Aiming Low: Necessity Entrepreneurs and the Choice to Incorporate*

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Abstract

Wage employees who are laid-off may turn to entrepreneurship to generate income. Conventional wisdom suggests that these necessity entrepreneurs perform poorly because they lack entrepreneurial skills and financing. In this paper we challenge this view, using data from matched employee-employer tax records that cover incorporated and unincorporated firms. We find that employees subject to mass layoffs, who "aim low" and start unincorporated companies, perform better than matched voluntary entrepreneurs starting similar firms. However, necessity entrepreneurs who start incorporated companies perform worse than their voluntary counterparts. This suggests a relatively smaller role for human and financial inputs on achieving success in unincorporated firms.

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1 Introduction

Necessity entrepreneurs (also known as "forced entrepreneurs", "distress-driven entrepreneurs" or "displaced entrepreneurs") are individuals who are forced into entrepreneurship after an unexpected and unplanned negative labour market shock.[1] Because these entrepreneurs start their firms out of necessity, compared to voluntary entrepreneurs they may have lower human capital (e.g. entrepreneurial or managerial skills) and lower financial capital (e.g collateral and access to credit). For these reasons, conventional wisdom suggests that, all else equal, necessity entrepreneurs may under perform relative to voluntary entrepreneurs.

However, the literature shows mixed results regarding the performance of firms started by necessity entrepreneurs. Some papers find that firms created by necessity entrepreneurs under perform (Galindo Da Fonseca, 2022), while others provide evidence of entrepreneurs finding success following negative labor shocks (Babina, 2019, Hacamo and Kleiner, 2022, Hou et al., 2025). In this paper, we show that these conflicting results may be reconciled by considering the type of firm created by necessity entrepreneurs. Providing evidence on this issue is important, given that individuals who have been subject to negative labor market shocks are often advised to enter entrepreneurship as an alternative way to generate income.[2]

We exploit a setting in which the propensity for entrepreneurship increases for plausibly exogenous reasons and document how the choice of legal business structure affects its subsequent performance. We use job displacement as a trigger for necessity entrepreneurship and provide new evidence that a key determinant of firm performance is the initial choice between "aiming high" with an incorporated legal structure or "aiming low" with an unincorporated one. A large literature (e.g. Levine and Rubinstein, 2017, Rubinstein and Levine, 2020) has emphasized the importance of a firm's legal structure for its future performance. The main contribution of our paper is to extend this understanding to necessity entrepreneurs by providing novel evidence on how their choice of business structure impacts their success. In doing so, we reconcile the mixed findings previously document in the literature.

[1] Examples of negative labour market shocks generating entrepreneurial outcomes include job layoff (e.g. Von Greiff, 2009, Røed and Skogstrøm, 2014, Nyström, 2020, Galindo Da Fonseca, 2022), financial distress of an employer (Babina, 2019), or graduating into a recession (Hacamo and Kleiner, 2022).

[2] Examples are common in the financial press, such as this recent Forbes article focusing on a wave of tech layoffs: https://www.forbes.com/sites/bernhardschroeder/2023/04/03/layoffs-are-fueling-a-new-wave-of-entrepreneurs-heres-how-you-can-join-them/.

Our data consists of matched employee-employer tax records covering the universe of Canadian taxpayers from 2001 to 2021. The matched employer-employee nature of the data allows us to link all individual tax filings to corporate tax filings and ownership structure of all businesses in Canada (including incorporated businesses, unincorporated businesses, and gig activity). In addition, the data includes a "Record of employment" in which the employer is legally required to certify whether any employee separation is voluntary or involuntary (Birinci et al., 2023). This allows us to precisely identify layoffs and therefore construct the universe of mass lay off events in Canada during the sample we study. Using these data we first identify all employees who are displaced in mass layoff events, second, we track these specific individuals as they start various kinds of entrepreneurial activity, and then third, we compare the performance of these necessity entrepreneurs to a matched group of voluntary entrepreneurs.

Our main findings are that necessity entrepreneurs subject to a mass layoff event, who select into an unincorporated legal structure, perform better than a matched control group of voluntary entrepreneurs. On the other hand, we also find that those subject to a mass layoff event, who select into an incorporated legal structure, perform worse than a control group of voluntary entrepreneurs. Taken together, these findings imply that it is more appropriate for necessity entrepreneurs (i.e. displaced workers) to "aim low" and select into the less complicated and demanding unincorporated legal structure, rather than to "aim high" and select into the more complex and demanding incorporated legal structure.

Our main explanation for these findings relates to the model proposed by Rubinstein and Levine (2020) to explain selection into incorporated and unincorporated business forms. According to Rubinstein and Levine (2020), incorporation "demands entrepreneurial ability, physical capital, and liquidity," while unincorporation "demands none (or little) of these inputs and is driven primarily by the non-pecuniary benefits of self-employment, such as being one's own boss" (page 4). The setting of displaced workers following a mass layoff event is ideal to test these predictions for necessity entrepreneurs.

Given that the employees in our setting have been unexpectedly laid off, it is likely that they do not have the levels of "entrepreneurial ability, physical capital, and liquidity" required for successful performance in an incorporated firm. This is consistent with our first empirical finding: laid-off employees who start incorporated businesses perform worse than a matched group of

voluntary entrepreneurs. On the other hand, even though the individuals in our study have been laid off and thus can be assumed to have relatively low levels of "entrepreneurial ability, physical capital, and liquidity," the key argument of Rubinstein and Levine (2020) is that such criteria are *not* prerequisites for successful performance in an unincorporated firm. This aligns with our second finding: laid-off employees who start unincorporated businesses perform relatively well.

The main difference between our paper and the model proposed by Rubinstein and Levine (2020), is that in their setting, individuals enter unincorporated firms for the "non-pecuniary benefits of self-employment, such as being one's own boss." In our study, the motivation for entry into an unincorporated business is directly linked to being laid off (i.e., out of necessity). Our finding that laid-off necessity entrepreneurs who start unincorporated businesses perform better than a matched group of voluntary entrepreneurs may be because the laid-off employees are motivated by necessity to maximize profitability; they have no alternative source of income, which drives them to focus on making their businesses successful. In contrast, the matched control group of voluntary entrepreneurs may have a lower incentive to maximize profitability if, as argued by Rubinstein and Levine (2020), they are primarily motivated by non-pecuniary benefits.

Our identification assumption follows the large literature arguing that in mass layoff events, where a large fraction of a company is laid off simultaneously, whether one specific worker is laid off can be considered plausibly exogenous (e.g. Jacobson et al., 1993, Couch and Placzek, 2010, Lachowska et al., 2020). We use a difference-in-differences specification to provide evidence that the mass layoff event can be considered plausibly exogenous. We follow recent advances in the DID literature on staggered treatment and estimate a stacked regression model (Baker et al., 2022), using only never-treated individuals in our control group. Using the mass layoff as the event date, we document parallel pre-trends for our treated group of mass layoff employees compared to a matched control group of employees who are not laid off. In the post period, we document a significant reduction in wage earnings for our treated group (laid-off workers) and a significant increase in various kinds of entrepreneurship income. We conclude that the mass layoff event had a causal impact on entry into entrepreneurship by these necessity entrepreneurs.

We evaluate the performance of new firms started by necessity entrepreneurs by analyzing laid-off employees who start either unincorporated or incorporated firms. We compare their firm performance to that of a control group of matched voluntary entrepreneurs, who also started a

their firm in the same year, but who were not subject to a mass layoff event. Using business tax record data (e.g., profitability, sales, assets), we provide ex post evidence on the performance of these firms based on their chosen business structure (either incorporated or unincorporated).

We find that laid-off employees who choose incorporation create firms that are significantly smaller and less profitable compared to voluntary entrepreneurs who incorporate in the same year. On the other hand, while laid-off employees who select unincorporation also create smaller firms than matched voluntary entrepreneurs, they are actually more profitable than their voluntary counterparts. Taken together, these findings suggest that both kinds of necessity entrepreneurs (incorporated and unincorporated) create smaller firms than matched voluntary entrepreneurs, possibly due to financial constraints. However, necessity entrepreneurs who select unincorporation are able to overcome these constraints and achieve higher profitability by "aiming low" and remaining small.

The depth of our data allows us to examine various sub groups of the population, including immigrants. A large recent literature (e.g. Azoulay et al., 2022, Fairlie and Lofstrom, 2015, Kerr and Kerr, 2020) has documented the success of immigrants as entrepreneurs. The main conclusion of Azoulay et al. (2022) is that "immigrants do not simply start small firms. Rather, they tend to start more firms at every size, compared to US-born individuals" (page 72). While Azoulay et al. (2022) does not specifically compare between incorporated and unincorporated firms, their main findings showing that there are more immigrant-entrepreneurs per capita than US born entrepreneurs per capita across all firm sizes, implies that immigrant entrepreneurs are successfully entering larger firms including incorporated firms.

Our main new finding regarding immigrant entrepreneurs, is that immigrants subject to a mass layoff event who select to enter an incorporated firm, have no significant difference in performance compared to the matched control group of voluntary entrepreneurs. This finding is thus different from our main finding (described above) which shows worse performance for the general population of laid-off employees who enter incorporation. These immigrant necessity entrepreneurs are also significantly larger than a matched group of voluntary entrepreneurs. In other words, immigrants appear to be the one group who are able to overcome the constraints associated with being laid off to successfully enter into incorporated businesses. This new finding is thus consistent with the recent literature on immigrant entrepreneurs (e.g. Azoulay et al.,

2022, Fairlie and Lofstrom, 2015, Kerr and Kerr, 2020) which has documented that immigrants are typically more successful than domestic born individuals, across all types of entrepreneurial businesses.

