Can a formalization program create dynamic entrepreneurs? Evidence from Brazil

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Abstract

We use matched administrative data from Brazil to study entrepreneurial selection and firm upgrading through the lens of legal form choice. We compare entrepreneurs who enter under the MEI regime—introduced in 2009 to formalize small firms—with those who start limited liability firms. MEI entrepreneurs are negatively selected on education, labor earnings, and prior work experience, consistent with necessity-driven entrepreneurship. In contrast, limited liability founders are positively selected, suggesting stronger opportunity-based motives. We track individuals over time to examine legal status transitions of the firms they create and find that MEI-to-limited liability transitions account for nearly 20 percent of new limited liability firms in 2018, revealing an overlooked path to formal upgrading. Exploiting industry-level MEI eligibility in a difference-in-differences design, we show the program increased firm creation but also displaced some limited liability entries. However, this substitution is more than offset by upgrading among MEI firms that later grow and hire, resulting in a small net positive effect on the creation of successful, job-generating firms.

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1 Introduction

Understanding what differentiates successful entrepreneurs from the rest is a central question for academics and policymakers as start-ups can be an important engine of job creation, innovation, and growth (Haltiwanger et al., 2013; Akcigit and Ates, 2023). The pursuit of entrepreneurs with high potential is especially relevant in developing countries, where governments often seek to incentivize entrepreneurship not only to reduce informality and unemployment, but also as a development strategy (Naudé, 2010). Yet despite ambitious policy efforts to incentivize firm creation, the vast majority of new enterprises remain small and stagnant. Identifying who the successful entrepreneurs are—and how to support them—remains a first-order priority.

One of the central challenges to answering this question is the lack of comprehensive data linking individual- and firm-level information, making it impossible to distinguish the role of entrepreneurial characteristics on firm performance. In many settings, firm-level data lack information on the founder, while labor market data do not track business ownership. Even when data are rich, many studies rely on coarse proxies for entrepreneurship, such as assuming that the highest-earning employee is the founder, which often fail in developing-country settings.

In this paper, we study the experience of Brazil, which in 2009 introduced the *Microempresário Individual* (MEI) program to formalize small firms.[1] We first expand the findings of Levine and Rubinstein (2017) to show that the ownership structure entrepreneurs choose for their company signals the potential of the firm to create jobs and grow and, at the same time, reflects their underlying entrepreneurial ability. We then show that, nevertheless, some entrepreneurs change their legal status throughout a firm's life, as they may be better suited for the different needs firms experience at various stages.

We construct a novel matched dataset that links Brazil's firm registry (CNPJ) to the universe of formal employment records (RAIS) between 2005 and 2019. This linkage allows us to observe firm characteristics—including creation date, legal structure, and payroll—as well as detailed information about firm owners—such as gender, education, formal labor history, and earnings.

[1] The regime significantly reduced entry costs and tax burden for small entrepreneurs, see Farias and Hsu Rocha (2025) for more details.

A key advantage of these data is that they enable us to precisely identify firm owners using administrative ownership records, rather than relying on inferred proxies such as the highest wage.[2] We can also follow business owners over time, observing whether and how their ventures change legal form—something that is rarely possible in other contexts.

Our empirical strategy is divided into two parts. First, we conduct a descriptive analysis of firm entry by legal form, classifying new firms into four categories: (i) MEI, (ii) individual entrepreneurs without limited liability, (iii) individual limited liability firms, and (iv) partnerships. We compare the characteristics of entrepreneurs at the time of firm creation across these categories, focusing on proxies for human capital (e.g., education, managerial experience) and prior labor market outcomes (e.g., employment status, earnings). We then track individuals over time to measure transitions across legal forms—particularly from MEI to limited liability structures—and document how frequently such transitions occur, as well as the characteristics of the entrepreneurs who make them.

We find that MEI entrepreneurs are, on average, individuals who have been unemployed or have been informal workers for some time, earn slightly less than non-entrepreneurs (when employed), and possess less education than the average employee in the economy. Thus, they are *negatively selected* into entrepreneurship on human capital and labor market outcomes. Using the terminology in Schoar (2010), they are *necessity entrepreneurs* as entrepreneurship is an outside option for these individuals. Meanwhile, limited liability firms (both individual and partnerships), which, while representing a smaller share of total firms, account for a disproportionately larger share of job creation. Individuals who create them are also less likely to be employed than the average individual, but they earn twice as much (when employed) as the average non-entrepreneur and show more managerial experience and higher levels of education. Thus, these entrepreneurs are *positively selected* based on human capital and labor market outcomes, suggesting that the pursuit of business opportunities and the potential returns from entrepreneurship are more important drivers for this group.

Firm legal status is also strongly associated with subsequent performance. While on average 45% of entrepreneurs who start at limited liability firms employ workers at some point, less than 4% of MEIs do so. Among employer firms, those with limited liability report payrolls

[2]We depart from the commonly used approach in the literature that assumes that the firm owner or entrepreneur is the highest-earning employee at the time of creation (Azoulay et al., 2020; Babina, 2020; Kerr and Kerr, 2016; Bernstein et al., 2022), we find that this approach works poorly in our setting, as more than 99 percent of firm owners cannot be identified this way.

and average wages several times higher than MEIs. Years as an active entrepreneur are also higher among those who start entrepreneurship at limited liability firms.

