of the tax filers are women and slightly more than half of women have dependents. Panel B reports variables related to firm outcomes. Around half of firms survive two years after founding. Approximately 18% of firms report employment one year after their founding. Panel C includes variables for the cross-section of entrepreneurs. About 34% of founders are women and 18% are women with dependents.

We also document the transition between labor income sources over the sample period for six possible categories. First, gig employment is an individual's income from a gig firm based on Forms 1099-MISC, 1099-NEC, and 1099-K. Contract employment is an individual's income from a non-gig firm also based on Forms 1099-MISC, 1099-NEC, and 1099-K. Sole proprietorship is an individual's income based on Schedule C, which is attached to Form 1040. Unemployment is an individual's income based on Form 1099-G. Wage employment is an individual's income based on Form W-2. We assign each individual to one category

[6] We split tax returns filed by a household with more than one person to separately include an observation for the primary filer and spouse.

based on the largest income source in a particular year. Individuals who do not appear in the sample for a particular year are considered out-of-sample.

Appendix Figure A1 shows the share of individuals transitioning from a particular income source. For example, the top-left panel show individuals transitioning from gig employment to one of the six categories. In 2020, we find that about 20% of gig workers in the current year transitioned to being a sole proprietor in the following year. Appendix Figure A2 provides the share of individuals transitioning to a particular income source. Appendix Figure A3 displays the count of individuals transitioning from a particular income source. Appendix Figure A4 reports the count of individuals transitioning to a particular income source. These figures offer new evidence of labor market transitions during a period of substantial disruptions.

3 Effects on Entrepreneurship

This section studies the evolution of entry into entrepreneurship following the pandemic in 2020 and 2021. Sections 3.1 and 3.2 provide aggregate and regression-based evidence on changes in entrepreneurial entry in 2020 and 2021, respectively. Section 3.3 examines the role of individual characteristics in response to the pandemic by focusing on firm creation. Section 3.4 investigates heterogeneity in the treatment intensity based on geographic variation.

3.1 Aggregate Evidence

Labor markets were substantially disrupted in 2020 and 2021, forcing a sizeable part of the labor force into unemployment. Figure 1 plots the number of individuals who received unemployment income based on Form 1099-G. We find that about 5 million people received unemployment before 2020. At the beginning of the pandemic in 2020, there was a substantial increase as more than 30 million individuals received unemployment income. This increase persisted at greater than 15 million people in 2021.

[Insert Figure 1 Here]

We start our analysis by providing aggregate evidence regarding the evolution of entrepreneurial entry around the pandemic. Theoretically, the effect of a prolonged and severe economic downturn on entrepreneurship is unclear. On the one hand, the distinct features of the disruption, including limited in-person work, potentially could increase individuals' willingness to use flexible employment arrangements as an income source. On the other hand, the shift to remote work and the availability of unemployment benefits during the pandemic could discourage individuals from participating in the labor market, including entering into entrepreneurial ventures (Garin et al. (2023)).

Figure 2 reports the share of individuals creating new firms over the sample period from 2016 to 2021. We find that there was a sharp increase in the propensity of individuals to become entrepreneurs in 2020 and 2021. In particular, the likelihood of an individual to create a firm is fairly stable in the period from 2016 to 2019, ranging from 0.006% to 0.0066%. However, we observe a sharp and persistent increase in the propensity of individuals to become entrepreneurs in the period following the pandemic. In fact, the magnitude of the effect is striking representing a 30% increase relative to the period prior to the pandemic. This is consistent with previous aggregate evidence that relies on business applications (Haltiwanger (2022)). While business applications are informative of a business' intent to engage in future economic activity, only a fraction corresponds to a subsequent business formation that reports economic activity or employs workers (Bayard et al. (2018)). Prior literature has highlighted that labor markets play a central role in an individual's decision to enter entrepreneurship (Hombert et al. (2020); Gottlieb, Townsend, and Xu (2022)). In times of distress, the opportunity cost to engage in entrepreneurship potentially decreases (Babina (2020)), motivating individuals with entrepreneurial potential to create firms (Hacamo and Kleiner (2022)).

[Insert Figure 2 Here]

Overall, our aggregate findings on the evolution of entrepreneurship provide important insights into the interaction between labor market disruptions and individuals' propensity to opt for entrepreneurship. They are connected to recent work about nationwide increases in business applications (Haltiwanger (2022)). In the next section, we provide regression evidence for the effects on entry into entrepreneurship.

3.2 Individual-level Analysis

We extend the aggregate evidence about trends in entrepreneurship by investigating, at the individual level, the effect of the "Great Reshuffling" on creating a new firm. An important advantage of using administrative data is that we study the universe of newly created firms that file tax returns and subsequently report economic activity. Therefore, a distinct contribution of our paper is that we are able characterize the effect of labor market disruptions on shifts in labor choices of individuals towards flexible forms of employment, by providing direct estimates of the propensity to enter into entrepreneurship at the individual level.

For our analysis, we estimate the following specification at the individual-year level:

$$Y_{it} = \alpha_m + \beta \cdot \text{Post}_t + \gamma \cdot \text{X}_{m,t-1} + \varepsilon_{it}, \tag{1}$$

where Y_{it} is the outcome variable measuring the incidence of creating a firm by individual i in year t. The sample for our analyses is the population of U.S. individuals from 2016 to 2021 aged 25 to 65 in a particular year. $Post_t$ is an indicator variable equal to one for the period from 2020 to 2021. $X_{i,t-1}$ is a control for log GDP at the metropolitan statistical area (MSA) level measured in the previous year. The specification includes MSA fixed effects (α_m) to absorb unobserved time-invariant heterogeneity at the MSA level. Standard errors are clustered at the MSA level. The coefficient of interest is β, which estimates the marginal effect of the post period on entrepreneurial entry.

[Insert Table 2 Here]

Table 2 includes the results. We start by providing estimates of the propensity of individuals to become an entrepreneur in the post-pandemic period relative to the prior period. Specifically, we define *Founder* as an indicator variable equaling one if an individual establishes a sole proprietorship in a particular year. In column (1), we include MSA fixed effects to absorb time-invariant heterogeneity across locations and column (2) augments the specification with a time-varying variable that accounts for differences in economic growth across MSAs. Our estimates across specifications suggest that individuals exhibit a 0.15 to 0.16 percentage-point increase in the likelihood of participating in the gig economy in the post period.[7] The effects are statistically significant and economically substantial, representing a 20% increase relative to the sample mean. Our findings highlight the large-scale shift of individuals towards entrepreneurship during the recent economic downturn.

We continue by linking our baseline estimates with the incidence of having prior experience with entrepreneurship. To the extent that the distinct features of the recent pandemic allowed individuals to experiment with entrepreneurship, we expect the effect to be largely driven by first-time entrepreneurs. A critical feature of our administrative data is that we are able to observe the labor market trajectory of individuals over time, thus allowing us to identify the first time individuals are involved in entrepreneurship. We define $First - Time\ Founder$ as an indicator variable equaling one if an individual starts a firm in that particular year for the first-time. In column (3), we find that entrepreneurial entry by individuals with no prior experience with entrepreneurship increases in the post period by 0.13 percentage points. Our estimates are similar when we include log MSA GDP in column (4), suggesting that the majority of the baseline effect is driven by individuals who experiment with entrepreneurship for the first time.

Finally, we evaluate the robustness of our estimates by focusing on the incidence of creating a firm with at least one employee at founding. Firms with employees play an outsize role in facilitating economic and employment growth, particularly in times of economic

[7]The R^2 is low since the incidence of an individual participating in the gig economy in a particular year is relatively infrequent.

downturns. In columns (5) and (6), we find that there is a statistically and economically significant increase in the creation of firms employing at least one individual at founding. Overall, our results provide individual-level estimates that there was a substantial increase in the probability of individuals opting for flexible options in the labor market through a rise in firm creation.

3.3 Who Responds?

Following the labor market disruptions, was there a shift in the composition of individuals who responded by working in the gig economy or starting a new firm? We continue by examining the role of individuals' characteristics. Albanesi and Kim (2021) and Goldin (2022) highlight that the pandemic substantially increased childcare responsibilities and disproportionately affected employment in sectors with high female employment shares (e.g., contact-intensive services). If entry into entrepreneurship is an alternative for displaced employees or those with childcare responsibilities, we expect transitions into entrepreneurship to be disproportionately driven by the most impacted groups, that is women and women with dependents. Using data available in U.S. tax returns, we incorporate information on individuals' demographic characteristics. This allows us to evaluate if there is a shift in the composition of entrepreneurs, shedding light on the potential economic mechanisms.

[Insert Figure 3 Here]

Figure 3 explores the association between labor market disruptions and gender. We define *Female Proportion* as the share of females employed in a particular industry in 2019. We also construct *Percent Change in Unemployment* as the percent change in the number of unemployed individuals from 2019 to 2020 in a particular industry. We find that there appears to be a link between the change in unemployment around the pandemic and the share of females working in a particular industry. For example, healthcare and personal services experienced substantial increases in unemployment of 9% and 7%, respectively, and employed

a majority of women. Comparatively, manufacturing and transportation experienced only minor increases in unemployment, and employment changes mostly affected men.

[Insert Figure 4 Here]

Figure 4 provides additional evidence on the composition of unemployed individuals based on gender and dependents. During 2016 to 2019, about 40% of individuals receiving unemployment income are women and about 25% are women with dependents. In 2020 and 2021, this notably rises to more than half of unemployed individuals are women and about 30% are women with dependents.

[Insert Figure 5 Here]

We next turn to the role of characteristics in the aggregate evidence. Figure 5 reports the composition of individuals starting new firms by gender and dependents. For each year, we separately determine the share of women and women with dependents. We find that there is a sharp and persistent increase in female representation in entrepreneurial entry that coincides with the onset of the pandemic. In particular, we observe an increase in the share of female founders from around 32.4% prior to the pandemic to 37.1% in the two-year post-pandemic period, driven by a striking jump in female founders from 33.4% in 2019 to 36.8% in 2020 that persists in 2021. In fact, the proportion of female entrepreneurs with dependents exhibits the largest relative growth, indicating that entry into entrepreneurship appears to be driven by the groups of individuals impacted by the pandemic-driven disruptions in labor market.