The basic framework proposed in this paper (that the success of necessity entrepreneurs depends on the matching of the pre-existing skills of those individuals with an appropriate business structure that matches those skills) is quite general and can also explain the results of recent studies of necessity entrepreneurs by Babina (2019) and Hacamo and Kleiner (2022), whose main results are quite different from ours. Babina (2019), examines high skill and high wage individuals, who leave wage employment for entrepreneurship when their wage employer experiences financial distress, while Hacamo and Kleiner (2022) examines university graduates of elite US colleges, who graduate into a recession. Both of these other studies thus focus on necessity entrepreneurs who can be argued to have high levels of pre-existing entrepreneurial capabilities, and/or high ability to raise the required funds to start a new venture, and in both studies these individuals select into complex and sophisticated businesses, that subsequently perform well.

The key similarity between Babina (2019), Hacamo and Kleiner (2022) and our study, is that in all three studies the necessity entrepreneur will have successful ex post performance if the characteristics of the necessity entrepreneur are appropriately matched to the business structure that the necessity entrepreneur selects into. In both these other two studies necessity entrepreneurs with high levels of pre-existing skills successfully select into complex and sophisticated businesses, whereas in our study, laid-off workers with lower levels of pre-existing skills successfully select into unincorporated businesses. The key difference between our paper and these other two studies is that our setting also allows us to examine other necessity entrepreneurs (in our case laid-off workers who unsuccessfully select into incorporated business), where the matching between the characteristics of the necessity entrepreneur and the choice of business structure is less appropriate.

Our study also differs from Galindo Da Fonseca (2022) who finds that the performance of laid-off workers, who select into incorporation, is poor. However, Galindo Da Fonseca (2022) only examines individuals who selected into incorporated, but not unincorporated, businesses, whereas the main contribution of our study is to compare across these two business forms.

2 Data

2.1 Matched Employer-Employee Tax Data

We use longitudinal linked employer-employee tax data from the Canadian Employer-Employee Dynamic Database (CEEDD), a comprehensive data set covering the universe of tax filers in Canada from 2001–2021. In this section, we document the different sources of data used in the analysis. Appendix Table A1 lists all the variables used in the analysis, their definition, and the source of data used to construct them. To minimize the influence of outliers, we winsorize all observations at the 5th and 95th percentiles of the distribution, adjusting values below and above these thresholds to the respective percentile values.

2.2 Demographics and Individual Tax Data

We use the T1 Personal Master File (T1PMF) data as the preliminary linkage file from CEEDD which allows us to match individuals' personal tax data across a range of datasets, using a unique identification number. The T1PMF is recorded at the individual level and contains the aggregate annual tax information, as well as demographics. From this dataset, we obtain age, gender and income variables.

In addition to the aggregated tax information provided in the T1PMF, the Record of Employment and Remuneration (T4ROE) provides the annual remuneration of each individual at each employer where they have worked. This allows us to observe all the different employers of a given individual annually. Employers provide information on the employees, salary paid, reason for separation, contributions to national pension programs, number of days worked when there is job separation, etc. A key feature of the T4ROE is its differentiation of job separation between voluntary and involuntary separations. Following Birinci et al. (2023) we only include individuals who were involuntarily laid off, rather than those who voluntarily quit, in our definition of mass layoff events (as described in detail below).

Finally, we identify immigrants from native-born individuals through the Longitudinal Immigration Database (IMDB), a database that contains immigrant landing records with annual tax data for those arriving in Canada since 1980. The database includes immigrants who have filed at least one tax return since 1982. The landing records within the IMDB provide detailed charac-

teristics of immigrants at the time of their arrival, including age, education, marital status, source country, official language proficiency, and admission category. We define immigrants in our study as individuals not born in Canada.

2.3 Unincorporated Business Data

To identify unincorporated businesses, we use consolidated data of the T1 Financial Declarations (T1FD) which are filed by taxpayers who report self-employment income, and T1 Business Declarations (T1BD) which are filed by unincorporated business owners. The data are available from 2005 onwards and cover all the unincorporated self-employed in Canada. The businesses can be either sole proprietorship or partnership. The entity in these data does not necessarily have to be registered. In Canada, registration through a business number (BN) is only mandatory for total taxable business revenues above $30,000 per year. Following Jeon et al. (2021) we define unincorporated businesses with total taxable business revenues of less than $30,000 per year, and without business number as "gig work".

We identify ownership of unincorporated firms using the unique business registry number, which consolidates all entities registered under a singular identifier. This measure allows us to track the opening of new unincorporated firms and accurately aggregate business activities over time. The business registry number accounts for all subsidiary or affiliated businesses, including a range of unincorporated small businesses under the same umbrella. Our results for unincorporated businesses are therefore aggregated annually at the business registry number level. We define the creation of an unincorporated firm using the first year the firm appears in the dataset.

2.4 Incorporated Business Data

To identify incorporated entities, we use the National Accounts Longitudinal Microdata File (NALMF), which is a longitudinal administrative database of all Canadian incorporated firms. The NALMF combines different data sources including administrative tax records, surveys of employment, and business registery data. From these data, we retrieve financial information such as income statement components, balance sheet components, employee count, and NAICS of the incorporated firms.

We complement these data with a link to the Schedule 50 (T2S50) files, which contain shareholder information using the same unique individual-level identifier. It is mandatory for private Canadian-controlled corporations to file this Schedule to disclose the identities of all significant shareholders, defined as individuals holding a minimum of a 10% stake in either common or preferred shares. We can therefore attribute ownership of each incorporated business to individuals in our sample, and obtain detailed ownership shares, type of ownership (i.e., direct or chain ownership), and the number of owners.

We define the creation of an incorporated firm using the date of incorporation recorded reported in NALMF. These administrative data allow us to accurately identify firms established in a specific year and link them with the individuals who created and/or incorporated these entities.

3 Identification Strategy

3.1 The Mass Layoff Identification Strategy

The key element of our identification strategy is to separate *involuntarily* displaced workers (i.e. layoffs) from those who endogenously choose to leave their employer (i.e., quits). We follow a large literature that has used mass layoff events of long tenured workers to identify involuntary layoffs of individual workers.[3] The main identifying assumption in this literature is that an individual's separation during a mass layoff event is *involuntarily*.

3.1.1 Threats to the Mass Layoff Identification Strategy

Recent literature argues that various threats exist to the identification assumption of involuntary separation when using a mass layoff strategy. The first threat is that simply observing a worker's separation during a mass layoff event may not be enough to identify it as an involuntary layoff rather than a voluntary quit; some workers may *voluntarily* quit during a mass layoff due to the employer's financial distress (as in Babina, 2019, for example). It is thus critical to distinguish between voluntary quits and involuntary layoffs in the data for all employees who separated during the mass layoff event.

[3] see e.g. Jacobson et al. (1993), Couch and Placzek (2010), Lachowska et al. (2020), Schmieder et al. (2023) and many others.

Birinci et al. (2023) argue that a second possible threat to identification when using the mass layoff strategy, concerns employees being erroneously classified as being laid off, when there is a change in the legal structure of the employer (e.g. resulting in a name change of the employer during a financial restructuring such as a merger and acquisition). It is possible that a change in the legal structure of the employer (e.g. name change or M & A) will generate new employment contracts with all existing employees, even though the employees have remained in employment. Care needs to be taken therefore to ensure that such new employment contracts for the entire workforce are not mistaken for mass layoff events. The data we use in this study allows us to address both threats, which we detail below.

3.1.2 Using "Record of Employment" (ROE) Data to Address Threats to Identification

In this section, we describe how Canadian employment data allows us to address these identification threats by exploiting unique Canadian data and intuitions. We closely follow the procedures suggested by Birinci et al. (2023), who also study mass layoffs using the same data, but do not study entrepreneurship as we do. A key element of Canadian employment law, is that all employers are legally obligated to describe the reasons for the separation for all employees who separate. In particular, the employer is required to certify whether the separation is a voluntary quit or an involuntary layoff. This data is known as "Record of Employment" (ROE) and is available to us as part of the matched employer-employee database. We are thus able to use this data to accurately differentiate between voluntary quits and involuntary layoffs for all separations in our data. Using this data we are also able to distinguish between a mass layoff event and a change to the legal structure of the employer (where the employees do not separate from the employer but rather where the employer issues new employment contracts reflecting its new legal structure).[4]

Using this ROE data, Birinci et al. (2023) document that examining mass layoff events in the Canadian data, *without* using ROE data, would result in very distorted conclusions. For example, they document that only a quarter of workers who would otherwise be classified as being part of a mass layoff should indeed be classified as an involuntary layoff. More than 45% of the mistaken

[4]The key use of this ROE information in practice is that it is used to determine whether the separated employee is eligible for Employment Insurance. Birinci et al. (2023) argue that various elements of Canadian employment law ensure that the data reported by ROE is accurate because both employers and employees have incentives to ensure accuracy.

classifications are caused by legal changes of the employer (e.g. name change or M and A), and the rest are voluntary quits that occurred at the same time as the mass layoff event.

3.1.3 Defining Mass Layoff Events

In constructing our sample, we start with the universe Canadian firms available in the National Accounts Longitudinal Microdata File (NALMF) between 2001 and 2021. We follow previous studies in defining mass layoffs as a year-to-year reduction of at least 30% of the workforce, and at least 5 employee layoffs (Bertheau et al., 2023, Couch and Placzek, 2010, Schmieder et al., 2023). We only consider employees who have been explicitly fired by the employer, as indicated in the administrative records. We restrict the sample to employers who conducted only one mass layoff between 2001 and 2021. This definition identifies a significant number of employers with a single mass layoff event, where an average number of at least 10 employees have been laid off per incident.