One possibility is that entrepreneurs change their legal status throughout a firm's life, as they may be better suited for the different needs firms experience at various stages. For example, an entrepreneur can use the MEI regime to start a firm because it makes entry less costly, but as firms develop and increase employment and revenue, they transition to a limited liability firm. To examine this possibility, we follow entrepreneurs who open a firm under any regime and calculate what percentage of them end up owning a firm under a different legal status. We find that 3.3% of entrepreneurs in limited liability firms switch to owning a MEI as late as eight years after firm opening. Changes between regimes with limited liability (individual and partnerships) are more common. Switching legal status is quite rare for MEI owners, as only 4.5% of them change to another legal status in the same time horizon. Despite this, these "Switchers" accounted for 18% of limited liability firms created in 2018, as MEI is the most popular firm type after its creation. This highlights the advantage of tracking entrepreneurs rather than firms, as we the majority of switchers open new firms rather than changing the firm's legal status.

Second, we implement a differences-in-differences research design exploiting the fact that MEI eligibility is defined at the industry level (CNAE classification). This quasi-experimental variation allows us to estimate the causal effect of the MEI program on firm creation. We document evidence of substitution across legal forms, with some entrepreneurs opting for MEI instead of other structures. However, we find that the program led to a net increase in total firm creation. We also analyzed the effects of the introduction of the MEI program in the creation of successful firms, namely those with more complex legal structures (limited liability) or those that hire employees. We see some evidence on negative effects on the number of successful firms that started as limited liability firms, however, this is more than compensated by the number of firms that start as MEIs and later growth, change their legal status and hire employees. We see small net positive effects of the MEI program on creation of successful firms.

Our analysis yields three main contributions. First, to the measurement of entrepreneurship. A commonly used approach in the literature is to assume that the firm owner or entrepreneur is the highest-earning employee at the time of creation. While this has been found to be a good approximation for the United States (Azoulay et al., 2020; Babina, 2020; Kerr and

Kerr, 2016), and has been used to study Brazil (Bernstein et al., 2022), we find that it works poorly for this country, as more than 99 percent of firm owners cannot be identified this way. We also contribute by including non-employer firms in the analysis, which are often not considered, and demonstrate that they constitute the majority of new firm creation.

Our second contribution is to understanding the motivations underlying entrepreneurship. Individuals start firms for a variety of reasons: some are driven by necessity and the absence of attractive employment opportunities (Herreño and Ocampo, 2023; Poschke, 2013), while others are motivated by the desire to exploit a business opportunity or to "be their own boss" (Hurst and Pugsley, 2011; Hurst, Pugsley, et al., 2015). Building on Levine and Rubinstein (2017), we examine how these distinct motivations are reflected in the legal status entrepreneurs select for their firms. In particular, we leverage the unique features of the MEI regime, which was specifically designed for small businesses, to analyze these patterns.

Our work also contributes to the literature evaluating formalization as a development strategy. Farias and Hsu Rocha (2025) study the same MEI reform and find that newly formalized microentrepreneurs rarely expand, hire workers, or increase earnings. Our findings are consistent with theirs and reinforce the broader view that lowering formalization costs increases registration but delivers limited economic upgrading for most firms. However, we focus on the small but policy-relevant subset of entrepreneurs who may fall under what Ulyssea (2018) describes as "De Soto-type" firms: potentially productive informal businesses held back by high entry barriers. By leveraging longitudinal worker-firm data, we are able to identify the characteristics and labor market histories of entrepreneurs who succeed in transitioning to more complex firm structures and generating jobs. This focus on the selection and trajectories of successful firms links our work to the high-growth firm literature, particularly Goswami et al. (2019), who show that more capable entrepreneurs systematically sort into higher-performing and more complex firms.

2 Institutional Setting and Data

2.1 Legal Status in Brazil

The Brazilian legal framework provides several ownership structures that can be used to establish a business. Most of them are similar to what can be found in the United States, but the most prevalent structure since 2009 is unique to Brazil: the *Individual Microentrepreneur* (*Microempreendor Individual*, MEI). The MEI program was announced in late 2008 and

launched in July 2009. To qualify for the program, an individual must not be an active owner of another firm and the business must be opened in one of the eligible industries.[3]

MEIs have a restriction in terms of size: they must not exceed an annual revenue limit (R$ 36,000, or roughly USD 18,460 in July 2009) and can employ at most one worker, not including the owner. On the other hand, the program greatly reduces the bureaucratic burden by having a flat tax structure – substantially lower than other types of formal firms – and not requiring an accountant – which all other formal firms in Brazil must have – and reducing the monetary and time costs of formal entry. The payment of the flat tax guarantees MEIs the access to Brazil's social security system. Finally, MEI entrepreneurs have unlimited liability.

The World Bank's 2010 Doing Business Report highlights that opening non-MEI firms in Brazil was difficult, taking nearly 120 days (8th longest in the world), 16 different procedures (7th most) and nearly 2,600 yearly hours of tax paying (worst). Starting a MEI is a vastly simpler process: since February 2010, it can be done online and for free, with the whole process usually taking less than a day.[4] Despite some reforms since 2009, the MEI still represents the easiest way of formal firm opening.

A similar legal status to the MEI is that of Sole Proprietorships – which we refer to as *Unlimited Liability Individual Firms*. It does not have the simplified entry and tax structure of MEIs, but also does not have its size limitations, with the only restriction being that the firm has to have only one owner.[5] Since 2009, it is mostly used for entrepreneurs that are ineligible for the MEI, such as liberal professionals (doctors, dentists, lawyers, engineers, among others). However, regulated activities such as nurses are ineligible for this regime.

The other individual legal status in Brazil is that of *Limited Liability Individual Firms*. Contrary to their unlimited liability counterpart, these entrepreneurs must have an initial capital of one hundred minimum wages at the time of opening.[6]

[3] Industries are defined using the *Classificação Nacional de Atividades Econômicas* (CNAEs), which are granular seven-digit codes created by the Brazilian Institute of Geography and Statistics (IBGE). Eligible industries are determined by the *Conselho de Gestão do Simples Nacional*. We turn back to these definitions in Section 4.