To further characterize the underlying economic mechanisms related to transitions to entrepreneurship during the post period, we provide regression estimates of heterogeneous effects. Specifically, we extend our baseline specification by interacting an individual's par-

ticular characteristic with entry in entrepreneurship as follows:

$$\begin{aligned} Y_{it} = \alpha_m + \beta \cdot \text{Post}_t \cdot \text{Characteristic}_{i,t-1} + \delta \cdot \text{Post}_t \\ + \theta \cdot \text{Characteristic}_{i,t-1} + \gamma \cdot \text{X}_{m,t-1} + \varepsilon_{it}. \end{aligned} \tag{2}$$

In this specification, $Characteristic_{i,t-1}$ is the characteristic of individual i in year $t-1$. The specification includes terms for the direct effects of the post period and the characteristic. We include MSA fixed effects (α_m) to absorb unobserved time-invariant variation at the MSA level. Standard errors are clustered at the MSA level. The coefficient of interest is β, which estimates the marginal effect of a specific characteristic in 2020 and 2021.

We investigate heterogeneity in entrepreneurial entry by gender and dependents. Prior research provides evidence that childcare responsibilities substantially increased in 2020 and 2021, and disproportionately affected employment in sectors with high female shares (Alon et al. (2022); Goldin (2022)). The opportunity cost of transitioning to entrepreneurship potentially decreased during the pandemic period for individuals who were either displaced or became constrained by childcare responsibilities. Consequently, we expect transitions to entrepreneurship to be disproportionately driven by individuals in these groups, which are women and, particularly, women with dependents. For our analyses, we define *Female* as an indicator variable equaling one if an individual is a female. We also define *Female with Dependents* as an indicator variable equaling one if an individual is a female and has any dependents.

[Insert Table 3 Here]

Table 3 provides our estimates for the likelihood of establishing a firm. Across our specifications, the coefficient on the *Post* variable is positive and statistically significant, which is consistent with our results in Section 3.2 that there is an overall shift towards entrepreneurial in the post-pandemic period. Furthermore, consistent with our prior evidence on female representation in entrepreneurial entry, our estimates for the *Characteristic* vari-

able demonstrate that women are less likely, on average, to engage in firm creation. In column (1), we investigate the differential response of women during the pandemic. Our coefficient estimate suggests that there is a statistically significant increase of 2.0 basis points in terms of entry to entrepreneurship, which is a 2% increase relative to the sample mean. In Column (2), the estimate remains unchanged in a specification that includes the GDP at the MSA level as a control.

Columns (3) and (4) examine the effect where the characteristic is *Female with Dependents*, which is a group that is particularly prone to childcare constraints. To the extent that they disproportionately bear the costs of childcare, women with dependents might be more likely to transition to entrepreneurship due to its flexibility. Columns (3) and (4) document that the effect more than doubles for women with dependents. This is consistent with childcare responsibilities playing a role in the shift to entrepreneurship during periods of labor market disruptions.

Appendix Table A1 repeats the analysis for first-time entrepreneurial entry. We document that the effects remain statistically significant and quantitatively similar to the previous estimates. Appendix Table A2 evaluates the robustness of our findings by providing estimates for firms that employ at least one individual in the two-year period after founding. The estimates are largely consistent with our previous results and highlight that highly affected groups exhibit a higher propensity to create employer firms following the pandemic. Appendix Table A3 evaluates the robustness of our results by focusing on dependents who are 12 years or younger. With the exception of founding employer firms, we find that the estimates are amplified, suggesting that childcare constraints play a critical role in entry into entrepreneurship during labor market disruptions.

We conclude this section by examining the timing of the effects in the post-pandemic. Specifically, we extend our event-study specification in equation (2) to separately identify

the effect years 2020 and 2021 as follows:

$$\begin{aligned} Y_{it} = \alpha_m + \beta_1 \cdot \text{Post } 2020_t \cdot \text{Characteristic}_{i,t-1} + \beta_2 \cdot \text{Post } 2021_t \cdot \text{Characteristic}_{i,t-1} \\ + \delta_1 \cdot \text{Post } 2020_t + \delta_2 \cdot \text{Post } 2021_t + \theta \cdot \text{Characteristic}_{i,t-1} + \gamma \cdot \text{X}_{m,t-1} + \varepsilon_{it}, \end{aligned} \tag{3}$$

where the variables *Post* 2020_t and *Post* 2021_t are indicator variables equal to one for the year 2020 or 2021, respectively.

[Insert Table 4 Here]

Table 4 provides the results. We find that there are two notable results. First, columns (1) and (2) show that the response by women is concentrated only in 2020. In anything, the effect appears to reverse in 2021, albeit being statistically insignificant. Second, the magnitudes of the coefficient estimates in columns (3) and (4) demonstrate that the pandemic effects are persistent and remain substantially larger for women with dependents. These results provide additional evidence that childcare constraints played a role in the shift to entrepreneurship. They also highlight that entrepreneurship is an economically important labor market alternative, especially for particular groups during labor market disruptions.

3.4 Heterogeneous Effects by Treatment Intensity

Our previous findings suggest that flexibility might play a role in the rising entrepreneurial entry by women and women with dependents. In this section, we examine geographic variation in flexibility during the labor market disruption occurring in 2020 and 2021. We proxy for differences in flexibility using the variation in childcare responsibilities. We use district-level data on school closures from the COVID-19 School Data Hub.[8] We determine the share of days closed in 2020 and 2021 using the location reported in Form 1040. We split the sample for our individual-level analyses into low and high treatment intensities based on the median value across counties. For each subsample, we estimate equation (2).

[8]See "District-Monthly Percentage In-Person, Hybrid, or Virtual" available at https://www.covidschooldatahub.com/data-resources.

[Insert Table 5 Here]

Table 5 reports our results. In columns (1) and (2), we find that there is no differential response for women in the propensity to enter entrepreneurship in areas with low treatment intensity. Columns (3) and (4) show that there is an economically substantial and statistically significant effect of the pandemic on the propensity of women to enter entrepreneurship in areas with high treatment intensity. In economic terms, the coefficient estimates correspond to an increase of 5.6% relative to the sample mean of starting a new firm. We focus on women with dependents in columns (5) to (8). We find that the effect is larger in areas where the treatment intensity is high. The magnitude of the response in high treatment intensity areas is about double relative to those with low treatment intensity. Additionally, the estimates across all specifications for the *Post* variable are positive, suggesting that there is a rise in new firm creation across both areas during the post period.

Taken together, our findings suggest that geographic variation in treatment intensity plays a critical role in entering into entrepreneurship in the post period. Having said that, there are alternative factors that potentially explain the disproportionate shift to entrepreneurship following the "Great Reshuffling." While in the current version we particularly focus on the role of childcare constraints that potentially shift preferences for flexibility from women, our next step is to investigate the role of displacement, availability of remote work, and provision of liquidity during the pandemic. In Section 5.2, we examine whether the transitions driven by labor market disruptions entrepreneurship are transitory or persistent.

4 Characteristics of Newly Created Firms

This section studies characteristics of newly created firms. In Section 4.1, we examine the industry composition of newly created firms following labor market disruptions compared to the prior period. Section 4.2 evaluates subsequent firm performance.

4.1 Industry Composition of Newly Created Firms

We start by examining the industry composition of newly created firms at founding. We use the universe of newly created firms in the United States described in Section 2.1 from 2016 to 2021. We extract information on the industry classification of newly created firms from the two-digit North American Industry Classification System (NAICS) code reported in firms' tax returns and estimate the share of newly created firms in a particular industry in our sample.[9] We compare the industry composition prior to labor market disruptions in 2016 to 2019, which is defined as *Pre*, to the period 2020 and 2021 (*Post*).

[Insert Figure 6 Here]

Figure 6 reports the industry composition for the universe of U.S. firms. The darker red bars represent the proportion of firms in a particular industry from 2016 to 2019. The lighter gray bars display the share of firms formed in a particular industry in 2020 and 2021. Overall, personal and professional services account for a large part of economic activity in sole prioprietorships. Having said that, there is a substantial post-pandemic increase of newly created firms in personal services and trade relative to the pre period, accompanied by a decline in professional services and manufacturing. The results suggest that disruptions in labor markets in 2020 and 2021 potentially support entry into entrepreneurship through online platforms that facilitate the digital provision of personal services and retail trade.

Panels B and C repeat the analysis on the industry distribution for the universe of U.S. sole proprietorships by focusing on differential shifts based on the founder's gender. We find that shifts in the composition of newly created firms in 2020 and 2021 are largely driven by female entrepreneurs, further highlighting the effect of labor market disruptions on the evolving nature of entrepreneurship. For example, there is a substantial shift to creating

[9]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 Public Administration (92).

firms in trade and personal services, which is particularly pronounced for female founders. In sum, our evidence indicates that the pandemic substantially changed the profiles of firms formed in 2020 and 2021.

4.2 Firm Performance

Our previous findings highlight that there was a large increase in entrepreneurial entry in 2020 and 2021, particularly from individuals likely impacted by labor market disruptions. We analyze the performance of newly created firms during this period relative to the pre period. If entrepreneurial talent is homogeneous, then there could be no effect on firm outcomes during the period of labor market disruptions. Alternatively, if entrepreneurial entry is only transitory until labor market conditions improve, transitions to entrepreneurship in the post period are expected to be followed by an increase in firm exits and a low rate of high-growth firms. Prior literature emphasizes the role of aggregate conditions at the time of entry as an important factor in explaining subsequent firm dynamics and growth (Sedláček and Sterk (2017)). By contrast, Hacamo and Kleiner (2022) provide evidence that labor market downturns allow individuals with untapped entrepreneurial potential to transition to entrepreneurship and subsequently create high-growth firms.

We estimate the following specification at the firm level:

$$Y_k = \alpha_m + \alpha_s + \alpha_t + \beta \cdot \text{Post}_t \cdot \text{Characteristic}_{k,t-1} + \gamma \cdot \text{Characteristic}_{k,t-1} + \varepsilon_k, \quad (4)$$

where Y_k is an outcome for firm k founded in year t located in MSA m and operating in industry s. We examine performance at the year of the founding, and in years one and two after a firm is started. $Post_t$ is an indicator variable equaling one if the year is 2020 or 2021. $Characteristic_{k,t-1}$ is an indicator variable equaling one if the founder has the specific individual trait in the year prior to the founding year t. We include MSA (α_m) and industry (α_s) fixed effects to capture time-invariant heterogeneity in the local economy and

industry, respectively. Our specification incorporates founding-year fixed effects to absorb time trends in firm creation (α_t). Standard errors are clustered at the MSA level. The coefficient of interest, β, estimates the marginal effect of the post period on a firm outcome for entrepreneurs with a specific individual characteristic.