3.2 Treatment and Control Groups

3.2.1 Individual Level: Mass Layoff as Treatment and Non Mass Layoff as Control

Our treatment group consists of displaced workers, identified as those laid off in a mass layoff event. To be included in our study, employees are required to have been employed for at least 3 years at the time of the mass layoff, and have been part of a single mass lay off between 2001 and 2021. Because we observe all employment links and reasons for separation, we can exclude individuals who leave voluntarily, were terminated by any firm in any year in the sample, or were part of more than one mass layoff. The precise identification of workers part of a mass layoff is possible using our detailed employer-employee tax data.

The control group consists of individuals who are never part of a mass layoff at any point in the sample and represents a never-treated counterfactual group, similar to the methodology employed by Greenstone et al. (2022). To form a well-matched control group, for each mass layoff year, we perform a one-to-one propensity score matching method without replacement, as employed in Bertheau et al. (2023) and Schmieder et al. (2023). This approach creates a counterfactual group of workers with characteristics as close as possible to the treatment group in terms

of earnings trends and employment trajectories pre-layoff. We match workers based on the following variables: the year of the mass layoff event, average earnings in the two and three years prior to the layoff, the worker's age at the time of layoff, the number of year employed at the firm, the size of the firm measured by the number of employees one year before the lay-off event, and the industry they were working in, as indicated by the 2-digit NAICS code. This ensures that both groups have similar pre-displacement characteristics. Below, we verify the validity of the parallel trend assumptions in this context.

Finally, to capture the dynamics surrounding mass layoffs, we analyze a balanced panel of individuals observed in the data for six years before and after the mass layoff event. This limits the occurrence of mass layoffs in our study to the period between 2007 and 2015, given the dataset's coverage from 2001 to 2021. This results in 118,745 individuals being affected by a single mass-layoff in our sample, matched one-to-one with 118,745 individuals in the control group.

3.2.2 Firm Level: Necessity Founders as Treatment and Voluntary Founders as Control

The second stage in our analysis is to compare the performance of firms started by displaced workers with firms started by non-displaced workers. In our sample of displaced workers (described above), we can observe that laid-off workers who start new incorporated and unincorporated firms. Our aim is to examine the performance of these specific firms, relative to an appropriate control group of similar firms founded by non-displaced individuals.

To account for macroeconomic conditions and trends, we separately match new incorporated and unincorporated firms based on the year of mass layoff. We first identify all firms started in a given year, by both displaced and non-displaced workers. We then match treated-group founders to control-group founders using one-to-one propensity score matching without replacement, based on their earnings history, age at creation, number of years employed at their prior firm as well as the size of that firm, and with the 2-digit NAICS industry code (sector), as outlined in our individual-level matching procedure (Bertheau et al., 2023, Schmieder et al., 2023).

This matching strategy at individual and mass-layoff-year levels ensures that each displaced founder's firm is directly compared to one non-displaced founder's firm. We validate this approach by verifying the parallel trend assumption, confirming the similarity of pre-displacement

characteristics between the matched pairs of firm founders.

4 Model and Estimation

4.1 Staggered Difference-in-Differences

The first stage of our analysis is to document that the mass layoff event has a causal impact on subsequent entry into entrepreneurship (both incorporated and unincorporated). Our main identification strategy to document this causal relationship compares the treated group of necessity entrepreneurs with the control group of voluntary entrepreneurs, where we argue that because the necessity entrepreneur was subject to a mass layoff, the lay off event can be considered involuntary and plausibly exogenous.

Our identification strategy uses mass layoffs as an instrument for job separation. The frequency and large scale of these layoffs provide a basis for examining their impact on employees, allowing us to analyze changes in employment patterns, income earnings, and transitions into entrepreneurship or self-employment. We follow the recent advances in the literature to measure dynamic treatment effects in a staggered difference-in-differences methodology (Goodman-Bacon, 2021, De Chaisemartin and D'Haultfœuille, 2020, Callaway and Sant'Anna, 2021, Sun and Abraham, 2021, Baker et al., 2022, Wing et al., 2024) and adopt a stacked-regression model (e.g. Deshpande and Li, 2019, Cengiz et al., 2019).

We use never-treated individuals as control groups, to ensure that we construct and analyze clean subsets of experiments (Baker et al., 2022). This addresses potential biases from staggered treatments by maintaining the critical assumption of parallel trends more reliably than if the control group were subject to varying treatment timings. Moreover, this method helps to avoid spillover effects, as our control group's outcomes remain uninfluenced by the treatment, providing a clearer estimation of the treatment effect.

Specifically, we estimate the following equation :

$$Y_{it} = \sum_{\substack{\tau=-6 \\ \tau \neq -1}}^{6} \mathbb{1}(\text{Period}_{i\tau}) \times (\beta_{0\tau} + \beta_{1\tau}\text{Treated}_i) + \gamma_j + \lambda_t + \theta_{c\tau} + \mu_i + \varepsilon_{it}, \tag{1}$$

where Y_{it} is the dependent variable for individual i in calendar year t (for example, labour earn-

ings, firm creation indicators, or firm outcomes), Treated_i is a dummy variable indicating whether individual i is in the treatment group, and $\mathbb{1}(\text{Period}_{i\tau})$ is an indicator variable equal to one if the event time is equal to τ, and 0 otherwise, λ_t captures calendar-year fixed effects, γ_j represents the firm fixed effect, $\theta_{c\tau}$ is the interaction of the cohort year with the event time, where c indexes different cohort year, distinguishing among groups of individuals based on the year of the mass layoff. μ_i represents individual fixed effects, and ε_{it} is the error term. In all our results, we cluster standard errors at the individual level and cohort level.

Because we use individuals who are part of a mass-layoff only once and we match to never-fired individuals without replacement in the cohort-year, the individual fixed effects capture time-invariant individual characteristics. We also saturate the model by including cohort-specific event-study-time fixed effects. Such a comprehensive fixed effects structure helps to isolate the impact of mass layoffs.

Our main coefficients of interest are the series of $\beta_{1\tau}$, which measure the effect of mass layoffs relative to event time $\tau = -1$ (the last year in which individuals are still employed by the firm which experienced the mass layoff).

4.2 Choice Between Incorporated and Unincorporated Firms

The second stage of our analysis is to document the choice of necessity entrepreneurs to select into either incorporated or unincorporated businesses. As we describe above, our main sample contains 118,745 displaced workers, matched one to one to undisplaced workers. In this section we examine on the fraction of this combined group (both displaced and matched undisplaced), who in the year t=0 select into either incorporated or unincorporated businesses. We examine this choice in the year of the displacement, to focus on laid-off individuals who selected into necessity entrepreneurship within one year.

To analyze this choice, we use the following probit model:

$$\text{Firmchoice}_{it} = \alpha + \beta \text{Treated}_i + \lambda_t + \theta_c + \delta_s + \epsilon_{it}. \tag{2}$$

In the model, Firmchoice_{it} represents a binary variable equal to one if the new firm is incorporated, and 0 if the new firm is unincorporated. The variable Treated_i is as a dummy variable indicating

whether the individual was displaced in calendar-year t. To account for time-specific influences that could affect the decision to incorporate or not, λ_t captures calendar-year fixed effects, since we are observing the firm that have been opened the year of the mass layoff.

Our main coefficient of interest is β, which captures the impact of displacement on the choice of firm type. Lastly, ϵ_{it} represents the error term, capturing unobserved factors that might influence the incorporation choice.

4.3 Firm Performance Regression

The third part of our empirical analysis examines the performance of firms started by a necessity entrepreneur, relative to a matched control group of voluntary entrepreneurs. We run separate specifications for incorporated and unincorporated firms (i.e. the first specification compares displaced vs. undisplaced employees who then start incorporated firms, while the second specification compares displaced vs. undisplaced employees who then start unincorporated firms).

To analyze the firm performance in our context, we employ the following regression:

$$\mathrm{Y}_{it} = \alpha + \beta_{1j}\mathrm{Treated}_{ij} + \gamma_r + \lambda_t + \delta_s + \epsilon_{it}, \tag{3}$$

where the Y_{it} serves as the dependent variable for firm i at time t, capturing outcomes such as profitability, growth, employment etc. The variable $\mathrm{Treated}_i$ is a dummy variable indicating whether a displaced worker founded the firm. The model includes γ_r to represent region fixed effects, controlling for geographic influence on firm performance, while λ_t accounts for the year fixed effects. Additionally, δ_s represents industry fixed effects using the 2-digit NAICS code to account for industry-specific trends that could affect firm performance.

In some specifications, we introduce an interaction term between the treated variable and a dummy variable, which represents the specificity or characteristic (demographics) of the founder. Our objective is to capture the heterogeneity of effects that could emerge among firms. This approach allows us to identify the differential impacts and insights into how various baseline characteristics interact with the treatment effect on firm outcomes.

In terms of the event window, we run two alternative specifications, the first examining performance in the year of the firm creation, and the second examining average annual performance

in the first five years after firm creation.