[4] See Farias and Hsu Rocha (2025) for a complete timeline of the MEI program. They find that the most significant phase was the one starting in February 2010, which essentially removed entry costs.

[5] Brazil has a simplified tax system called SIMPLES, which, although not as simple as the MEI tax structure, reduces the accounting burden. To qualify, firms must meet an yearly revenue restriction. See Piza (2018) and Alvarez et al. (2022) for further details.

[6] This requirement was for *Empresas Individuais de Responsabilidade Limitada* (EIRELIs), which were substituted in 2021 by *Sociedades Limitadas Unipessoais* (SLUs). The latter does not require an initial capital amount.

To conclude, the other most common firm type in Brazil are *Limited Liability Partnerships*. It must have two or more owners and does not require an initial capital amount nor have size restrictions. Non-individual ownership can also be formed through Corporations, and other entities, which have a different creation process.

Throughout most of this paper, we compare MEIs to limited liability (LL) entrepreneurs and firms, be them individual or partnerships. These three legal status correspond to 85% of private firms opened between 2010 and 2019; when we include unlimited liability individual firms, we get 97% of the total.[7]

2.2 Data Sources

We use a novel database containing administrative employer-employee information coming from RAIS, which we match with administrative records of firm ownership.

RAIS. RAIS is a comprehensive employer-employee database that covers the universe of formal workers in Brazil compiled by the Ministry of Labor. This database contains essential demographic characteristics, such as age, gender, race, and educational level, as well as job characteristics, including salary, occupation, and tenure. Additionally, it provides valuable insights into firms, including sector, number of employees, and incorporation date. Note that, since RAIS covers only formal workers, a firm must have (formal) workers to be included in RAIS. The high-frequency nature of this dataset enables the construction of a panel at the individual level, including the entire formal labor market career. Individuals in RAIS are identified by their full name and unique social identifier (CPF), while firms are identified by their unique tax identifier (CNPJ). These identifiers facilitate the tracking of individuals across different years and the merging of information in RAIS with other datasets, such as the firm registry.

CNPJ Registry. The CNPJ registry, managed by the Brazilian tax authority, records all legally constituted firms in Brazil. Each snapshot provides the most up-to-date information on the current ownership of active firms—though it does not capture ownership changes over time—as well as the last known owners of firms that are no longer active. We have access to 9 snapshots spanning from 2018 to 2019. We use the CNPJ registry to build a

[7] We exclude political parties and candidates – which must register a CNPJ to run for office –, religious institutions and public firms.

comprehensive list of firms established during our study period, along with their respective owners.

Crucially for this study, the CNPJ registry provides the tax identifiers (CPF) and names of the legal owners of firms, which will allows us to match with RAIS. This information is provided in different ways depending on the type of firm. For MEIs, Brazilian legislation requires that the official business name include both the owner's name and CPF.

In a few snapshots, the dataset contains the official names of these firms, which enables us to infer the names and CPFs of MEI owners. Limited liability firms are required to report their *quadro de sócios* (ownership structure), which allows us to access ownership information for these firms. In contrast, unlimited liability individual firms, equivalent to Sole Proprietorships in the United States, are not required to report ownership data. Since we do not have their ownership information, we exclude them from the entrepreneur analysis.[8]

To focus on the comparison between MEIs and limited liability firms, we analyze entrepreneurship in the period from 2005 to 2019, which includes several years before the MEI regime was introduced. In RAIS, we observe individuals that had at least one formal contract as an employee between 2000 and 2019.

2.3 Measurement

We define entrepreneurs as individuals who are legally registered as the owners of a firm. This mapping from firms to entrepreneurs is not 1-to-1. A single firm can be associated with more than one entrepreneur, as it might have multiple owners, and at the same time, a single entrepreneur can own more than one firm. Through this analysis, we focus on the characteristics associated with workers' decisions to start a firm and the type of firm they establish. However, the decision between employee and entrepreneur is not a dichotomous one, as an individual can simultaneously be a firm owner and an employee of another firm.

To observe the demographics and labor market history of entrepreneurs, we merge the two administrative datasets from official Brazilian administrative records: the matched employer-employee database, RAIS, and the firm registry, CNPJ. Details of the matching

[8] Figure 2 shows the stock of firms in the Brazilian economy. In 2008, unlimited liability individual firms were 44% of firms, but their importance decreased to 20% in 2019, ten years after the introduction of the MEI program. Between 2009 and 2019, they accounted only for 11.5% of firm creation. As described in Section 2.1, these are mostly liberal professionals.

procedure can be found in Appendix A. This allows us to create a panel at quarterly level of formal workers in RAIS with their labor market history, demographic characteristics and entrepreneurial decisions. For computational purposes, we select a random sample of one million workers born between 1954 and 1992. This ensures that, by January 1, 2010, they were at least 18 years old, and by January 1, 2019, they were at most 65 years old, capturing workers of working age and before retirement. We do not observe any demographic characteristics in the CNPJ dataset.

2.4 Identifying New Firms and Entrepreneurs

Previous studies such as Azoulay et al. (2020), Babina (2020), Bernstein et al. (2022), and Kerr and Kerr (2016), among others, have attempted to identify entrepreneurs (or founders) as the highest-paid employees at the time of firm creation. While this approximation yields reasonable results for certain countries, such as the United States (Azoulay et al., 2020), we find that for Brazil it fails in two dimensions.

First, because 92% of firms have no employees at birth, while 83% of them have zero employees as late as 5 years after creation (Table 1). Second, because most firm owners do not work at their firm, and even fewer are the highest-paid employee. Only 0.18% of entrepreneurs are formally employed at their firm at creation, and 0.7% 5 years later, while less than 1% of entrepreneurs are the best paid employee at their own firm. This is expected, as there are no tax incentives to be registered as an employee.