[Insert Table 6 Here]

The first firm outcome that we evaluate is a firm's survival. We define *Survival* as an indicator variable equaling one if a firm files taxes in a particular year after founding.[10] Based on the findings in Section 3.3, we continue to examine whether the effects differ for firms created by women and women with dependents. Table 6 provides the results. Columns (1) and (2) report the heterogeneous response of female entrepreneurs. Columns (3) and (4) provide estimates for female entrepreneurs with dependents.

We find that female entrepreneurs started in 2020 and 2021 exhibit a significantly higher likelihood of survival. In columns (1) and (2) of Panel A, we find that female-founded firms are 0.5 to 0.6 percentage points more likely to survive both in the first and the second year following founding. The differential response persists and is even larger for the subsample of firms created by female entrepreneurs with dependents (columns (3) and (4)).

[Insert Table 7 Here]

Table 7 examines firms' profitability. We define $Profitability$ 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. The estimates for profitability at founding are reported in columns (1) and (3) and one year after founding in columns (2) and (4). We find that firms started by female entrepreneurs and female entrepreneurs with dependents have higher profitability in the post period. In columns (1) and (2) we document that the profitability of firms started

[10]Specifically, a firm is observed in a particular year if a Schedule C with the same EIN is filed by a tax filer with the same SSN as at the firm's founding.

by female entrepreneurs in 2020 and 2021 is 34.5% and 12.8% higher at founding and in the following year, respectively.[11]

While the estimates are quite similar in terms of direction and magnitude, we find that the effects tend to be smaller for female entrepreneurs with dependents (columns (3) and (4)). For example, profitability is 11.8% higher one year after founding for firms started by women with dependents during the post period.

[Insert Table 8 Here]

We conclude this section by evaluating the propensity of firms to employ individuals at founding and the year after founding. We define *Has Employees* as an indicator variable equaling one if a firm has any employees in a particular year. Table 8 reports the estimates. Contrary to our findings for survival and profitability, we mostly find that firms started by women and women with dependents are less likely to employ workers, which is larger in magnitude during the post period.

We explore the robustness of our results to firms with employees. In Appendix Tables A4 and A5, we re-estimate the specifications for survival and performance on the subset of firms with at least one employee in the two-year period after founding. The results are larger and remain statistically significant. Taken together, our findings suggest that firms created by women in 2020 and 2021 exhibit higher survival rates and profitability. However, these firms tend to grow leaner in terms of employment.

5 Effects of Transitions into Entrepreneurship

5.1 Income

We study the effects for individuals transitioning to entrepreneurship in the post-pandemic period, by focusing on individuals' income trajectory and propensity to remain in the labor

[11] For the profitability specifications, we report the exponentiated coefficient minus one in the text. The tables contain the raw coefficients.

force. For the analysis, we rely on a cohort-based estimation where we restrict our sample to female tax filers who received a W2 as the primary source of income in 2019. For this sample, we track their adjusted gross income from 2016 to 2021. We estimate the following specification to compare income for individuals who transitioned to entrepreneurship in 2020 or 2021:

$$Y_{it} = \alpha_i + \alpha_t + \beta \cdot \text{Post}_t \cdot \text{Transition}_i + \varepsilon_{it}, \tag{5}$$

where Y_{it} is an income measure for individual i who in tax year t. $Post_t$ is an indicator variable equal to one for the period from 2020 to 2021. $Transition_i$ is an indicator variable equaling one if individual i transitions to entrepreneurship at any point in the post-pandemic period, that is 2020 or 2021. We include individual (α_i) and tax year (α_t) fixed effects to capture time-invariant individual heterogeneity and to absorb time trends, respectively. Standard errors are clustered at the MSA level. The coefficient of interest, β, estimates the marginal effect on income and labor force participation for transitions to entrepreneurship in 2020 or 2021.

[Insert Table 9 Here]

Table 9 reports the estimates. In column (1), our first income measure is *Log AGI*, which is the log of the individual's adjusted gross income in a particular year. We construct a balanced panel and assume that an individual's income is zero if there is no information in a particular year. We find that female employees who transitioned from salaried employment in 2019 to entrepreneurship in 2020 or 2021 experience a 17.2% increase in income relative to those who did not enter entrepreneurship in 2020 or 2021.[12]

In column (2), we assess the likelihood of an individual reporting income in a particular year. We define *No Income* as an indicator variable equaling one if an individual's adjusted gross income is not available in a particular year. This approach allows us to estimate the

[12]When the outcome is log AGI, we report the exponentiated coefficient minus one in the text. The tables contain the raw coefficients.

propensity for women to participate in an income-generating activity. We find that there is a 3.4-percentage-point decrease in the likelihood of having no information on income for women who transitioned to entrepreneurship in 2020 or 2021.

We examine the robustness of these estimates. In Appendix Table A6, we focus on first-time transitions in entrepreneurship. In Appendix Table A7, we focus on newly created firms with employees in the two-year period after founding. The estimates are broadly consistent with those in Table 9. Additionally, they are notably larger in magnitude for first-time transitions. In sum, our results provide evidence that individuals transitioning into entrepreneurship appear to benefit in terms of their income. A caveat to the findings in this section is that there might be selection on individuals deciding to start a new firm.

5.2 Persistence

We conclude by examining whether transitions to entrepreneurship are transitory or persist into the following years. If these transitions are used by individuals to stabilize their income, then they might be transitory with no substantial long-term labor market implications. On the other hand, individuals might remain in entrepreneurship if they are relatively better off, suggesting a permanent shift with respect to individual preferences for work.

For this analysis, we restrict to individuals who create new firms from 2016 to 2021 and estimate equation (4). We follow founders over time and identify the propensity to continue being entrepreneurs in the first two years after founding.[13] The outcome is *Business Owner*, which is an indicator variable equaling one if the founder owns a firm in a particular year after founding. This variable captures subsequent entrepreneurial entry even if the focal firm of a founder is defunct.

[Insert Table 10 Here]

Table 10 provides the results. In columns (1) and (2), we find that there is an increase

[13]For this analysis, we look at business ownership until 2022.

in the likelihood of owning a business either one or two years after founding if the founder is a woman. Columns (3) and (4) show that there is an even higher propensity to stay as an entrepreneur for women with dependents in 2020 or 2021. The increase in business ownership for this group is 3.1 percentage points in the first year after a firm's founding and 3.9 percentage points in following two years. Our estimates suggest that transitions into entrepreneurship are largely not transitory and appear to persist in the following couple of years. They highlight that the effect of labor market disruptions in 2020 and 2021 could continue into future years.

6 Conclusion

Using U.S. administrative tax data, we study how entrepreneurship evolved in 2020 and 2021 following labor market disruptions driven by the pandemic and the subsequent "Great Reshuffling." We find an aggregate rise in entrepreneurial entry in the post-pandemic period that persists over time. Prior literature documents that women, particularly women with dependents, were differentially impacted in 2020 and 2021 stemming from childcare disruptions. We evaluate the response by these groups and find that there were pronounced shifts into entrepreneurship. These findings indicate that the flexible opportunities especially benefit groups facing labor supply constraints.

We investigate firms created during the period of labor market disruptions. There are notable shifts in the composition of firms created in 2020 and 2021, with greater representation in trade and personal services. We generally find that firms created by women are more likely to survive and have higher profitability. However, they grow leaner by exhibiting a lower propensity to create employment. We additionally show that income rises for those transitioning to entrepreneurship and that the transitions to entrepreneurship persist. Our findings offer novel insights into the changing nature of individuals' preferences towards flexibility in the workplace.

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Figure 1: Aggregate Unemployment

The figure reports the number of individuals receiving any unemployment income based on Form 1099-G from 2016 to 2021.

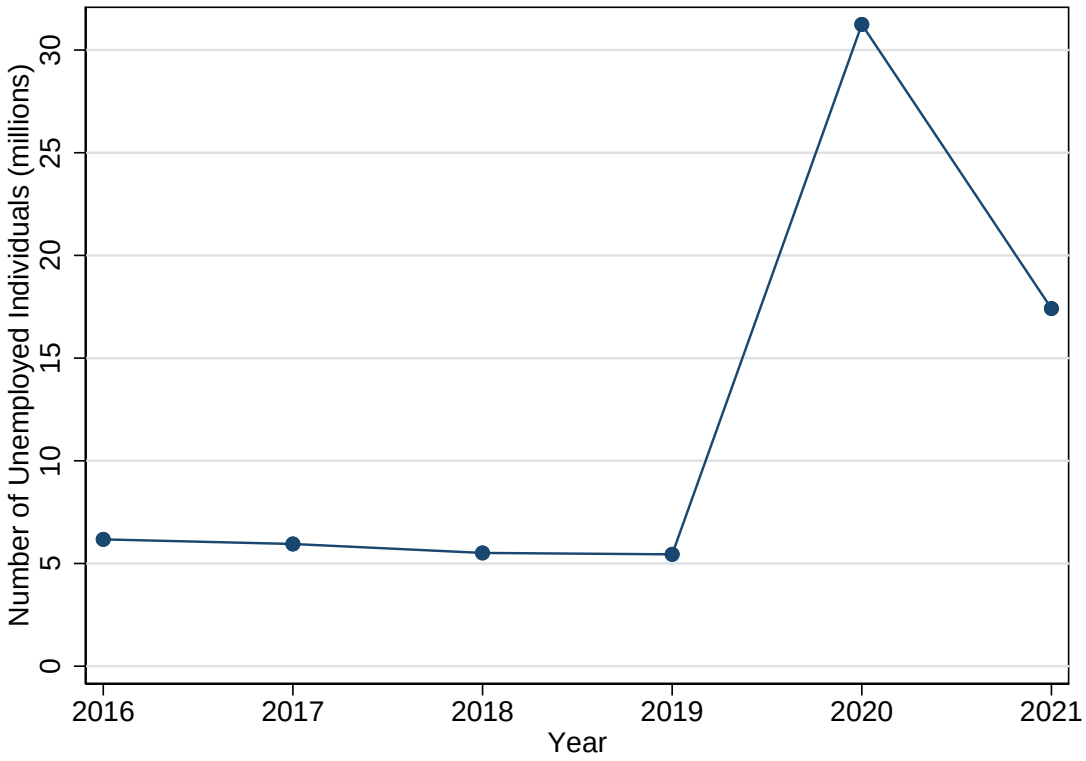


Figure 2: Participation in Entrepreneurship

The figure shows the share of individuals creating new firms in a particular year from 2016 to 2021.