5 Results

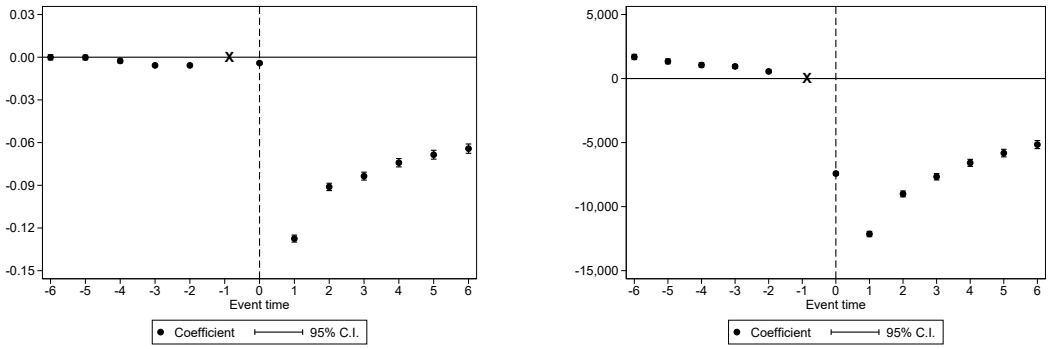
Our first set of results examine DID event studies, where displaced workers are the treated group, and non-displaced workers are the control group. We first document the significant negative effects of a mass-layoff on worker employment, earnings and withdrawals in existing pension plans (known as Registered Retirement Savings Plans or RRSPs in Canada). We then document how the mass layoff event causes these displaced workers to become necessity entrepreneurs, by selecting into either incorporated or unincorporated businesses.

The main conclusion of the event study DID results in this section is to provide strong evidence that the mass layoff event has a causal impact on necessity entrepreneurship (of both incorporated as well as unincorporated types). In all of the event study DID results we report, we show insignificant pre-trends before the event date (the date of the mass layoff event), and then significant changes after the event date. We argue that the evidence presented here is thus consistent with our key identification assumption that the mass layoff event will cause workers subject to a mass layoff to become necessity entrepreneurs and select into entrepreneurship.

5.1 Employment, Earnings and Savings Withdrawal

Figure 1 (a) exhibits the impact of mass layoffs on the probability of subsequent employment. The trends for both treated and control groups align consistently until the event of the layoffs. At this point, a pronounced dip in employment likelihood for the treated group is evident, showing a decline of almost 15 percentage points. Recovery is gradual over time; however, even several years post-layoff, employment probabilities have not returned to pre-layoff levels, suggesting a lasting effect of mass layoffs on job prospects. Figure 1 (b) portrays the trajectory of wage employment earnings following mass layoffs. Aligning with the employment probabilities trend, the earnings of the treated group mirror those of the control group until the event of the layoffs. The layoff event marks a significant inflection point, with earnings for the treated group declining sharply by close to $15,000. The subsequent period demonstrates a partial recovery, yet earnings remain noticeably below the pre-layoff benchmark, reflecting the enduring financial impact of mass lay-

Figure 1: Effect of mass layoff on employment and earnings



(a) Employment

(b) Employment income ($)

Note: This figure presents employment activity (a) and employment income (b) around the mass-layoff event. $t = 0$ represents the year of the mass layoff. We use the sample of 118,745 individuals part of a mass-layoff between 2007 and 2015 matched to a control group of 118,745 individuals who were not affected by the mass-layoff event. Employment (a) is defined as a dummy variable equal to one if the individual received employment income (i.e. some T4 earnings) from a firm in the current year, and 0 otherwise. Earnings are calculated from the T1 Personal Master File (T1PMF) and are defined as the total employment income reported on T4 slips, before any deductions. We report 95% confidence intervals based on standard errors clustered at the individual level.

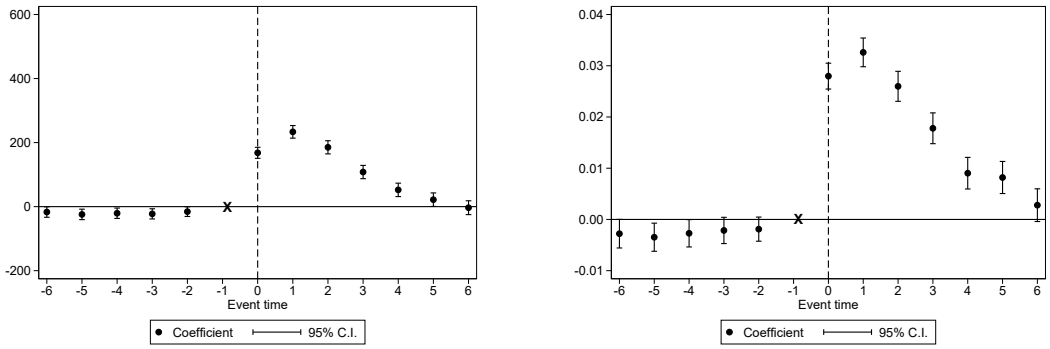
offs.

Figure 2 portrays the trend in withdrawals from Registered Retirement Savings Plan (RRSP) before and after mass layoffs. Because individuals who are subject to a mass layoff event have a sudden and significant drop in wage income (as documented above), they face an incentive to withdraw money from their retirement savings plans (RRSPs). The timeline prior to the layoffs demonstrates a relatively low and steady amount of RRSP withdrawals. However, coinciding with the layoffs, there is a notable increase in withdrawals (4%), indicating that individuals are tapping into their retirement savings as a response to job loss. This provide one mechanism used by displaced workers to adjust to the lay-off.

5.2 New Incorporated Firms

We then observe the dynamic of incorporation for the displaced workers after the displacement. Figure 3 (a) indicates a discernible increase in the opening of an incorporated business following mass layoffs. The baseline trend before the layoffs shows little change in the rate of new business creation. However, concurrent with the layoffs, there is a noticeable increase, with the rate of

Figure 2: Pension savings withdrawals



(a) Amount ($)

(b) Extensive margin

Note: this figure presents RRSP income (withdrawal) dynamic around the mass-layoff event (Amount withdrawal (a) and extensive margin (b)). $t = 0$ represents the year of the mass-layoff. We use the sample of 118,745 individuals part of a mass-layoff between 2007 and 2015 matched to a control group of 118,745 individuals who were not affected by the mass-layoff event. RRSP-income is calculated from the T1 Personal Master File (T1PMF). We report 95% confidence intervals based on standard errors clustered at the individual level.

individuals starting new incorporated businesses rising by close to one percentage point in the year of the lay-off.

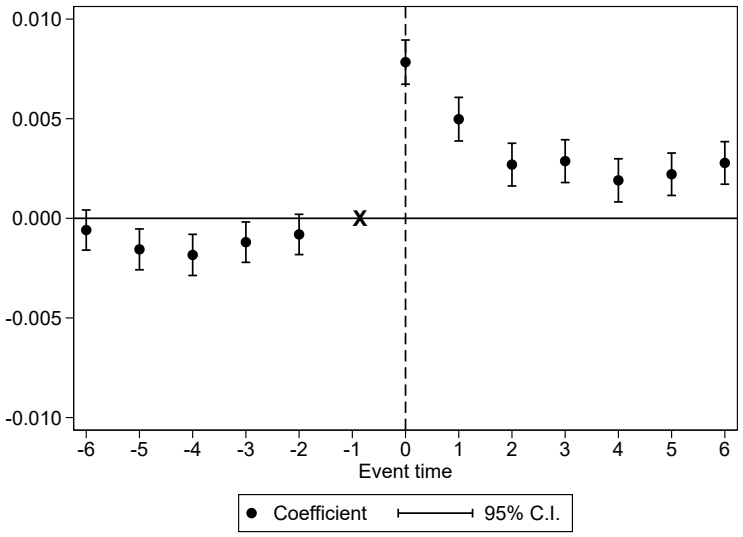
5.3 New Unincorporated Firms

Figure 4 examines total self employment income from unincorporated firms. Panel (a) of Figure 4 examines the extensive margin of entry into self-employment following the mass layoff event. This figure reveals a marked shift toward self-employment in response to mass layoffs. Prior to the layoffs, the prevalence of self-employment was similar between the treated and control groups. Following the layoffs, however, there is a pronounced increase in self-employment for those impacted, peaking at a 5% increase. Figure 4 (b) documents very similar patterns for the dollar magnitudes of total self-employment income.

5.3.1 Unregistered Business, Commission, and Professional Incomes

Our tax return data allows us to observe various categories of unincorporated business activity. We focus on three main categories of self-employment income (1) unincorporated business in-

Figure 3: Incorporated business



(a) Opening an incorporated business

Note: This figure presents the opening dynamics of incorporated businesses around the mass-layoff event. $t = 0$ represents the year of the mass layoff. We use the sample of 118,745 individuals part of a mass layoff between 2007 and 2015 matched to a control group of 118,745 individuals who were not affected by the mass layoff event. "Opening an incorporated business" is defined as the businesses created and incorporated within the year, we identify these openings using a binary indicator. This indicator is derived from combining data from the T2 Corporation Income Tax Return (T2SR50) and the National Accounts Longitudinal Microdata File (NALMF), with '1' indicating the presence of a new business, and '0' indicating the absence of such activity. We report 95% confidence intervals based on standard errors which are clustered at the individual level.

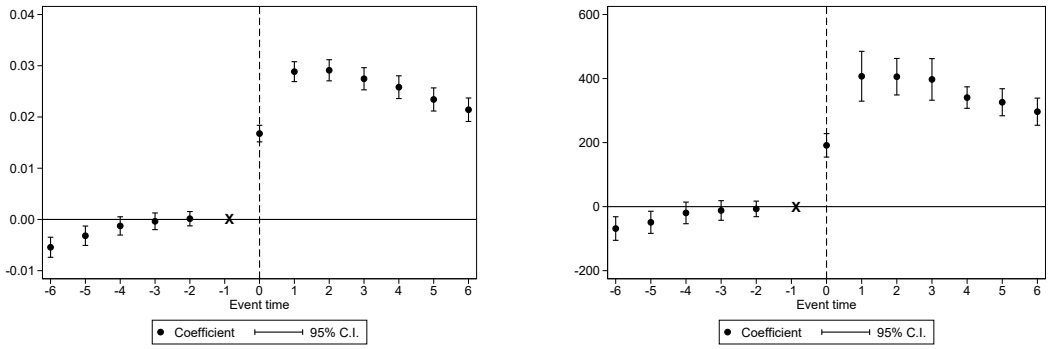
come, (2) professional income and (3) commission income.[5] Figure 5 presents the extensive margin of these three components, and show that the impact of mass layoffs on commission income and on professional income is very small. The vast majority of the effect of a mass layoff event is on unincorporated business income. Appendix Figure A1 shows that this result also holds when looking at the amount earned in each component.