Finally, 65.17% of firms have at least one owner who can be found in RAIS at some point. Among MEI and limited liability entrepreneurs with CPF information, 69% are successfully matched to RAIS, as detailed in Appendix A. When we also include entrepreneurs without identifying information, the overall match rate falls to 61.4%. This implies that 38.6% of all owners never appear in RAIS, meaning they have never worked as formal employees, in the private or public sector, including their own firm.[9]

The overall match rate for MEIs is 60.1%, while for limited liability entrepreneurs is 63.1%. While match rates across both types are similar, it could be so for different reasons: MEIs could be more likely to be informal workers, while limited liability entrepreneurs could be more likely to be in entrepreneurial activity for multiple years. In the opposite view,

[9]These numbers roughly match the informality rate in Brazil, which rovers around 25 to 45% depending on the definition and the inclusion of self-employed (Ulyssea, 2018; Engbom et al., 2022).

only 10.8% of workers in RAIS will create a firm at some point: 59.3% MEI, 3.3% limited liability individual firms, and 37.4% partnerships.

Table 1. Legal Firm Owners

	MEI	Other Individual	Partnership	All not MEIs	All
A. Firm Creation					
Openings (in thousands)	14,351	991	4,333	5,324	19,675
(% of Total)	72.94	5.04	22.02	27.06	100
Matched with RAIS (in thousands)	8,635	639	3,548	4,187	12,822
(% of Openings)	60.17	64.46	81.88	78.64	65.17
B. Firm Employment					
Employer at Birth (%)	1.28	24.93	23.09	23.44	8.26
Employer within 3 Years (%)	2.95	42.98	41.98	42.17	15.30
Employer within 5 Years (%)	3.51	45.96	45.51	45.59	16.77
Owner Employed at Birth (%)	0.00	0.31	0.61	0.56	0.18
Owner Employed within 3 Years (%)	0.02	0.96	1.85	1.68	0.54
Owner Employed within 5 Years (%)	0.02	1.25	2.39	2.17	0.70
Owner Best Paid Employee at Birth (%)	0.00	0.17	0.35	0.31	0.10
Owner Best Paid Employee within 3 Years (%)	0.00	0.12	0.26	0.23	0.08

Note: Totals reflect counts of firms that are MEIs or limited liability between 2005 and 2019. "Matched with RAIS" indicates if at least one owner of the firm appears in RAIS at some point. Firms are classified as employers if their CNPJ identifier appears in RAIS. We identify owner employment with their person identifier (CPF), which we are able to obtain from RAIS for all entrepreneurs that appear at least once in it. Other Individual refers to both limited and unlimited liability non-MEI individual firms.

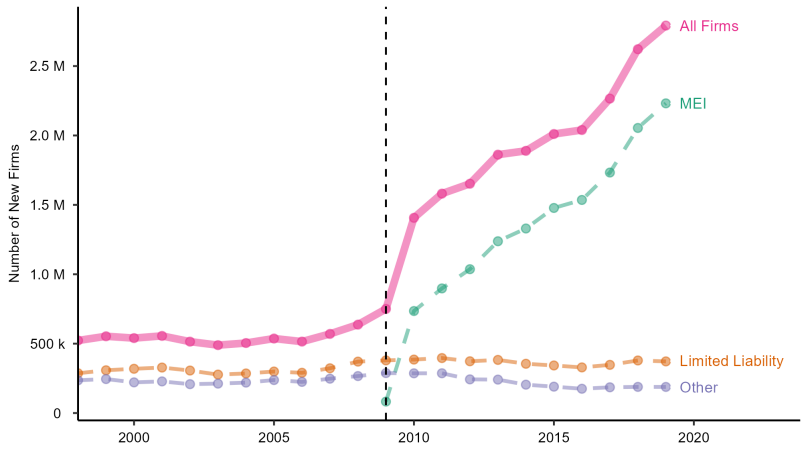
3 Characterizing Entrepreneurs and Firms

Our main argument follows the idea present in Levine and Rubinstein (2017) and Levine and Rubinstein (2018), that the legal status (or ownership structure) of firms serve as an indicator of their underlying motivation. The MEI regime is more likely to be used by *subsistence* entrepreneurs, those that are motivated to establish firms because they lack attractive and well remunerated employment oportunities. In contrast, limited liability firms would be the choice of entrepreneurs motivated by business opportunities they wished to exploit. Of course, in practice there is no dichotomy between these two types, as entrepreneurs can have multiple motivations to establish firms. We show, however, that the type of firm is highly persistent, and that the characteristics of the entrepreneurs that create them, and their performance are markedly different. We argue that the heterogeneity in underlying

motivations is partially explained by the human capital of entrepreneurs: individuals with more education, experience, and wealth are more likely to create limited liability firms, while those with poor labor market prospects are more likely to create MEIs.

Summary Statistics. Figure 1 shows that, since its introduction in late 2009, the MEI regime has been the most commonly used legal status by a wide margin. Even more, as the commodities supercycle ended, the creation of partnerships experienced sustained decrease, while MEIs continued increasing.