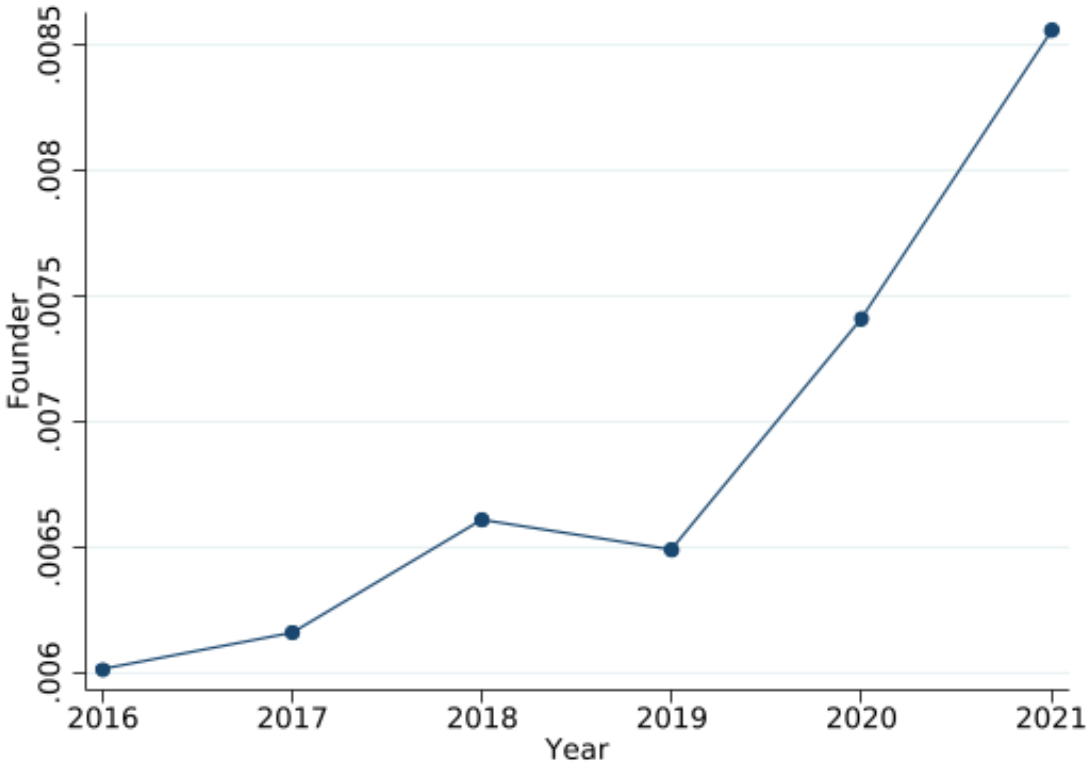


Figure 3: Labor Market Disruptions in Industries

This figure examines the role of gender in labor market disruptions. *Female Proportion* is the share of females employed in a particular industry in 2019. *Percent Change in Unemployment* is the percent change in the number of unemployed individuals from 2019 to 2020 in a particular industry.

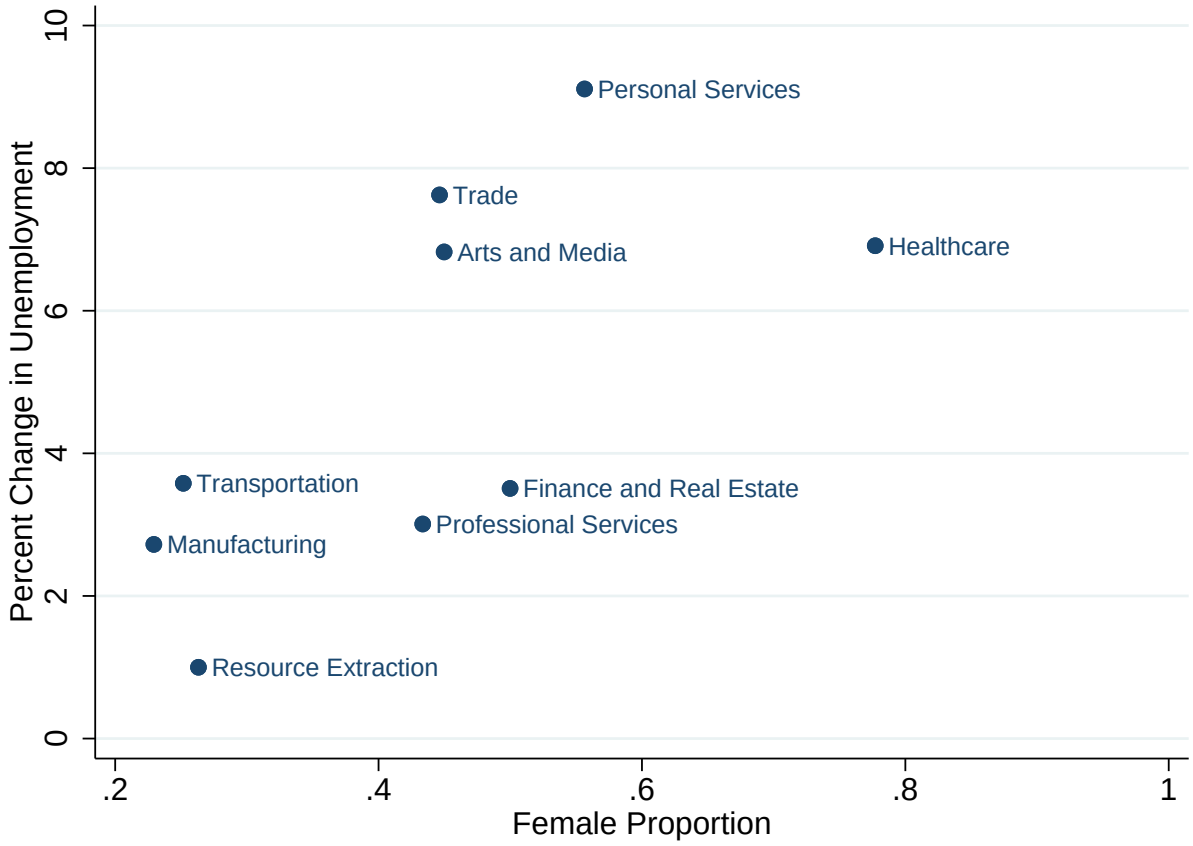


Figure 4: Unemployment by Gender and Dependents

This figure reports the composition of individuals receiving any unemployment income from Form 1099-G based on gender and dependents. The sample period is 2016 to 2021.

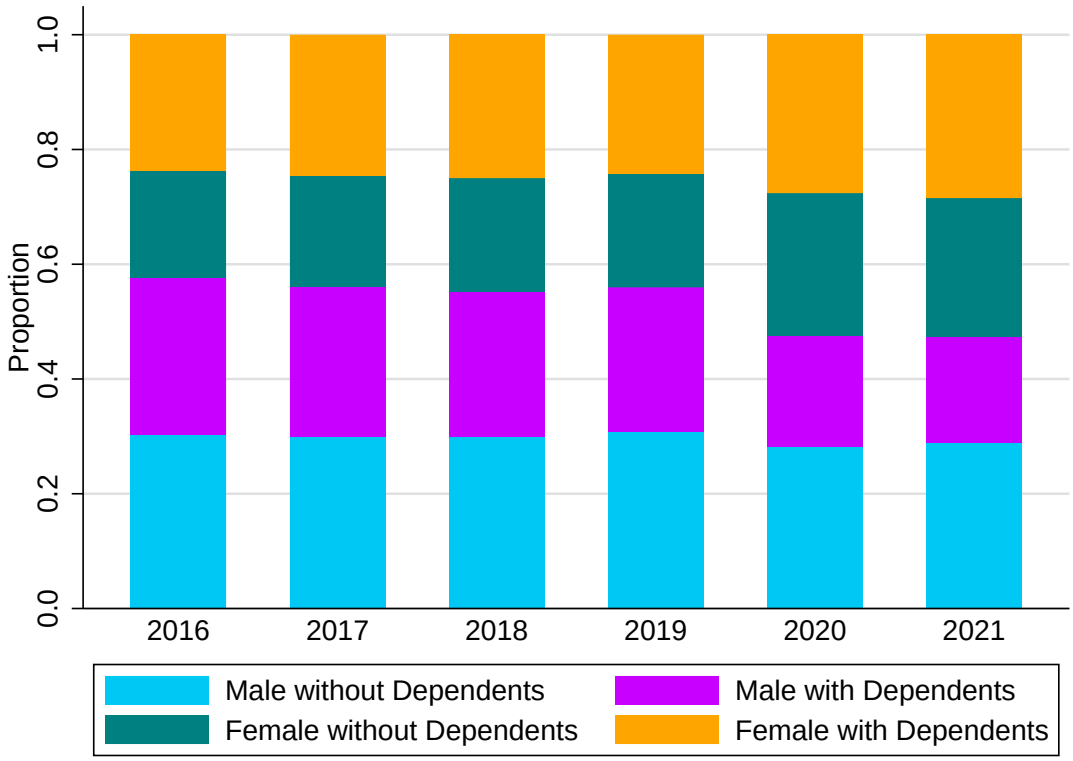


Figure 5: Entrepreneurship by Gender and Dependents

This figure shows the proportion of women and women with dependents starting new firms. The sample is from 2016 to 2021.