5.3.2 Unregistered and Unincorporated Firms (Gig Work)

Another useful distinction, described above, concerns the cutoff of firm annual income above and below $30 000 in the Canadian tax code. Firms with income below this cutoff do not have to report and file Canadian Sales Tax. These firms are thus very small (as measured by income) and can be

[5]Because they consist of small amounts, we exclude farming, fishing, and rental income.

Figure 4: Effect of mass layoff on self-employment and self-employment income



(a) Self-employment extensive margin

(b) Self-employment income($)

Note: This figure presents self-employment extensive margin (a) and self-employment income (b) around the mass-layoff event. $t = 0$ represents the year of the mass-layoff. We use the sample of 118,745 individuals part of a mass-layoff between 2007 and 2015 matched to a control group of 118,745 individuals who were not affected by the mass-layoff event. Self-employment income is the sum of business, commission, and professional income, calculated from the T1 Personal Master File (T1PMF). We report 95% confidence intervals based on standard errors clustered at the individual level.

labelled as unincorporated unregistered, or as Gig work.

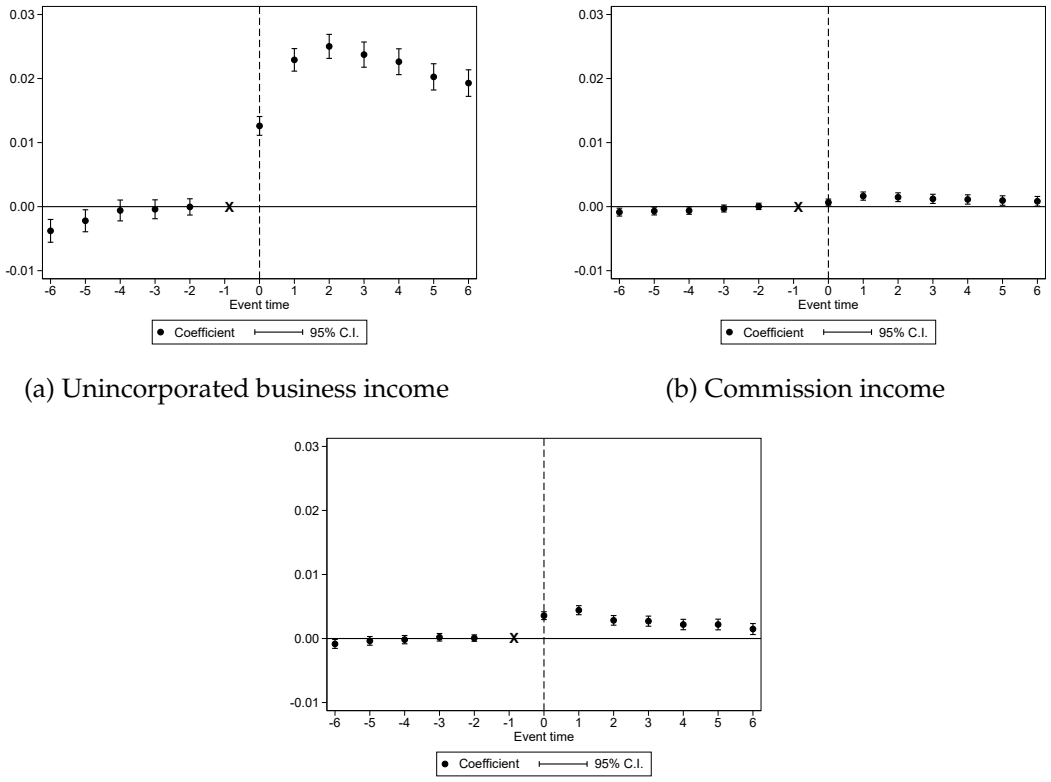
Figure 6 tracks the trajectory of gig economy activity following mass layoffs. In the aftermath of the layoffs, there is a discernible uptick in gig economy engagement among the treated group, with an increase of close to 3 percentage points. This shift highlights the layoffs' role in driving individuals towards alternative forms of employment within the gig economy.

In summary therefore, the previous analysis has shown that those subject to a mass layoff event select into both incorporated as well as unincorporated new businesses. Within the group of unincorporated firms many are very small gig type enterprises that are unregistered and without a formal business number. However selection into partnerships and commission income type enterprises are very limited.

6 The Choice Between Incorporated and Unincorporated Firms

Before we document our main results on firm performance, based on the identification strategy described above, we first, analyze the choice between opening an incorporated entity versus an unincorporated entity in the year of displacement (t=0) using equation (2).

Figure 5: Self-employment income (extensive margin)



(a) Unincorporated business income

(b) Commission income

(c) Professional income

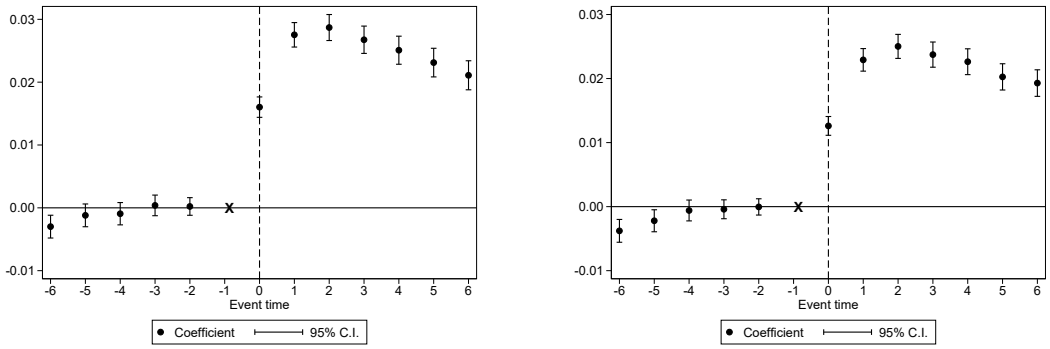
Note: This figure presents the business unincorporated (a), commission unincorporated (b), and professional unincorporated extensive margin activity around the mass-layoff event. $t = 0$ represents the year of the mass layoff. We use the sample of 118,745 individuals' part of a mass layoff between 2007 and 2015 matched to a control group of 118,745 individuals who were not affected by the mass layoff event. We report 95% confidence intervals based on standard errors clustered at the individual level.

Our finding presents a clear pattern, with individuals who have experienced a job displacement being more likely to start an unincorporated business rather than an incorporated one. We notice that they are 9.7 percentage points more likely to open an unincorporated business (Table 2). The results show a discernible inclination towards unincorporated entities, signifying a potential strategic preference for paths with potentially lower initial investment and complexity.

We then turn our analysis, to identify if there are demographic and economic factors of the founders which could nuanced dynamics across this entrepreneurial decision the year of their displacement.

First, we found that the gender of the entrepreneur could significantly influence incorporation

Figure 6: Gig Income and Unincorporated Business extensive margin



(a) Gig-work extensive margin

(b) Unincorporated business extensive margin

Note: This figure presents the dynamics of gig and business activity around the mass-layoff event. $t = 0$ represents the year of the mass layoff. We analyze a sample of 118,745 individuals who were part of a mass layoff between 2007 and 2015, matched to a control group of 118,745 individuals who were not affected by the mass-layoff event. Gig-income is defined following the Jeon et al. (2021).It is derived from combining the T1PMF and the T1FDB. We report 95% confidence intervals based on standard errors clustered at the individual level.

choices. Men are more likely to open an incorporated business compared to women. This gender difference could represent the varied perceived opportunities and access to funding between men and women when navigating the decision to launch a business and to incorporate them. However, we also found that among the displaced workers, there is no significant difference among the genders. The interaction between job displacement and gender is statistically non-significant, suggesting that the impact of job loss on incorporation decisions does not change significantly across men and women.

Second, we also observe that immigrant status plays a role in our findings. While being an immigrant does not directly affect the likelihood of choosing to open an incorporated entity rather than an unincorporated entity, we notice that there is a distinct pattern among the displaced. Displaced immigrants (interaction terms between immigrant and displaced) are more inclined towards opening incorporated entities compared to their non-immigrant counterparts. The significance of this interaction between job displacement and immigrant status could reveal the challenges and opportunities faced by immigrants in their entrepreneurial adventures, especially when job loss is a factor.

7 Firm Performance of Necessity vs. Voluntary Entrepreneurs

In the previous sections we used event study DIDs to document that a mass layoff event has a causal effect on the starting of necessity entrepreneurship of different kinds (including unincorporated, incorporated, gig etc.). Our aim in this section is to compare the performance of these exact same necessity entrepreneurs, with the performance of propensity matched voluntary entrepreneurs (i.e. non laid-off individuals who started similar firms).

We classify an individual founder as a necessity entrepreneur based on our causal DID results above, linking the formation of that firm to the founder being subject to a mass lay-off event. For this reason we are able to use these founders who were subject to the mass layoff event (i.e. necessity entrepreneurs), as our treatment group in these regressions. Our control group consists of propensity score matched founders who were not subject to a mass layoff event, who we can thus designate as voluntary entrepreneurs.

In this section we use firm level performance data (e.g. sales, assets, profits, etc) from the date of the origination of the firm. Because we start from the date of the formation of the firm, there is no pre-period, by construction.