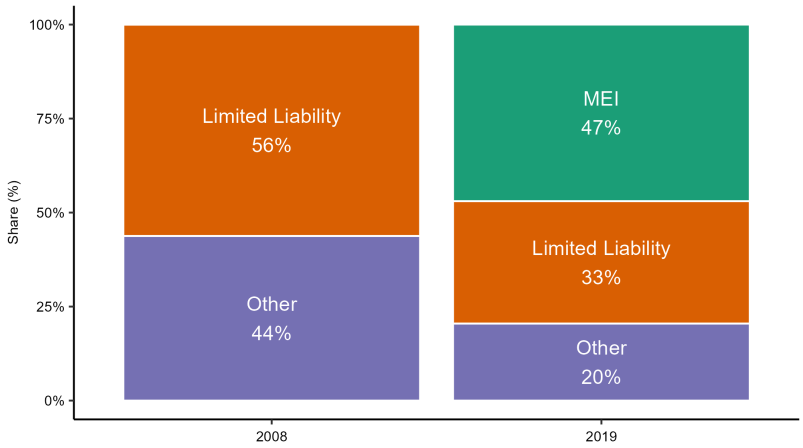
Figure 1. Firm Creation



Note: This figure shows the annual number of new firms created by legal type from 1998 to 2019, measured in millions. The solid line represents the total number of new firms ("All Firms"), while dashed lines show the breakdown by MEI, Limited Liability (Partnerships or Individual), and Other types. The vertical dashed line at 2009 marks the introduction of the MEI regime. The data illustrate the rapid growth of MEIs following their introduction, as well as trends for other firm types over time.

Figure 2 shows the stock of active firms in the economy, distinguishing by legal type. In 2019, only ten years after the introduction of the regime, MEIs constituted 47% of all legal firms in the economy, while limited liability firms accounted for 33%. Moreover, roughly one third of all firms ever registered in the Brazilian CNPJ registry until 2019 – active or closed – have started as MEIs, which further highlights the importance of the MEI program.

Figure 2. Stock of Active Firms in 2008 and 2019



Note: This figure shows the distribution of active firms by legal type in Brazil in 2008 and 2019. MEIs represent the largest share of firms, followed by limited liability firms and other types of firms (e.g., unlimited liability individual firms). The data highlights the rapid expansion of MEIs since their introduction, making them the predominant legal form among active firms.

Demographics. We begin by comparing the characteristics of entrepreneurs—those that set up a firm—versus non-entrepreneurs—those that only have employment history as employees. Table 2 shows summary statistics of these two groups. All variables are computed at the moment of firm creation, and presented as averages over the entire sample period. In Panel A, we can observe that there are not large differences in gender or age between entrepreneurs and non-entrepreneurs, as well as across owners of different types. There are, however, differences in race: black individuals are underrepresented among firm owners, and those who do open firm, are more likely to establish MEIs.

Entrepreneurs are more educated than non-entrepreneurs, as they are 11 p.p. more likely to have a college degree. However, there are notable differences among the types of entrepreneurs. MEI entrepreneurs are negatively selected on education, while limited liability firm owners are positively selected. While 48% of limited liability firms owners have at least a college degree, only 20% of MEIs owners do. At the same time, 63% of MEI owners have a high school degree or less, while 40% of limited liability firms owners do. These summary statistics suggest that MEI entrepreneurs are *negatively selected* on education, while owners of limited liability firms are *positively selected*.

Labor Market Outcomes. Our hypothesis on the different underlying motivations between MEIs and limited liability firms owners also finds some validation in labor market outcomes. There is also a large variation among entrepreneur types: while 24% of MEIs owners are employed at the moment of firm creation, 40% of limited liability firms owners are. Examining the time employed over the last five years reveals a similar pattern: entrepreneurs spend less time employed on average relative to non-entrepreneurs.

In terms of experience, an attribute commonly considered as an integral part of human capital, entrepreneurs of all types have a similar level of potential experience as revealed by their age. There is a slight difference in the time spent as managers: limited firm owners have spent 12% of the five years prior to firm opening working as managers, while MEIs owners 4%. This is in line with the results of Muendler et al. (2025) on the importance of managerial experience for firm creation.

Finally, the combination of higher education and more managerial experience is reflected in wages, as the average wage of limited liability firm owners in the 5 years prior to establishing a firm more than doubles that of MEIs and non-entrepreneurs. Thus, similarly to education, these statistics suggest that MEIs owners face less attractive labor market outcomes, being *negatively selected* on this margin, while the opposite is true for owners of limited liability firms.

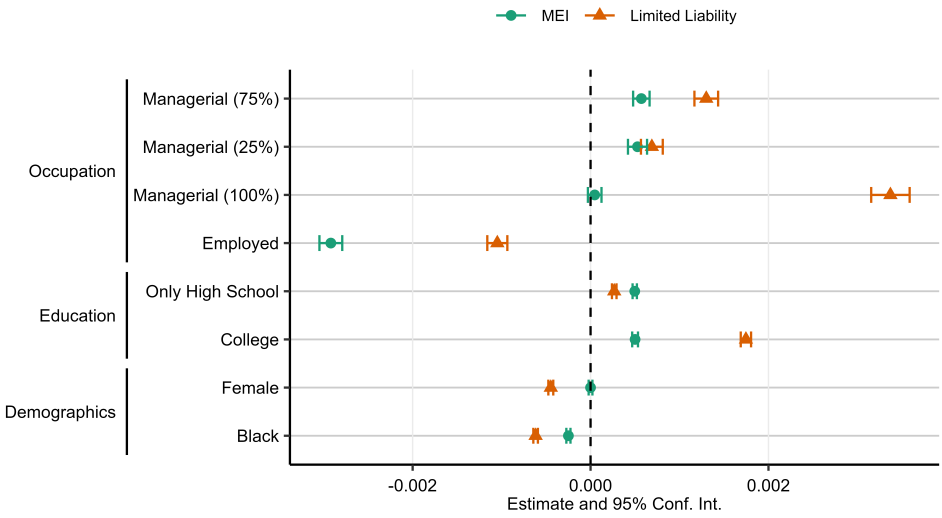
Table 2. Summary Statistics: Entrepreneurs (2005-2019)