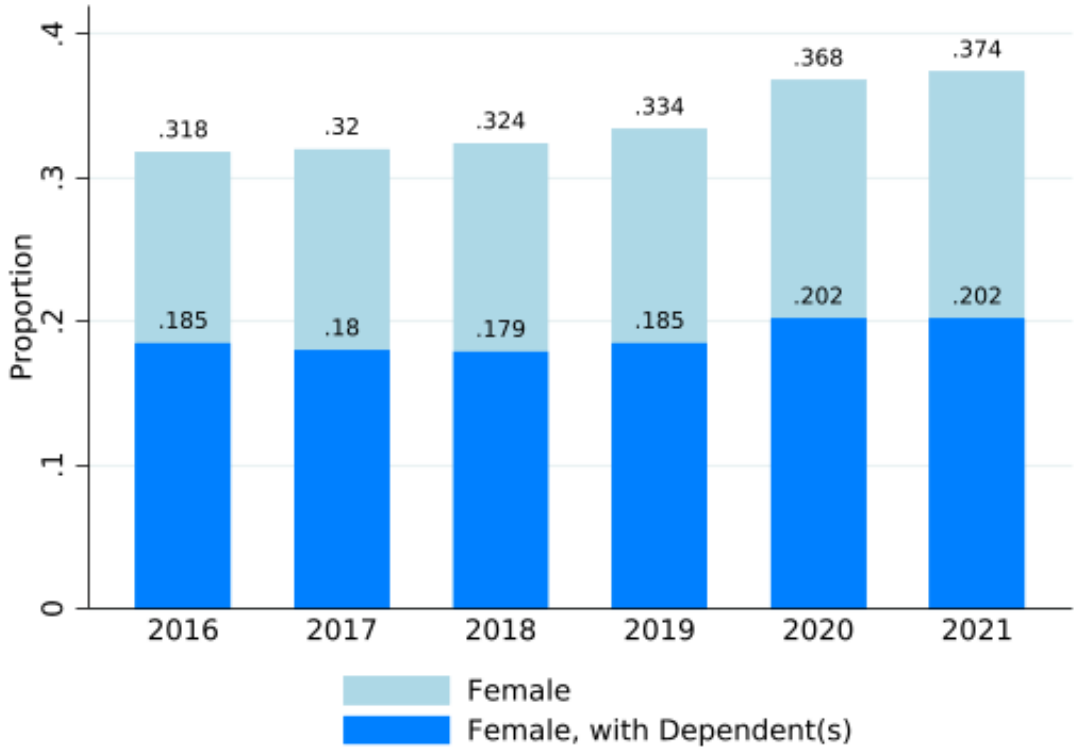
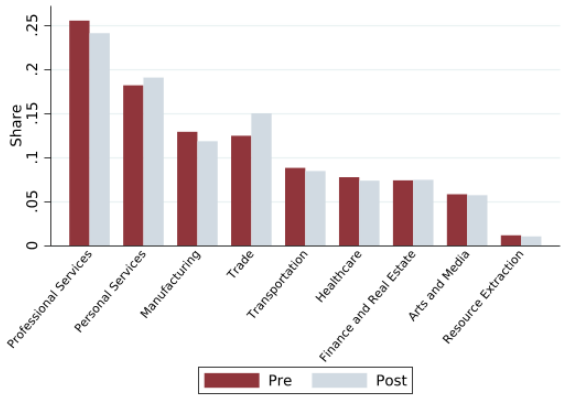


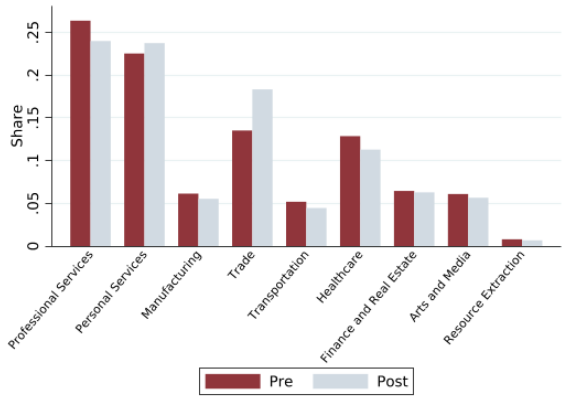
Figure 6: Industry Composition of Newly Created Firms

This figure provides the industry composition of new firms created in 2016 to 2021. *Pre* includes firms created in 2016 to 2019. *Post* captures new firms in 2020 and 2021. Panel A provides industry shares of newly created firms. Panel B (C) displays the industry distribution for firms started by female (male) entrepreneurs.

Panel A: All Firms



Panel B: Firms Started by Females



Panel C: Firms Started by Males

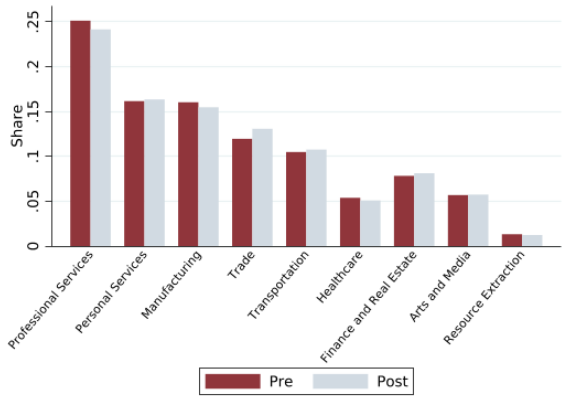


Table 1: Summary Statistics

This table provides summary statistics for variables used in our analyses. Panel A includes variables at the individual-year level, Panel B has firm outcomes, and Panel C contains variables for the cross-section of entrepreneurs. All variables are defined in Appendix A.

Panel A: Individual-Year Variables

Variable	Number of Observations	Mean	Median	Standard Deviation
Founder	912,615,991	0.007	0.000	0.083
Female	912,615,991	0.516	1.000	0.500
Female with Dependents	912,615,991	0.275	0.000	0.446

Panel B: Firm Variables

Variable	Number of Observations	Mean	Median	Standard Deviation
Has Employees at Founding	6,024,082	0.162	0.000	0.369
Has Employees in One Year	4,226,787	0.180	0.000	0.385
Profitability at Founding	6,024,081	7.407	9.393	5.151
Profitability in One Year	3,925,917	8.585	10.309	4.930
Survival One Year After Founding	6,024,082	0.702	1.000	0.458
Survival Two Years After Founding	4,742,122	0.566	1.000	0.496
Female	6,024,082	0.342	0.000	0.474
Female with Dependents	6,024,082	0.182	0.000	0.386

Panel C: Entrepreneur Variables

Variable	Number of Observations	Mean	Median	Standard Deviation
Business Owner in One Year	5,989,430	0.657	1.000	0.475
Business Owner in Two Years	4,715,474	0.529	1.000	0.499
Female	5,989,430	0.343	0.000	0.475
Female with Dependents	5,989,430	0.182	0.000	0.386

Table 2: Entrepreneurial Entry

Gig Worker is an indicator variable equaling one if an individual receives gig income in that particular year. *Gig Founder* is an indicator variable equaling one if an individual starts a firm in that particular year and has received gig income in a previous year. *Founder* is an indicator variable equaling one if an individual starts a firm in that particular year. *Post* is an indicator variable equaling one if the year is 2020 or 2021. The control is log MSA GDP in a particular year. All models include MSA fixed effects. The sample includes all U.S. tax filers from 2016 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Founder		First-Time Founder		Founder with Employees	
	(1)	(2)	(3)	(4)	(5)	(6)
Post	0.163***	0.146***	0.132***	0.119***	0.007***	0.007***
	(0.014)	(0.012)	(0.011)	(0.010)	(0.001)	(0.001)
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes
Control	No	Yes	No	Yes	No	Yes
R^2	0.001	0.001	0.001	0.001	0.000	0.000
Observations	912,615,991	912,615,991	912,615,991	912,615,991	912,615,991	912,615,991

Table 3: Who Responds?

This table examines the role of characteristics in gig participation and entrepreneurship. Panel A examines gig workers, Panel B shows firm creation by gig workers, and Panel C focuses on all newly created firms. *Gig Worker* is an indicator variable equaling one if an individual receives gig income in that particular year. *Gig Founder* is an indicator variable equaling one if an individual starts a firm in that particular year and has received gig income in a previous year. *Founder* is an indicator variable equaling one if an individual starts a firm in that particular year. *Post* is an indicator variable equaling one if the year is 2020 or 2021. *Female* is an indicator variable equaling one if an individual is a female. *Female with Dependents* is an indicator variable equaling one if an individual is a female and has any dependents. The control is log MSA GDP in a particular year. All models include MSA fixed effects. The sample includes all U.S. tax filers from 2016 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Founder			
	(1)	(2)	(3)	(4)
Post × Characteristic	0.020**	0.020**	0.049***	0.049***
	(0.008)	(0.008)	(0.008)	(0.008)
Post	0.154***	0.137***	0.146***	0.129***
	(0.011)	(0.010)	(0.012)	(0.010)
Characteristic	-0.490***	-0.489***	-0.314***	-0.313***
	(0.012)	(0.012)	(0.011)	(0.011)
Characteristic	Female	Female	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes
Control	No	Yes	No	Yes
R^2	0.002	0.002	0.001	0.001
Observations	912,615,991	912,615,991	912,615,991	912,615,991

Table 4: Who Responds?: Dynamics

Gig Worker is an indicator variable equaling one if an individual receives gig income in that particular year. *Gig Founder* is an indicator variable equaling one if an individual starts a Schedule C firm in that particular year and has received gig income in a previous year. *Founded* is an indicator variable equaling one if an individual starts a Schedule C firm in that particular year. *Post*2020 is an indicator variable equaling one if the observation is from 2020. *Post*2021 is an indicator variable equaling one if the observation is from 2021. *Female* is an indicator variable equaling one if an individual is female. *Female with Dependents* is an indicator variable equaling one if an individual is female and the individual has any dependents based on Form 1040 The control is log MSA GDP in a particular year. The fixed effects are indicators for each MSA. The sample includes all U.S. tax filers from 2016 to 2021 with ages 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. All models include MSA fixed effects. Standard errors are reported in parentheses and clustered at the MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Founders			
	(1)	(2)	(3)	(4)
Post2020 × Characteristic	0.048***	0.048***	0.058***	0.058***
	(0.007)	(0.007)	(0.008)	(0.008)
Post2021 × Characteristic	-0.011	-0.011	0.041***	0.041***
	(0.009)	(0.009)	(0.009)	(0.009)
Post2020	0.082***	0.081***	0.088***	0.087***
	(0.010)	(0.010)	(0.011)	(0.011)
Post2021	0.228***	0.216***	0.205***	0.193***
	(0.013)	(0.012)	(0.013)	(0.012)
Characteristic	-0.490***	-0.490***	-0.314***	-0.314***
	(0.012)	(0.012)	(0.011)	(0.011)
Characteristic	Female	Female	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes
Control	No	Yes	No	Yes
R^2	0.002	0.002	0.001	0.001
Observations	912,615,991	912,615,991	912,615,991	912,615,991