7.1 Incorporated Firms

Our short run results for incorporated firms are presented in Panel A of Table 3, for the year of the firm creation, and our long run results are presented in panel A of Table 4 for the average of years 1 to 5 after the firm creation.

In these two tables, we first report our main baseline results comparing the performance for the necessity entrepreneurs against the matched group of voluntary entrepreneurs. We then examine various hetrogeneity tests for various subgroups (specifically based on gender and immigrant status) which we discuss in detail below.

7.1.1 Baseline Results

Our short term (in year of firm formation) baseline results for reported in Panel A of Table 3 indicate that necessity entrepreneurs who select into incorporation have profits that are $13K lower than the matched sample of voluntary entrepreneurs who select into incorporation. In addition,

we document that the incorporated firms of necessity entrepreneurs are significantly smaller than matched incorporated firms of firms of voluntary entrepreneurs across many measures of firm size (including sales ($68k), cost of sales ($63k), total assets ($122K), total payroll ($11K) etc.).

Our long term results (based on the average annual amounts for the first five years after the firms creation), as reported in Table 4 are even larger in magnitude than the short term results. In the long term case, we find that necessity entrepreneurs who select into incorporation have an annual gross profit of $53K less than the matched group of voluntary entrepreneurs who select into incorporation. Similarly, our results show that the incorporated firms started by necessity entrepreneurs are significantly smaller across all of these measures, relative to voluntary entrepreneurs (including sales ($177k), cost of sales ($151k), total assets ($218K), total payroll ($34K) etc.)

These results, showing that necessity entrepreneurs who select into incorporation are both significantly less profitable as well as significantly smaller, compared to voluntary entrepreneurs, is consistent with the main new hypothesis proposed in this paper. Our new hypothesis combines the model of Rubinstein and Levine (2020) (that financial and human capital are important inputs required for success as incorporated firms), as well as the argument that necessity entrepreneurs typically lack both human as well as financial capital. Our results that necessity entrepreneurs who select into incorporation are both significantly less profitable as well as significantly smaller than the matched group of voluntary entrepreneurs, is consistent with necessity entrepreneurs not having access to either (or both) of the human capital and financial capital that are prerequisites for success and growth as an incorporated firm.

In panel B of these two tables we show hetrogeneity results based on gender, but our main conclusion here is that we find no significant effects based on gender.

7.1.2 Immigrant Status

In Panel C of Table 3 and Panel C of Table 4 we show heterogeneity results based on immigrant status. As we describe above, a large recent literature has documented the relative success of immigrant entrepreneurs across firms of all sizes. Our main conclusion from these results is that the gross profits of immigrant necessity entrepreneurs who select into incorporation is not signifi-

cantly different than voluntary entrepreneurs who select into incorporation. In addition, we show that incorporated firms started by laid-off immigrants are significantly larger then similar firms started by voluntary entrepreneurs.

Taken together, these results for immigrants are very different from similar results for the general population (as seen in Panel A of these two Tables), where necessity entrepreneurs are both smaller as well as less profitable. We argue that these new results are consistent with the recent literature documenting that immigrants have achieved entrepreneurial success across all kinds of firms (e.g. Azoulay et al. (2022), Kerr and Kerr (2020), Fairlie and Lofstrom (2015). Put differently, immigrants seem to be the one category of necessity entrepreneurs who are able to overcome the liabilities imposed by being laid off (typically thought of as the lack of human capital and the lack of financial capital) in order to start incorporated firms that have similar levels of profitability compared to similar firms started by voluntary entrepreneurs.

7.2 Unincorporated Firms

7.2.1 Baseline Results

Our baseline results for comparing necessity entrepreneurs selecting into unincorporated firms with matched voluntary entrepreneurs selecting into unincorporated forms are presented in Panel A of Table 5 for short run results in the year of the firm formation, and Panel A of Table 6 for long run results for the average annual effect of the first five years after the firm's formation.

Our main finding from Panel A of Table 5 and Panel A of Table 6 is that the gross profits of necessity entrepreneurs in unincorporated firms are significantly larger than matched results for voluntary entrepreneurs, in both the short run ($2.8K per year) as well as the long run ($5.5K per year).

In addition, we also find that necessity entrepreneurs are small than matched voluntary across a variety of measures, in both the first year (e.g. total revenue $10K, total expenses $6K, total payroll $0.6K), as well as the first five years ((e.g. total revenue $10K, total expenses $6K, total payroll $0.7K).

One interpretation of these results is that even within the group of unincorporated firms, necessity entrepreneurs are significantly smaller than matched voluntary entrepreneurs. However, in

spite of the small size of the firms, the necessity entrepreneurs are still significantly more profitable than matched voluntary entrepreneurs. In other words, even within the group of unincorporated firms, the necessity entrepreneurs still "aim low", in that they are smaller but still more profitable.

In Panel B and Panel C of these tables, we examine hetrogeneity tests for gender and immigrant status, but do not find significant evidence across multiple different measures.

8 Conclusion

The literature has found conflicting results regarding the performance of firms started by necessity entrepreneurs. Some papers have found that firms created by necessity entrepreneurs under perform (Galindo Da Fonseca, 2022), while others provide evidence of entrepreneurs founding successful firms following negative labor shocks (Babina, 2019, Hacamo and Kleiner, 2022). This paper argues that these differing results can be reconciled by considering the type of firm created by necessity entrepreneurs, particularly in terms of the decision to incorporate or not.

We use administrative tax record data to track both incorporated and unincorporated businesses in Canada and we study the performance of displaced workers who start each type of firm. 0ur analysis suggests that the type of firm created by displaced workers significantly affects their entrepreneurial success. Displaced workers who start unincorporated firms perform better than a non-displaced control group, whereas those who create incorporated firms under perform. These results challenge the traditional narrative that displaced workers are less likely to succeed in entrepreneurial ventures. Instead, we show that displaced workers can find success, particularly when they choose to open unincorporated businesses or engage in gig work, which we define as "aiming low."

The success of displaced workers in less complex entrepreneurial activities (unincorporated business and gig work) demonstrates the importance of lower entry costs in entrepreneurship (Levine and Rubinstein, 2017). This suggests that success in entrepreneurship, particularly for displaced workers, may be easier to achieve in less formal structures. These findings have broader implications for understanding entrepreneurship in the face of adversity, considering the common rhetoric that portrays entrepreneurship as an alternative path out of unemployment following job displacement. While our analysis supports the idea that entrepreneurship can help recover from

negative labor shocks, it highlights that success largely depends on the type of entrepreneurial firms created. Given the distinct challenges and opportunities that laid-off workers face, policy frameworks should support realistic entrepreneurial pathways, particularly those requiring lower initial investments, such as unincorporated businesses and gig work.

References

AZOULAY, P., B. F. JONES, J. D. KIM, AND J. MIRANDA (2022): "Immigration and entrepreneurship in the United States," *American Economic Review: Insights*, 4, 71–88.

BABINA, T. (2019): "Destructive Creation at Work: How Financial Distress Spurs Entrepreneurship," *The Review of Financial Studies*, 00, 41.

BAKER, A. C., D. F. LARCKER, AND C. C. WANG (2022): "How much should we trust staggered difference-in-differences estimates?" *Journal of Financial Economics*, 144, 370–395.

BERTHEAU, A., E. M. ACABBI, C. BARCELÓ, A. GULYAS, S. LOMBARDI, AND R. SAGGIO (2023): "The Unequal Consequences of Job Loss across Countries," *American Economic Review: Insights*, 5, 393–408.

BIRINCI, S., Y. PARK, T. PUGH, AND K. SEE (2023): "Uncovering the Differences Among Displaced Workers: Evidence from Canadian Job Separation Records," Tech. rep., Bank of Canada.

CALLAWAY, B. AND P. H. SANT'ANNA (2021): "Difference-in-Differences with multiple time periods," *Journal of Econometrics*, 225, 200–230.

CENGIZ, D., A. DUBE, A. LINDNER, AND B. ZIPPERER (2019): "The Effect of Minimum Wages on Low-Wage Jobs*," *The Quarterly Journal of Economics*, 134, 1405–1454.

COUCH, K. A. AND D. W. PLACZEK (2010): "Earnings Losses of Displaced Workers Revisited," *American Economic Review*, 100, 572–589.

DE CHAISEMARTIN, C. AND X. D'HAULTFŒUILLE (2020): "Two-Way Fixed Effects Estimators with Heterogeneous Treatment Effects," *American Economic Review*, 110, 2964–2996.

DESHPANDE, M. AND Y. LI (2019): "Who Is Screened Out? Application Costs and the Targeting of Disability Programs," *American Economic Journal: Economic Policy*, 11, 213–248.

FAIRLIE, R. W. AND M. LOFSTROM (2015): "Immigration and entrepreneurship," in *Handbook of the economics of international migration*, Elsevier, vol. 1, 877–911.

GALINDO DA FONSECA, J. (2022): "Unemployment, entrepreneurship and firm outcomes," *Review of Economic Dynamics*, 45, 322–338.

GOODMAN-BACON, A. (2021): "Difference-in-differences with variation in treatment timing," *Journal of Econometrics*, 225, 254–277.

GREENSTONE, M., G. HE, R. JIA, AND T. LIU (2022): "Can Technology Solve the Principal-Agent Problem? Evidence from China's War on Air Pollution," *American Economic Review: Insights*, 4, 54–70.

HACAMO, I. AND K. KLEINER (2022): "Forced Entrepreneurs," *The Journal of Finance*, 77, 49–83.

HOU, A. J., S. JONSSON, X. LI, AND Q. OUYANG (2025): "From employee to entrepreneur: The role of unemployment risk," *Journal of Financial Economics*, 163, 103966.