Variable	MEIs	LL Individual	Partnerships	All not MEIs	All Entrepreneurs	Non-Entrepreneurs
A. Demographics						
Woman	0.44	0.34	0.39	0.38	0.42	0.44
Black	0.35	0.25	0.21	0.22	0.30	0.40
Age	36.2	37.6	35.6	35.8	36.0	35.7
HS degree	0.63	0.46	0.40	0.40	0.53	0.56
College degree	0.20	0.43	0.49	0.48	0.32	0.21
B. Labor Market Outcomes						
Employed at Birth	0.24	0.35	0.41	0.40	0.31	0.51
Quarters Worked (%)	0.44	0.47	0.47	0.47	0.45	0.46
Average Wage (last 5y)	1,590	3,564	3,913	3,878	2,576	1,679
Wage Change (last 5y)	0.08	0.10	0.11	0.11	0.09	0.07
Time Managerial (last 5y)	0.04	0.15	0.12	0.12	0.07	0.03

Note: Statistics refer to a random sample of one million individuals who were formal workers at some point between 2005 and 2019. *HS degree* and *College degree* are dummies that indicate if an individual has completed high school and college education, respectively. *Employed* is a dummy indicating if an individual is currently employed. *Quarter worked* is the number of months an individual was employed over the five years prior to firm creation, within a five year window. *Average wage* is the average wage over the last five years, conditional on employment. *Time Managerial* is the fraction of a five year window that an individual has spent in managerial occupations.

Figure 3 shows the results of a regression exercise that examines the correlation between firm creation and these demographic and labor outcome variables. The regressions are run separately for MEI firm creation and for limited liability firm creation as outcomes. Confirming the descriptive statistics in Table 2, managerial occupation influences firm creation in a positive way, especially for limited liability firms. Being employed reduces the probability of firm creation, especially for MEIs, which further demonstrates that MEIs are often *survival* entrepreneurs. Education increases the probability of firm creation, while being female or non-white decreases it.

Figure 3. Entrepreneur's Characteristics



Note: The figure displays selected coefficients of a regression of an indicator of firm creation – MEI or limited liability – on the demographics and labor market outcomes of Table 2. In addition to those, we also include controls for time spent in firms of different sizes, for time on agricultural occupations and for wage changes. Statistics refer to a random sample of one million individuals who were formal workers at some point between 2005 and 2019.

Entrepreneur Performance. A natural question is whether these different legal statuses are not only used by entrepreneurs with different characteristics, but also indicative of firm performance *after* it is created. Several studies have found that firms operating under different legal statuses display different performance in terms of size, growth, and productivity, among other outcomes (Glover and Short, 2018; Herranz et al., 2017; Morales, 2025). To assess the performance of entrepreneurs, we build a panel at the entrepreneur-year level, aggregating information on all firms opened by that individual using the procedure detailed in Appendix B. Table 3 displays the results of the performance of these entrepreneurs, classifying individuals by the type of the first firm they created. Entrepreneurs who create a limited liability firm (relative tho those that create a MEI) are much more likely to be employers and employ more workers, in addition to paying higher average wages. They also are more likely to stay in entrepreneurial activity: between 2010 and 2018, they had an active firm for a median of six

years, while MEIs had one for four years.[10] Overall, limited liability entrepreneurs show more dynamism than MEIs. Table D1 does the same exercise at the firm level, and confirms the findings of Table 3.

Table 3. Entrepreneur Performance: Summary Statistics

	Limited Liability	MEIs	Regular MEIs	MEI Switchers	All Entrepreneurs
Number of Entrepreneurs (in thousands)	3754.2	10853.0	10567.6	285.4	14607.1
Employers (%)	44.8	3.8	2.8	42.7	14.4
Number of Employees (Mean)	9.4	2.3	1.0	5.3	8.0
Number of Employees (Median)	4.0	1.0	1.0	3.0	3.0
Payroll (Mean)	17519.1	3137.3	1181.5	7898.3	14652.2
Payroll (Median)	5122.9	1184.2	1062.4	3541.7	3868.8
Average Wage (Mean)	1736.5	1272.2	1181.5	1497.5	1643.8
Average Wage (Median)	1483.1	1137.9	1062.4	1354.5	1405.6
Years Active (Mean)	6.0	4.6	4.6	5.6	5.0
Years Active (Median)	6.0	4.0	4.0	5.5	5.0

Note: This table summarizes entrepreneur performance distinguishing individual by the legal status of the first firm they created. The column "MEI" includes firms that initially registered under the MEI regime and do not exceed the legal limit of one employment. The column "Limited Liability" aggregates limited liability firms, while "All Entrepreneurs" includes all individuals whose firm first was created between 2010 and 2018. "MEI Switchers" are entrepreneurs who started as MEIs and later opened a limited liability firm. An entrepreneur is classified as an "employer" if it reports at least one formal employee and its firm appears in RAIS. Payroll, average wages and employment metrics correspond to the maximum values conditional on having employees. Monetary variables are in 2018BRL. Employment, payroll and survival metrics are winsorized at the 99% level within each type of entrepreneur.

3.1 Transitions Between Firm Types

It is possible for entrepreneurs to establish different firms with distinct legal status. For example, some entrepreneurs might use the MEI regime as a starting point because it simplifies bureaucracy and diminishes taxes. Over time, as they accumulate wealth and/or learn about entrepreneurship and the firm grows, they could change to a legal status more suitable for this new stage. We refer to entrepreneurs whose first firm was a MEI and then opened a limited liability firm as "MEI Switchers". Table 3 also shows the performance of these firms. They are 2.6% of MEIs, but, by creating a limited liability firm afterward,

[10] By restricting firm opening years to the period after 2010, we make the active times between MEIs and Limited Liability entrepreneurs more comparable, but we underestimate the survival time for a typical Limited Liability firm. When considering all firms opened in the period between 2005 and 2019, the average survival time for those firms is 6.3 years, while this number is 4.5 years considering the period between 2010 and 2019 (see Table D1).

they are much more likely to be employers. Relative to entrepreneurs who started as limited liability firms, switchers employ fewer workers and pay slightly lower wages, but they show more dynamism than those that started as MEI, highlighting the use of the MEI regime as a starting point for entrepreneurial activity.