Table 5: Heterogeneous Effects by Treatment Intensity

Gig Worker is an indicator variable equaling one if an individual receives gig income in that particular year. *Gig Founder* is an indicator variable equaling one if an individual starts a firm in that particular year and has received gig income in a previous year. *Founder* is an indicator variable equaling one if an individual starts a firm in that particular year. *Post* is an indicator variable equaling one if the year is 2020 or 2021. *Female* is an indicator variable equaling one if an individual is a female. *Female with Dependents* is an indicator variable equaling one if an individual is a female and has any dependents. Treatment intensity is based on geographic variation in school closures and split by the median value across counties. The control is log MSA GDP in a particular year. All models include MSA fixed effects. The sample includes all U.S. tax filers from 2016 to 2021 aged 25 to 65. The unit of observation is a firm. 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Founder							
Treat. Intensity	Low		High		Low		High	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post	-0.001	-0.002	0.038***	0.039***	0.035***	0.035***	0.061***	0.061***
× Characteristic	(0.007)	(0.007)	(0.008)	(0.008)	(0.007)	(0.007)	(0.011)	(0.011)
Post	0.159***	0.135***	0.150***	0.137***	0.144***	0.121***	0.148***	0.136***
	(0.013)	(0.011)	(0.015)	(0.013)	(0.014)	(0.012)	(0.015)	(0.012)
Characteristic	-0.514***	-0.514***	-0.469***	-0.469***	-0.311***	-0.311***	-0.316***	-0.316***
	(0.020)	(0.020)	(0.014)	(0.014)	(0.016)	(0.016)	(0.010)	(0.010)
Characteristic	Female	Female	Female	Female	Female with Dependents	Female with Dependents	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Control	No	Yes	No	Yes	No	Yes	No	Yes
R^2	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001
Observations	427,184,796	427,184,796	485,431,195	485,431,195	427,184,796	427,184,796	485,431,195	485,431,195

Table 6: Firm Survival

Survival is an indicator variable equaling one if a firm files taxes in a particular year after founding. *Female* is an indicator variable equaling one if an individual is a female. *Female with Dependents* is an indicator variable equaling one if an individual is a female and has any dependents. *Post* is an indicator variable equaling one if the year is 2020 or 2021. All models include MSA, founding 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Survival After Founding			
	One Year	Two Years	One Year	Two Years
	(1)	(2)	(3)	(4)
Post × Characteristic	0.464***	0.590***	0.943***	1.104***
	(0.099)	(0.143)	(0.141)	(0.185)
Characteristic	-3.956***	-4.598***	-2.098***	-2.418***
	(0.388)	(0.437)	(0.454)	(0.521)
Characteristic	Female	Female	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes
Founding Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
R^2	0.040	0.042	0.039	0.041
Observations	6,024,079	4,742,119	6,024,079	4,742,119

Table 7: Firm Profitability

Profitability is the inverse hyperbolic sine of a firm's gross profits in a particular year. *Female* is an indicator variable equaling one if an individual is a female. *Female with Dependents* is an indicator variable equaling one if an individual is a female and has any dependents. *Post* is an indicator variable equaling one if the year is 2020 or 2021. All models include MSA, founding 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Profitability			
	At Founding	One Year	At Founding	One Year
	(1)	(2)	(3)	(4)
Post × Characteristic	34.518***	12.814***	26.179***	11.781***
	(3.217)	(2.191)	(4.196)	(2.775)
Characteristic	-66.101***	-61.608***	-44.395***	-47.514***
	(2.924)	(2.638)	(3.981)	(3.224)
Characteristic	Female	Female	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes
Founding Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
R^2	0.084	0.090	0.082	0.088
Observations	6,024,079	3,925,913	6,024,079	3,925,913

Table 8: Firm Employment

Has Employees is an indicator variable equaling one if a firm has any employees in a particular year. *Post* is an indicator variable equaling one if the year is 2020 or 2021. *Female* is an indicator variable equaling one if an individual is a female. *Female with Dependents* is an indicator variable equaling one if an individual is a female and has any dependents. 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 Employees			
	At Founding	One Year	At Founding	One Year
	(1)	(2)	(3)	(4)
Post × Characteristic	-0.484***	-0.621***	-0.452***	-0.514***
	(0.108)	(0.100)	(0.140)	(0.125)
Characteristic	-3.149***	-3.974***	-2.725***	-3.473***
	(0.207)	(0.267)	(0.256)	(0.318)
Characteristic	Female	Female	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes
Founding Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
R^2	0.044	0.054	0.043	0.052
Observations	6,024,079	4,226,785	6,024,079	4,226,785

Table 9: Income

Log AGI is the log of the individual's adjusted gross income in a particular year. *No Information on Income* is an indicator variable equaling one if an individual's adjusted gross income is not available in a particular year. *Gig Worker* is an indicator variable equaling one if an individual receives gig income in that particular year. *Gig Founder* is an indicator variable equaling one if an individual starts a firm in that particular year and has received gig income in a previous year. *Founder* is an indicator variable equaling one if an individual starts a firm in that particular year. All models include individual and year fixed effects. The sample includes all female tax filers from 2016 to 2021 who received a W2 in 2019. 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Log AGI	No Income
	(1)	(2)
Post × Transition to Founder	17.160***	-3.425***
	(0.813)	(0.070)
Individual FE	Yes	Yes
Year FE	Yes	Yes
R^2	0.566	0.410
Observations	292,624,751	292,624,751

Table 10: Persistence

Business Owner is an indicator variable equaling one if the founder owns a firm in a particular year after founding. *Post* is an indicator variable equaling one if the year is 2020 or 2021. *Female* is an indicator variable equaling one if an individual is a female. *Female with Dependents* is an indicator variable equaling one if an individual is a female and has any dependents. All models include MSA, founding 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Business Owner			
	One Year	Two Years	One Year	Two Years
	(1)	(2)	(3)	(4)
Post × Characteristic	2.374***	2.803***	3.127***	3.881***
	(0.132)	(0.185)	(0.199)	(0.227)
Characteristic	-6.954***	-7.722***	-4.673***	-4.993***
	(0.472)	(0.519)	(0.606)	(0.662)
Characteristic	Female	Female	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes
Founding Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
R^2	0.031	0.0335	0.028	0.030
Observations	5,989,427	4,715,471	5,989,427	4,715,471

Appendix A Variable Definitions

This appendix provides variable definitions.

- *Business Owner* is a variable equaling one if the founder owns a Schedule C firm in a particular year after founding.
- *Female* is an indicator equaling one if an individual is female.
- *Female with Dependents* is an indicator variable equaling one if an individual is female and has any dependents based on Form 1040.
- *Female Young Dependents* is an indicator variable equaling one if an individual is female and has any dependents who are 12 or younger based on Form 1040.
- *First-Time Founder* is an indicator variable equaling one if an individual starts their first Schedule C firm in that particular year.
- *Founder* is an indicator variable equaling one if an individual starts a Schedule C firm in that particular year.
- *Founder with Employees* is an indicator variable equaling one if an individual starts a Schedule C firm in that particular year that had employment in the first or second year.
- *Has Employees* is an indicator variable equaling one if the firm employed a W2 or 1099 worker in a particular year.
- *Log AGI* is the log of the adjusted gross income of the individual's household in a particular year.
- *No Information on Income* is an indicator variable equaling one if we do not observe their AGI in that year.
- *Post* is an indicator variable equaling one if the observation is from 2020 or later.
- *Post*2020 is an indicator equaling one if the observation is from 2020.
- *Post*2021 is an indicator equaling one if the observation is from 2021.

- $Profitability$ is a variable equaling the inverse hyperbolic sine of a firm's gross profits in a particular year.
- $Survival$ is an indicator variable equaling one if a firm files taxes in a particular year after founding.

Figure A1: Labor Market Transitions: Proportions from Previous Labor Income

This figure provides the proportions of labor market transitions based on an individual's previous labor income. Each panel shows individuals deriving their primary income from that source in the current year. The colors in each panel represent the proportion of individuals deriving their primary labor income from the indicated source in the previous year.