JACOBSON, L. S., R. J. LALONDE, AND D. G. SULLIVAN (1993): "Earnings Losses of Displaced Workers," *The American Economic Review*, 83, 685–709, publisher: American Economic Association.

JEON, S.-H., H. LIU, AND Y. OSTROVSKY (2021): "Measuring the gig economy in Canada using administrative data," *Canadian Journal of Economics/Revue canadienne d'économique*, 54, 1638–1666.

KERR, S. P. AND W. KERR (2020): "Immigrant entrepreneurship in America: Evidence from the survey of business owners 2007 & 2012," *Research Policy*, 49, 103918.

LACHOWSKA, M., A. MAS, AND S. A. WOODBURY (2020): "Sources of Displaced Workers' Long-Term Earnings Losses," *American Economic Review*, 110, 3231–3266.

LEVINE, R. AND Y. RUBINSTEIN (2017): "Smart and Illicit: Who Becomes an Entrepreneur and Do They Earn More?*," *The Quarterly Journal of Economics*, 132, 963–1018.

NYSTRÖM, K. (2020): "Entrepreneurship after displacement," *Small Business Economics*, 54, 475–494.

RØED, K. AND J. F. SKOGSTRØM (2014): "Job loss and entrepreneurship," *Oxford bulletin of economics and statistics*, 76, 727–744.

RUBINSTEIN, Y. AND R. LEVINE (2020): "Selection into entrepreneurship and self-employment," ISSN: 2042-2695 Issue: 1722 Num Pages: 64 Number: 1722 Place: London, UK Publisher: London School of Economics and Political Science.

SCHMIEDER, J. F., T. VON WACHTER, AND J. HEINING (2023): "The Costs of Job Displacement over the Business Cycle and Its Sources: Evidence from Germany," *American Economic Review*, 113, 1208–1254.

SUN, L. AND S. ABRAHAM (2021): "Estimating dynamic treatment effects in event studies with heterogeneous treatment effects," *Journal of Econometrics*, 225, 175–199.

VON GREIFF, J. (2009): "Displacement and self-employment entry," *Labour Economics*, 16, 556–565.

WING, C., M. YOZWIAK, A. HOLLINGSWORTH, S. FREEDMAN, AND K. SIMON (2024): "Designing difference-in-difference studies with staggered treatment adoption: Key concepts and practical guidelines," *Annual Review of Public Health*, 45.

Tables

Table 1: Descriptive Statistics

	Mean	SD	N
Panel A. Demographics			
Year of layoff	x	x	x
Age	x	x	x
Male indicator	x	x	x
Immigrant indicator	x	x	x
Panel B. Employment data			
Employment income	x	x	x
Nb of employers	x	x	x
RRSP withdrawals	x	x	x
Panel C. Unincorporated business data			
Unincorp. bus. owner	x	x	x
Self-employment income	x	x	x
Total revenues	x	x	x
Total expenses	x	x	x
Gross profits	x	x	x
Capital cost	x	x	x
Number of employees	x	x	x
Total payroll	x	x	x
Panel D. Incorporated business data			
Incorp. bus. owner	x	x	x
Sales, goods and services	x	x	x
Cost of sales	x	x	x
Gross profits	x	x	x
Total assets	x	x	x
Intangible assets	x	x	x
Tangibility ratio	x	x	x
Number of employees	x	x	x
Total payroll	x	x	x

Note: This table presents the descriptive statistics for the main variables used in the analysis, and is currently pending disclosure review.

Table 2: Choosing between incorporated and unincorporated businesses

	(1) Incorporation
A. Baseline result	
Displaced worker	-0.097***
	(0.014)
B. Gender	
Displaced worker × Male	0.068**
	(0.030)
Male	0.08***
	(0.016)
Displaced worker	-0.102***
	(0.014)
C. Immigrant	
Displaced worker × Immigrant	0.11***
	(0.035)
Immigrant	0.00002
	(0.018)
Displaced worker	-0.097***
	(0.014)
Cohort FE	YES
Year FE	YES
Treated FE	YES
Treated x Cohort FE	YES

Note: This table summarizes the findings from a probit model analysis on the choice between starting an incorporated versus an unincorporated business in the event year of displacement (T=0). Our model controls for individual displacement status, gender, and immigration status. The coefficients indicate the likelihood of choosing incorporation over unincorporation, with positive values suggesting a higher propensity towards incorporated businesses. Standard errors are clustered at the individual level to account for within-individual correlation across time. Significance levels are denoted by asterisks, with *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Incorporated business performance (in year of firm creation)

	Income and profits			Balance sheet and labor				
	(1) Sales	(2) Cost of sales	(3) Gross profits	(4) Total assets	(5) Intangible assets	(6) Tangibility ratio	(7) Number of employees	(8) Total payroll
A. Baseline result								
Displaced worker	-68,951***	-63,439***	-13,077**	-122,961***	-6,139**	-0.02**	-0.848***	-11,100***
	(16,970)	(16,283)	(5,403)	(20,977)	(2,546)	(0.009)	(0.232)	(3,452)
B. Gender								
Displaced worker × Male	-2,138	-1,217	5,348	-46,408	-4,077	0.009	-0.839*	-11,131*
	(36,335)	(34,945)	(11,380)	(44,204)	(4,825)	(0.019)	(0.503)	(6,737)
Male	5,689	4,548	-207	42,306	6,471	0.025*	0.622	9,422*
	(31,346)	(31,067)	(8,800)	(37,545)	(4,439)	(0.013)	(0.381)	(5,342)
Displaced worker	-67,638**	-62,754**	-17,030*	-90,593**	-3,427	-0.028*	-0.256	-3,301
	(30,695)	(29,335)	(9,317)	(35,822)	(3,699)	(0.016)	(0.419)	(4,921)
C. Immigrant								
Displaced worker × Immigrant	91,355***	86,636***	18,369*	95,127**	11,382***	0.014	0.967**	21,814***
	(34,231)	(31,691)	(10,219)	(40,411)	(4,384)	(0.020)	(0.464)	(6,092)
Immigrant	-127,698***	-104,340***	-40,285***	-125,109***	-12,481***	-0.004	-1.837***	-25,499***
	(30,166)	(29,168)	(7,856)	(35,821)	(3,937)	(0.015)	(0.368)	(4,522)
Displaced worker	-88,496***	-82,481***	-16,565**	-143,551***	-8,678***	-0.023**	-1.041***	-15,918***
	(20,952)	(20,745)	(6,612)	(26,231)	(3,296)	(0.010)	(0.283)	(4,421)
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Treated FE	YES	YES	YES	YES	YES	YES	YES	YES
Treated x Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: This table illustrates the influence of various factors on the operational outcomes of incorporated firms, considering asset values, profitability, and sales of goods. The analysis uses a sample of firms established by displaced workers, comparing their performance against non-displaced founders across different demographic and economic dimensions. 'Displaced x Sex' indicates the interaction effect of displacement and the founder's gender, while 'Displaced x Immigrant' analyzes the relation of job loss with immigration status, respectively. Standard errors are clustered at the firm level to account for within-individual correlation across time. Significance levels are denoted by asterisks, with *** p<0.01, ** p<0.05, * p<0.1.

Table 4: Incorporated business performance (Averaged one to five years after firm creation)

	Income and profits			Balance sheet and labor				
	(1) Sales	(2) Cost of sales	(3) Gross profits	(4) Total assets	(5) Intangible assets	(6) Tangibility ratio	(7) Number of employees	(8) Total payroll
A. Baseline result								
Displaced worker	-177,912***	-151,400***	-52,693***	-218,720***	-8,775***	-0.002	-1.508***	-33,759***
	(24,845)	(23,571)	(8,878)	(25,542)	(2,679)	(0.009)	(0.259)	(6,009)
B. Gender								
Displaced worker × Male	-52,950	-84,990*	9,057	-58,868	-390	0.018	-0.134	-5,793
	(48,011)	(44,963)	(17,847)	(53,944)	(5,505)	(0.019)	(0.534)	(11,370)
Male	89,562**	93,097**	19,238	94,591**	2,935	0.02	0.591	20,396**
	(38,509)	(37,031)	(14,326)	(44,504)	(4,688)	(0.013)	(0.419)	(8,994)
Displaced worker	-141,896***	-92,025**	-59,922***	-178,525***	-8,580*	-0.016	-1.428***	-30,146***
	(38,747)	(35,898)	(14,826)	(44,508)	(4,694)	(0.016)	(0.445)	(8,918)
C. Immigrant								
Displaced worker × Immigrant	83,261	88,023*	4,842	170,804***	8,101*	-0.017	0.598	36,744***
	(52,614)	(49,956)	(18,324)	(51,288)	(4,538)	(0.020)	(0.547)	(11,030)
Immigrant	-166,936***	-124,257***	-60,088***	-195,295***	-10,987***	-0.016	-1.925***	-59,909***
	(43,696)	(43,579)	(14,959)	(41,522)	(4,201)	(0.015)	(0.442)	(8,473)
Displaced worker	-193,875***	-169,754***	-52,196***	-255,630***	-10,477***	0.003	-1.602***	-41,193***
	(28,837)	(27,498)	(10,393)	(30,774)	(3,320)	(0.010)	(0.301)	(7,175)
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Treated FE	YES	YES	YES	YES	YES	YES	YES	YES
Treated x Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: This table illustrates the influence of various factors on the operational outcomes of incorporated firms, considering asset values, profitability, and sales of goods. The analysis uses a sample of firms established by displaced workers, comparing their performance against non-displaced founders across different demographic and economic dimensions. 'Displaced x Sex' indicates the interaction effect of displacement and the founder's gender, while 'Displaced x Immigrant' analyzes the interplay of job loss with immigration status, respectively. Standard errors are clustered at the firm level to account for within-firm correlation across time. Significance levels are denoted by asterisks, with *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Unincorporated business performance (in year of firm creation)