By following entrepreneurs over time, we can assess the timing of their transitions into other types of firms and into non-entrepreneurship (no longer having active firms).[11] Table 4 displays the transitions matrix after four and eight years after firm creation. Note that the sum of each line is at least 100%, as one entrepreneur can own multiple firms at the same time.[12]

After four years, 79.9% of entrepreneurs that start as MEIs remain in the same legal regime, either in the same firm or by opening a new MEI. Switching legal status is quite rare for MEI entrepreneurs, as 3.15% of them are associates of another type of firm within 4 years, and 4.48% within 8 years. Figure D4 and Table D2 show the transitions in further detail. Transitions are more common for owners of limited liability firms. However, most of these transitions occur within the framework of limited liability regimes. For example, 10.17% of entrepreneurs whose first firm was Limited Liability Individual Firms switch to Partnerships after four years. In all cases, transitions to non-entrepreneurship are more common than switching legal statuses.

[11] There is one exception. "MEI Switchers" can switch to a limited liability firm by either *(i)* creating a new firm or *(ii)* changing the legal status of their existing MEI firm. In the latter case, the CNPJ data does not allow us to observe *when* the change happened, only that those that started as MEIs changed their legal status at some point. Table 4 assigns these cases to transitioning in year zero. Switching by creating a new firm is twice as common than by changing the legal status of the original MEI firm.

[12] Each entrepreneur can only have one active MEI, but can own a MEI and a limited liability firm, for example. Muendler et al. (2025) refer to these individuals as "serial entrepreneurs".

Table 4. Entrepreneur Transitions Between Firm Types

	Stayed MEI	LL Individual	Partnership	Non-Entrepreneur
A. After 4 Years				
MEI	79.92	0.70	2.45	17.95
LL Individual	1.41	92.46	10.17	6.29
Partnership	1.23	2.97	91.15	8.02
Non-Entrepreneur	4.88	0.53	3.54	91.48
B. After 8 Years				
MEI	61.19	0.93	3.55	35.53
LL Individual	1.19	91.59	17.41	6.60
Partnership	2.16	3.92	82.85	15.03
Non-Entrepreneur	7.70	1.37	6.84	85.20

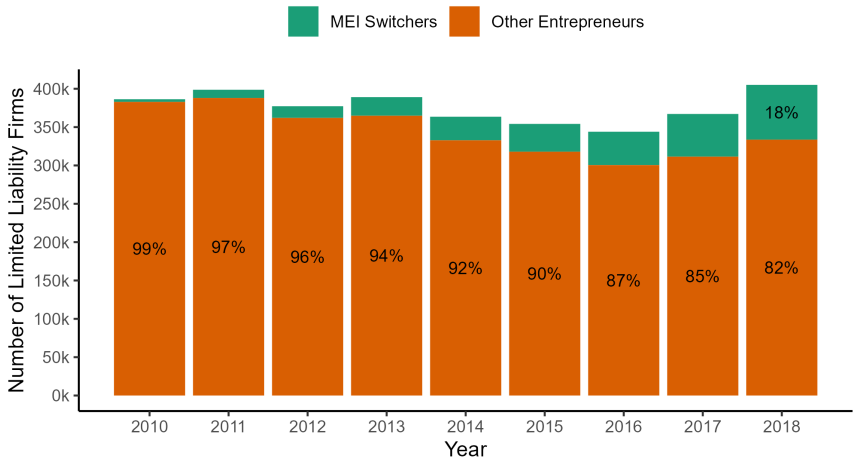
Note: Transitions calculated based on all entrepreneurs in 2010–2018, the last year where we have the full CPF information for MEIs in the CNPJ data. Entrepreneurs are classified by the legal status of the first firm they created. The percentage of non-entrepreneurs is calculated as a residual (if the entrepreneur is not the owner of an active MEI or limited liability firm), so may include entrepreneurs that transitioned to unlimited liability individual firms. For the last line in each panel, we take a sample of workers which are not firm owners in RAIS between 2010–2015 and follow their outcomes. Further details are in Appendix B.

Despite being a small percentage of the total MEIs, "MEI Switchers" account for a relevant portion of firm creation, since MEIs account for the majority of firms in Brazil (see Figure 1 and Figure 2). Figure 4 decomposes the number of new firms per year, highlighting the number of firms which had an owner which opened a MEI in the same year or in prior years.[13]

In 2018, 18% of Limited Liability Firms were opened by entrepreneurs who were previously MEIs, with their share growing over the years. Figure 4 highlights that an important portion of firms are opened by entrepreneurs which used MEI as a starting point and outgrew its size constraints or gained sufficient experience to open a bigger firm.

[13] For MEI Switchers who remain in the same CNPJ, we do not observe when they changed their legal status. For these entrepreneurs, we assign uniform probability of switching to all years after firm creation. For example, for a MEI created in 2012 that changed its legal status, we assign it a $1/7$ probability that it switched in 2012, $1/7$ in 2013, ..., and $1/7$ in 2018.

Figure 4. Limited Liability Firm Creation and MEI Switchers



Note: This figure shows the annual number of new Limited Liability Partnerships and Limited Liability Individual Firms between 2010 and 2018, with the number of firms where at least one owner was previously a MEI. We exclude firms opened in 2019 because we do not have information on the full CPF of MEIs. Further details are in Appendix B.

What are the characteristics of these "MEI Switchers"? Do they differ from entrepreneurs who stayed as a MEIs and entrepreneurs who were not previously MEIs? Using the information in RAIS, we can answer these questions for entrepreneurs who at some point were formal workers. We show the results in Table 5.