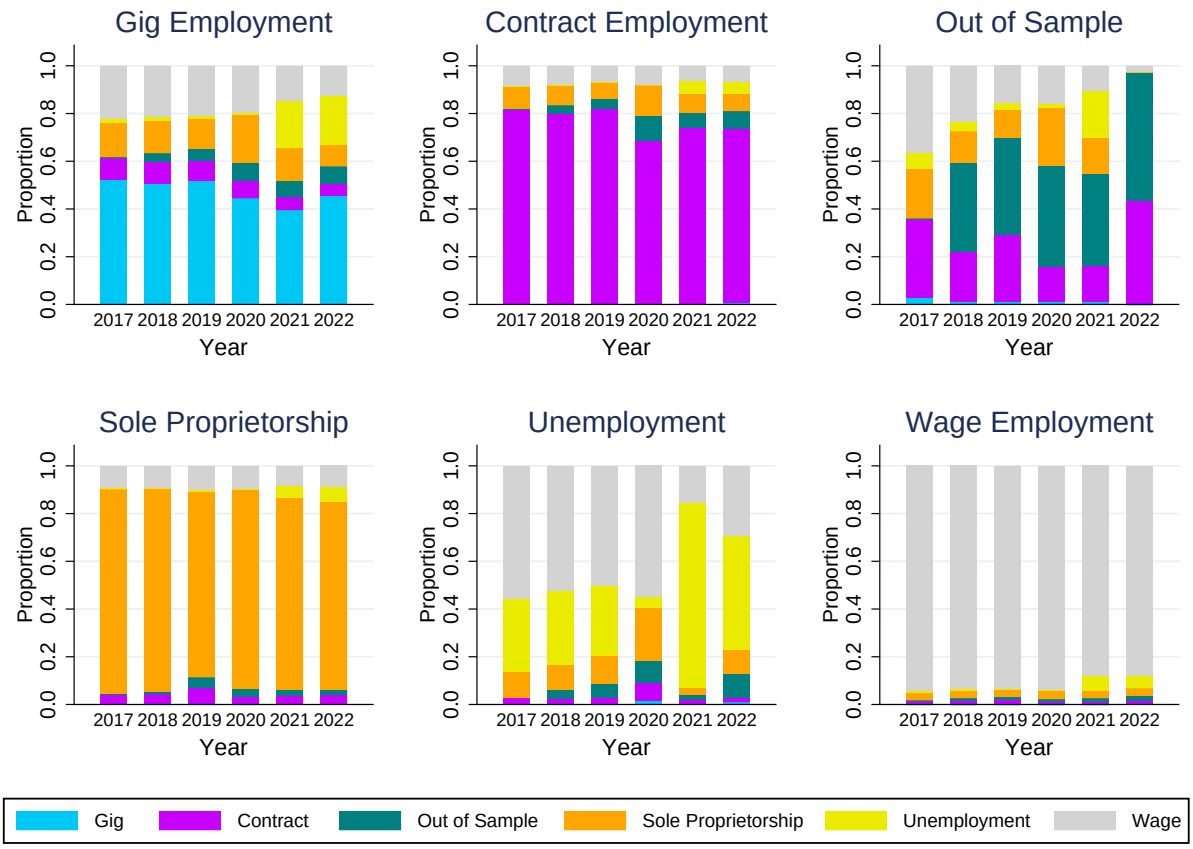


Figure A2: Labor Market Transitions: Proportions to Current Labor Income

This figure provides the proportions of labor market transitions based on an individual's current labor income. Each panel shows individuals deriving their primary labor income from that source in the current year. The colors in each panel represent the proportion of individuals deriving their primary labor income from the indicated source in the next year.

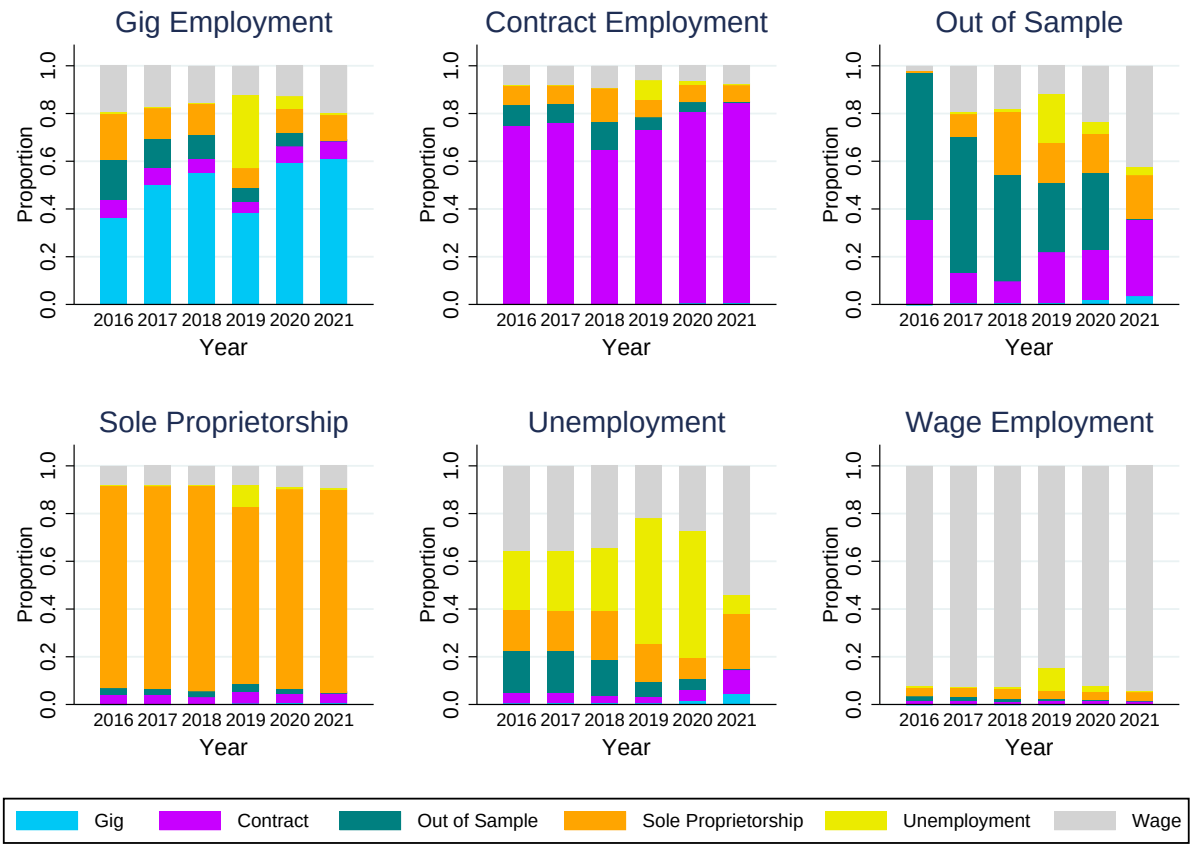


Figure A3: Labor Market Transitions: Counts from Previous Labor Income

This figure provides the counts of labor market transitions based on an individual's previous labor income. Each panel shows individuals deriving their primary income from that source in the current year. The colors in each panel represent the count of individuals deriving their primary labor income from the indicated source in the previous year.

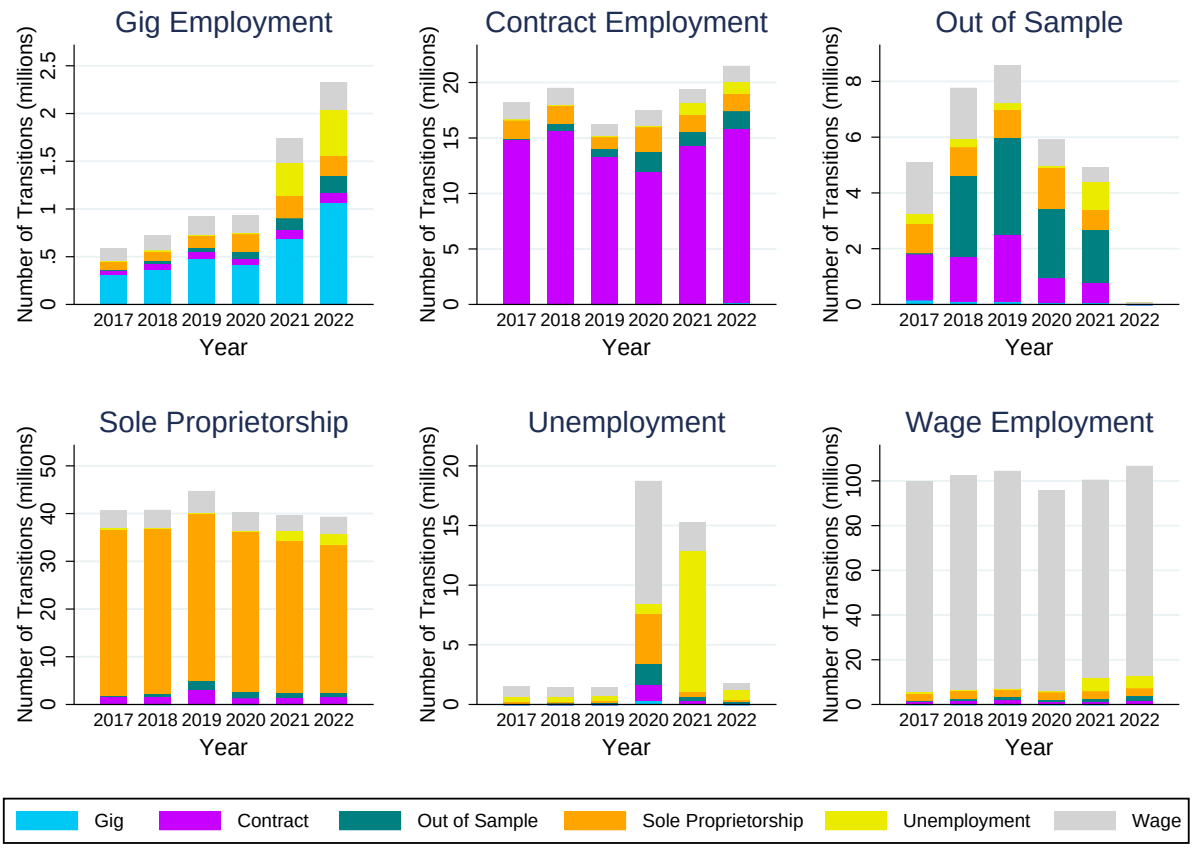


Figure A4: Labor Market Transitions: Counts to Current Labor Income

This figure provides the counts of labor market transitions based on an individual's current labor income. Each panel shows individuals deriving their primary labor income from that source in the current year. The colors in each panel represent the count of individuals deriving their primary labor income from the indicated source in the next year.