	Income and profits			Balance sheet and labor		
	(1) Total revenues	(2) Total expenses	(3) Gross profits	(4) Capital cost	(5) Number of employees	(6) Total payroll
A. Baseline result						
Displaced worker	-10,469***	-6,165***	2,846***	1,400**	-0.063***	-651***
	(2,304)	(1,018)	(911)	(713)	(0.023)	(206)
B. Gender						
Displaced worker × Male	7,342	2,740	2,829	2,333	-0.025	101
	(4,719)	(2,099)	(1,808)	(1,470)	(0.049)	(430)
Male	2,110	-199	627	755	-0.031	-213
	(3,880)	(1,716)	(1,293)	(1,121)	(0.036)	(332)
Displaced worker	-15,400***	-7,979***	951	-170	-0.045	-713**
	(3,765)	(1,706)	(1,444)	(1,183)	(0.040)	(349)
C. Immigrant						
Displaced worker × Immigrant	5,343	1,657	-912	48	-0.071	-723
	(4,835)	(2,189)	(2,057)	(1,594)	(0.050)	(458)
Immigrant	-18,467***	-6,866***	-2,740*	-2,904**	-0.027	-52
	(4,045)	(1,836)	(1,452)	(1,211)	(0.040)	(380)
Displaced worker	-11,598***	-6,511***	3,061***	1,400*	-0.046*	-489**
	(2,724)	(1,198)	(1,047)	(830)	(0.027)	(241)
Cohort FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Treated FE	YES	YES	YES	YES	YES	YES
Treated x Cohort FE	YES	YES	YES	YES	YES	YES

Note: This table illustrates the influence of various factors on the operational outcomes of unincorporated firms, considering profit, expense, and revenue. The analysis uses a sample of firms established by displaced workers, comparing their performance against non-displaced founders across different demographic and economic dimensions. 'Displaced x Sex' indicates the interaction effect of displacement and the founder's gender, while 'Displaced x Immigrant' examine the interplay of job loss with immigration. Standard errors are clustered at the firm level to account for within-firm correlation across time. Significance levels are denoted by asterisks, with *** p<0.01, ** p<0.05, * p<0.1.

Table 6: Unincorporated business performance (Averaged one to five years after firm creation)

	Income and profits			Balance sheet and labor		
	(1) Total revenues	(2) Total expenses	(3) Gross profits	(4) Capital cost	(5) Number of employees	(6) Total payroll
A. Baseline result						
Displaced worker	-9,752***	-6,488***	5,506***	1,805*	-0.062**	-704**
	(3,415)	(1,435)	(1,400)	(992)	(0.030)	(310)
B. Gender						
Displaced worker × Male	11,244	6,205**	-321	174	0.015	353
	(7,057)	(2,975)	(2,815)	(2,016)	(0.066)	(666)
Male	4,389	-283	2,774	2,623*	-0.066	-525
	(5,608)	(2,351)	(1,897)	(1,441)	(0.049)	(494)
Displaced worker	-17,146***	-10,552***	5,699**	1,675	-0.071	-932*
	(5,691)	(2,404)	(2,272)	(1,643)	(0.055)	(548)
C. Immigrant						
Displaced worker × Immigrant	8,573	6,424**	-1,249	-881	0.02	332
	(7,257)	(3,159)	(3,169)	(2,167)	(0.068)	(703)
Immigrant	-27,284***	-11,070***	-5,421**	-5,144***	-0.09*	-881*
	(5,875)	(2,486)	(2,266)	(1,639)	(0.051)	(532)
Displaced worker	-11,898***	-8,012***	5,735***	1,955*	-0.067*	-785**
	(4,040)	(1,691)	(1,599)	(1,151)	(0.035)	(362)
Cohort FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Treated FE	YES	YES	YES	YES	YES	YES
Treated x Cohort FE	YES	YES	YES	YES	YES	YES

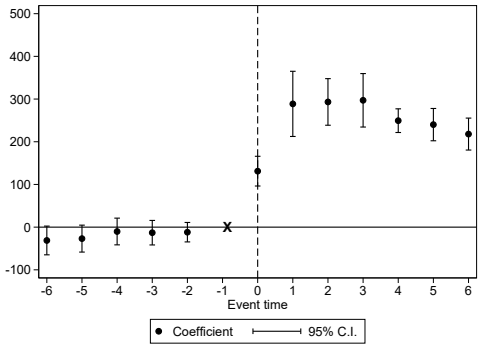
Note: This table illustrates the influence of various factors on the operational outcomes of unincorporated firms, considering profit, expense, and revenue. The analysis uses a sample of firms established by displaced workers, comparing their performance against non-displaced founders across different demographic and economic dimensions. 'Displaced x Sex' indicates the interaction effect of displacement and the founder's gender, while 'Displaced x Immigrant' examines the relation between job loss with immigration status. Standard errors are clustered at the firms level to account for within-firm correlation across time. Significance levels are denoted by asterisks, with *** p<0.01, ** p<0.05, * p<0.1.

A Appendix

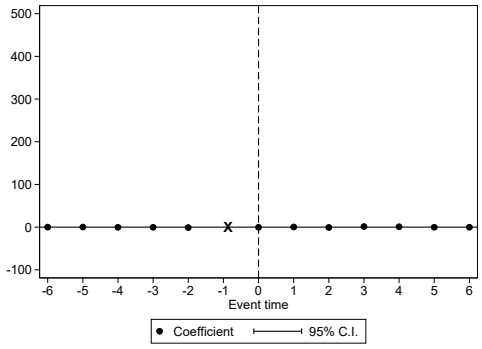
Table A1: Definitions of Variables

Variable	Definition	Source
A. Demographic variables		
casenum2019	Unique identifier for individuals	T1PMF
prov of residence	Province or territory of residence	T1PMF
year	Year of tax records	T1PMF
birth year	Birth year of the individual	T1PMF
death year	Death year of the individual	T1PMF
sex	Sex	T1PMF
age	Age of the individual	T1PMF
Immigrant	Indicator representing whether the individual is an immigrant or not	IMBD
B. Income variables		
Business income net	Net business unincorporated income	T1PMF
Commission income net	Net commission unincorporated income	T1PMF
Professional inc net	Net professional unincorporated income	T1PMF
Earnings	Total employment income from T4 slips, before deductions	T1PMF
RSP Income	Income from RRSP withdrawals	T1PMF
Gig income total	Revenue from Gig- Income activities	T1PMF
Self-employment income	Self-employment income	T1PMF
C. Incorporated firm variables		
Nbr worker laidoff	Number of worker who were laidoff by the firm	NALFM
Nbr worker	Number of worker who worked for the firm	NALFM
Year of mass layoff	Year of mass-layoff	NALFM
entid syn	Business entity ID	NALFM
reason	Reason of separation from employment	NALFM
naics	NAICS - in detail	NALFM
T4 Payroll	Payroll for the enteprise	NALFM
Net income	Net income or loss for income tax purposes	NALFM
total assets	All current, capital, long-term assets, and assets held in trust	NALFM
total liabilities	All current and long-term liabilities	NALFM
total shareholder equity	All shareholder equity amount	NALFM
total current assets	All current assets	NALFM
total tangible assets	All tangible capital asset	NALFM
total intangible assets	All intangible capital asset	NALFM
total long term assets	All long term assets	NALFM
total current liabilities	All current liabilities	NALFM
D. Unincorporated firm variables		
Business number	Synthetic Business Number (BN)	T1FDB
total revenue unincorporated	L8299 : Total non-farm revenue	T1FDB
total expenses unincorporated	L9368 : Total expenses	T1FDB
wages salaries unincorporated	L9060 : Non farm wages and salaries	T1FDB
material costs unincorporated	L8320 : Cost of materials	T1FDB
direct wages unincorporated	L8340 : Direct wages (commission, labour, production wages and supervision)	T1FDB
cost of goods sold unincorporated	L8518 : Cost of goods sold	T1FDB
gross profit unincorporated	L8519 : Gross Profit	T1FDB
employee beneftis unincorporated	L9794 : Employee benefits, employer contribution, insurance, etc	T1FDB
t4 bn employee count unincorporated	Number of employees in the BN who received T4	T1FDB
t4 bn payroll unincorporated	Total payroll at BN using T4	T1FDB
tot wages benefits unincorporated	Total wages and benefits	T1FDB

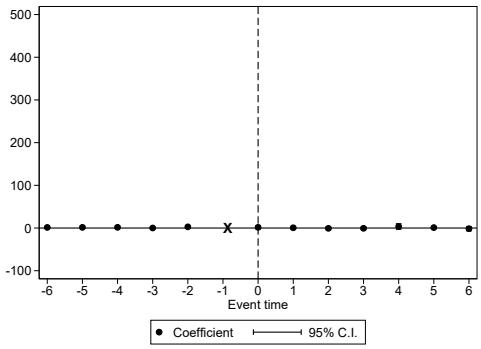
Figure A1: Self-employment income (amounts)



(a) Unincorporated business income ($)



(b) Commission income ($)



(c) Professional income ($)

Note: This figure presents the business unincorporated income (a), commission unincorporated income (b), and professional unincorporated income (c) the mass-layoff event. $t = 0$ represents the year of the mass layoff. We use the sample of 118,745 individuals' part of a mass layoff between 2007 and 2015 matched to a control group of 118,745 individuals who were not affected by the mass layoff event. Business income, professional income, and commission income are calculated from the T1 Personal Master File (T1PMF). We report 95% confidence intervals based on standard errors clustered at the individual level.