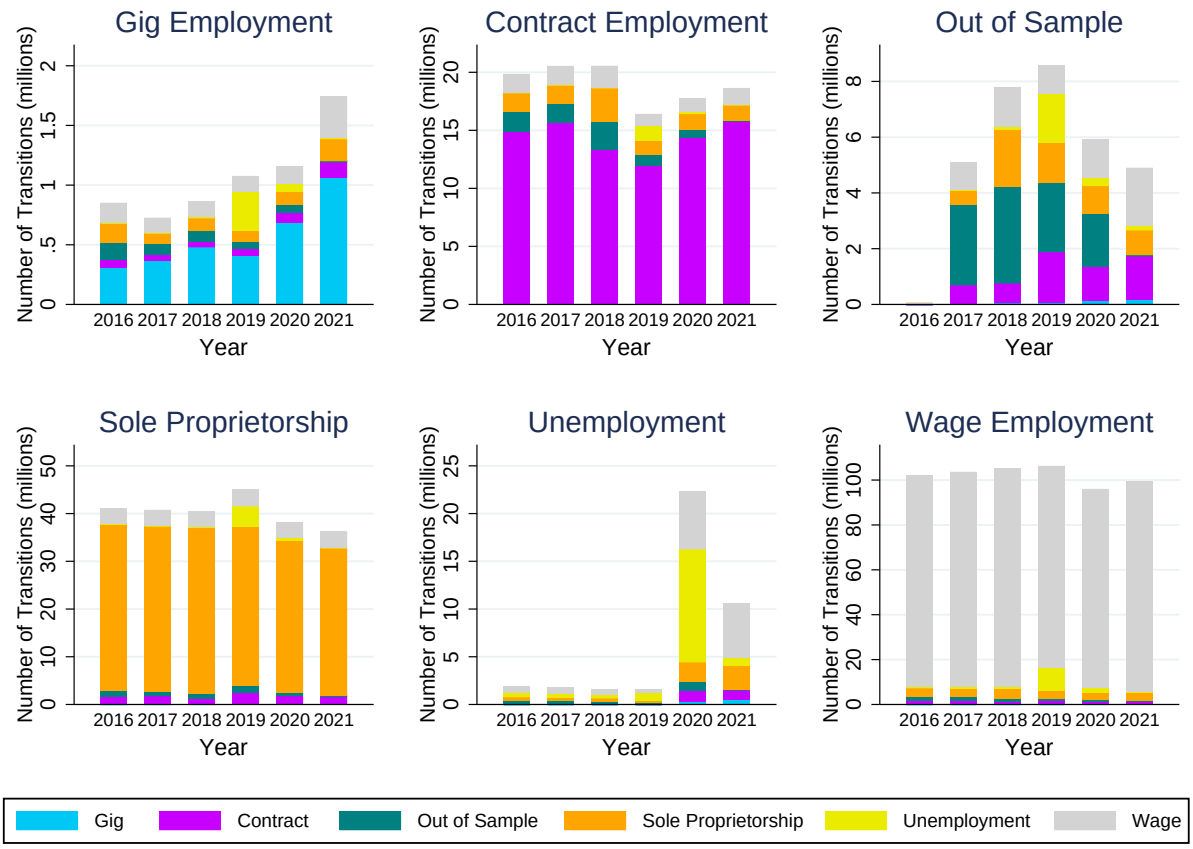


Table A1: Who Responds?: First-time

First-Time Gig Worker is an indicator variable equaling one if an individual receives gig income for the first time in that particular year. *First-Time Gig Founder* is an indicator variable equaling one if an individual starts their Schedule C firm for the first time in that particular year and has received gig income in a previous year. *First-Time Founder* is an indicator variable equaling one if an individual starts their first Schedule C firm in that particular year. *Female* is an indicator variable equaling one if an individual is female. *Female has Dependents* is an indicator variable equaling one if an individual is female and has at least one dependent. The control is log MSA GDP in a particular year. All models include MSA fixed effects. The sample includes all U.S. tax filers from 2016 to 2021 with ages 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	First-Time Founder			
	(1)	(2)	(3)	(4)
Post × Characteristic	0.033***	0.033***	0.047***	0.048***
	(0.007)	(0.007)	(0.007)	(0.007)
Post	0.115***	0.103***	0.115***	0.103***
	(0.009)	(0.008)	(0.009)	(0.008)
Characteristic	-0.400***	-0.400***	-0.255***	-0.255***
	(0.009)	(0.009)	(0.009)	(0.009)
Characteristic	Female	Female	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes
Control	No	Yes	No	Yes
R^2	0.001	0.001	0.001	0.001
Observations	912,615,991	912,615,991	912,615,991	912,615,991

Table A2: Who Responds? At Least One Employee

Gig Founder is an indicator variable equaling one if an individual starts a firm in that particular year and has received gig income in a previous year. *Founder* is an indicator variable equaling one if an individual starts a firm in that particular year. This tables focuses on newly created firms with at least one employee in two-year period after founding. *Post* is an indicator variable equaling one if the year is 2020 or 2021. *Female* is an indicator variable equaling one if an individual is a female. *Female with Dependents* is an indicator variable equaling one if an individual is a female and has any dependents. The control is log MSA GDP in a particular year. All models include MSA fixed effects. The sample includes all U.S. tax filers from 2016 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Founder with Employees			
	(1)	(2)	(3)	(4)
Post × Characteristic	0.003**	0.003**	0.006***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)
Post	0.006***	0.006***	0.004***	0.004***
	(0.002)	(0.002)	(0.002)	(0.001)
Characteristic	-0.140***	-0.140***	-0.093***	-0.093***
	(0.003)	(0.003)	(0.002)	(0.002)
Characteristic	Female	Female	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes
Control	No	Yes	No	Yes
R^2	0.000	0.000	0.000	0.000
Observations	912,615,991	912,615,991	912,615,991	912,615,991

Table A3: Who Responds? Young Dependents

This table examines the role of characteristics in the response to the pandemic. Panel A examines gig workers, Panel B shows firm creation by gig workers, and Panel C focuses on all newly created firms. *Gig Worker* is an indicator variable equaling one if an individual receives gig income in a particular year. *Gig Founder* is an indicator variable equaling one if an individual starts a Schedule C firm in a particular year and has received gig income in a previous year. *Founder* is an indicator variable equaling one if an individual starts any new firms in a particular year. *Post* is an indicator variable equaling one if the year is 2020 or 2021. *Female* is an indicator variable equaling one if an individual is female. *Female Young Dependents* is an indicator variable equaling one if an individual is female and the individual has any dependents who are 12 or younger based on Form 1040. The control is log MSA GDP in a particular year. All models include MSA fixed effects. The sample includes all U.S. tax filers from 2016 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Founder		First-Time Founder		Founder with Employees	
	(1)	(2)	(3)	(4)	(5)	(6)
Post ×	0.064***	0.064***	0.067***	0.066***	0.005***	0.005***
Characteristic	(0.009)	(0.009)	(0.008)	(0.008)	(0.001)	(0.001)
Characteristic	-0.222***	-0.221***	-0.173***	-0.173***	-0.069***	-0.069***
	(0.011)	(0.011)	(0.010)	(0.010)	(0.001)	(0.001)
Post	0.156***	0.139***	0.124***	0.112***	0.007***	0.007***
	(0.013)	(0.011)	(0.010)	(0.009)	(0.001)	(0.001)
Characteristic	Female Young Dependents	Female Young Dependents	Female Young Dependents	Female Young Dependents	Female Young Dependents	Female Young Dependents
MSA FE	Yes	Yes	Yes	Yes	Yes	Yes
Control	No	Yes	No	Yes	No	Yes
R^2	0.001	0.001	0.001	0.001	0.000	0.000
Observations	912,615,991	912,615,991	912,615,991	912,615,991	912,615,991	912,615,991

Table A4: Firm Survival: At Least One Employee

Survival is an indicator variable equaling one if a firm files taxes in a particular year after founding. *Female* is an indicator variable equaling one if an individual is a female. *Female with Dependents* is an indicator variable equaling one if an individual is a female and has any dependents. *Post* is an indicator variable equaling one if the year is 2020 or 2021. The sample for this table includes firms with at least one employee at founding. All models include MSA, founding 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Survival			
	One Year	Two Years	One Year	Two Years
	(1)	(2)	(3)	(4)
Post × Characteristic	1.022***	1.148***	1.581***	1.529***
	(0.194)	(0.255)	(0.245)	(0.324)
Characteristic	-4.455***	-5.035***	-2.502***	-3.098***
	(0.445)	(0.511)	(0.568)	(0.633)
Characteristic	Female	Female	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes
Founding Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
R^2	0.058	0.057	0.057	0.056
Observations	1,199,470	1,199,470	985,069	985,069

Table A5: Firm Profitability: At Least One Employee

Profitability is the inverse hyperbolic sine of a firm's gross profits in a particular year. *Female* is an indicator variable equaling one if an individual is a female. *Female with Dependents* is an indicator variable equaling one if an individual is a female and has any dependents. *Post* is an indicator variable equaling one if the year is 2020 or 2021. The sample for this table includes firms with at least one employee at founding. All models include MSA, founding 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Profitability			
	At Founding	One Year	At Founding	One Year
	(1)	(2)	(3)	(4)
Post × Characteristic	49.579***	24.930***	40.122***	22.309***
	(3.040)	(2.244)	(4.130)	(3.030)
Characteristic	-83.958***	-63.467***	-59.013***	-49.305***
	(3.922)	(2.944)	(5.690)	(3.518)
Characteristic	Female	Female	Female with Dependents	Female with Dependents
MSA FE	Yes	Yes	Yes	Yes
Founding Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
R^2	0.080	0.070	0.077	0.068
Observations	1,199,470	836,380	1,199,470	836,380

Table A6: Income: First-time Transitions

Log AGI is the log of the individual's adjusted gross income in a particular year. *No Information on Income* is an indicator variable equaling one if an individual's adjusted gross income is not available in a particular year. *Gig Worker* is an indicator variable equaling one if an individual receives gig income in that particular year. *Gig Founder* is an indicator variable equaling one if an individual starts a firm in that particular year and has received gig income in a previous year. *Founder* is an indicator variable equaling one if an individual starts a firm in that particular year. For this table, transitions are based on the first time. All models include individual and year fixed effects. The sample includes all female tax filers who receive a W2 in 2019 from 2016 to 2021. 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Log AGI	No Income
	(1)	(2)
Post × Transition to Founder	34.586***	-5.633***
	(1.149)	(0.087)
Individual FE	Yes	Yes
Year FE	Yes	Yes
R^2	0.566	0.410
Observations	292,624,751	292,624,751

Table A7: Income: At Least One Employee

Log AGI is the log of the individual's adjusted gross income in a particular year. *No Information on Income* is an indicator variable equaling one if an individual's adjusted gross income is not available in a particular year. *Gig Worker* is an indicator variable equaling one if an individual receives gig income in that particular year. *Gig Founder* is an indicator variable equaling one if an individual starts a firm in that particular year and has received gig income in a previous year. *Founder* is an indicator variable equaling one if an individual starts a firm in that particular year. All models include individual and year fixed effects. The sample includes all female tax filers who receive a W2 in 2019 from 2016 to 2021. 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 MSA level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

	Log AGI (1)	No Income (2)
Post × Transition to Founder	9.100***	-3.092***
	(1.825)	(0.095)
Individual FE	Yes	Yes
Year FE	Yes	Yes
R^2	0.566	0.410
Observations	292,624,751	292,624,751