At the time of their MEI creation, Switchers are less likely to be female and black, younger and more likely to have a college degree relative to those that did not switch ("Regular MEIs"). Switchers are also more likely to have been formally employed in the five years prior to firm opening, have more time in managerial tasks, have higher wages and attain bigger wage growth.

Relative to owners of Partnerships and Limited Liability Individual Firms ("All not MEIs"), Switchers are younger and less educated. They also have worse labor market outcomes in the five years prior to firm opening, with the exception of bigger wage growth.

Table 5. Characteristics of MEIs, Switchers and All Entrepreneurs

Variable	Regular MEIs	MEI Switchers	All not MEIs	Diff. to Regular	Diff. to not MEIs
A. Demographics					
Woman	0.44	0.37	0.38	-0.070***	-0.013***
Age	38.1	37.3	35.8	-0.727***	1.548***
Black	0.36	0.27	0.22	-0.087***	0.055***
College degree	0.19	0.35	0.48	0.160***	-0.133***
HS degree	0.64	0.55	0.40	-0.096***	0.143***
B. Labor Market Outcomes					
Quarters Worked (%)	0.35	0.37	0.47	0.021***	-0.100***
Time Managerial (last 5y)	0.03	0.05	0.12	0.027***	-0.071***
Average Wage (last 5y)	1,211	1,793	3,878	581.8***	-2084.6***
Wage Change (last 5y)	0.06	0.09	0.11	0.026***	-0.021***

Note: Comparison of means between individuals who started as MEIs and later opened another type of firm (Partnerships or Limited Liability Individual Firms), and a sample of those who remained as MEIs ("Regular MEIs"). All groups include only individuals that were in RAIS at some point. The table reports group means, the difference in means with significance stars (*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$), and the standard error of the difference. Further details are in the end of Appendix B and variable construction is as detailed in the notes of Table 2.

The use of MEI as a starting point for entrepreneurial activity is also highlighted in the performance of firms opened by Switchers. To compare the performance of Regular and MEI Switchers, we build a panel at the entrepreneur-year level, aggregating information on all firms opened by that individual. Table 6 shows the performance of entrepreneurs whose first firm was a MEI, and hence used the regime as a starting point for entrepreneurship.

Switchers – that is, entrepreneurs who later opened a limited liability firm – are much more likely to be employers and have bigger firms in terms of payroll and number of employees than Regular MEIs. They also pay higher average wages. Moreover, they engage in entrepreneurial activity for longer: between 2010 and 2018, a Switcher had an active firm for a median of five years, while Regular MEIs had one for four. However, firms from Regular MEIs survive slightly longer, on average.

Table 6. Performance of MEIs: Regular and Switchers

	Regular	Switchers
Number of Entrepreneurs (in thousands)	10,628.5	193.3
Employers (%)	2.9	40.1
Number of Employees (Mean)	1.0	5.9
Number of Employees (Median)	1.0	3.0
Payroll (Mean)	1189.0	8996.9
Payroll (Median)	1068.2	3863.4
Average Wage (Mean)	1189.0	1522.6
Average Wage (Median)	1068.2	1367.2
Survival Time (Mean)	3.8	3.5
Survival Time (Median)	3.5	3.2
Time Active (Mean)	4.6	5.4
Time Active (Median)	4.0	5.0

Note: The table shows performance information for entrepreneurs whose first firm was a MEI between 2010 and 2018. Variable construction is as in Table 3. Details on identifying Switchers are in Appendix B.

Table 7 further decomposes entrepreneurs whose first firm was a MEI between Regular, Switchers and Grown – that is, individuals who remained in the original MEI, but changed its legal status. We see that Grown MEIs are more likely to be employers than Switchers, but their firms are smaller on average. On average, they also have an active firm for longer.

However, entrepreneurs who changed the legal status of their original MEI and also opened other limited liability firms are the ones that are most likely to be employers and have bigger firms. They are also the most likely to engage in entrepreneurial activity.

Table 7. Performance of MEIs: Regular, Switchers and Grown

	Regular	Grown	Switchers	Switchers + Grown
Number of Entrepreneurs (in thousands)	10,568.3	91.9	183.1	10.2
Employers (%)	2.8	48.2	38.1	76.0
Number of Employees (Mean)	1.0	4.2	5.6	9.4
Number of Employees (Median)	1.0	2.0	3.0	5.0
Payroll (Mean)	1181.6	5967.2	8400.8	14336.2
Payroll (Median)	1062.5	3075.8	3667.1	6433.8
Average Wage (Mean)	1181.6	1453.1	1516.7	1575.1
Average Wage (Median)	1062.5	1334.5	1360.9	1432.2
Survival Time (Mean)	3.8	5.3	3.4	4.5
Survival Time (Median)	3.4	5.1	3.1	4.4
Time Active (Mean)	4.6	6.0	5.4	6.9
Time Active (Median)	4.0	6.0	5.0	7.0

Note: The table shows performance information for entrepreneurs whose first firm was a MEI between 2010 and 2018. Variable construction is as in Table 3. Details on identifying Switchers are in Appendix B.

4 The Net Effect of the MEI Program on Dynamic Entrepreneurs

As Figure 1 shows, MEIs were responsible for the majority of firm openings since the creation of the program, while yearly limited liability firm creation stagnated and declined. At the same time, Table 3 shows that MEIs are less likely to be employers and, when they are, hire fewer workers at lower salaries. Taken together, these patterns cast doubt on the effectiveness of the MEI program in promoting the creation of dynamic firms and entrepreneurs. To shed light into this question, we use our entrepreneur-level panel to estimate the effect of the MEI program on the number of new entrepreneurs and on the amount of them that create "successful" or "dynamic" firms, as measured by their legal status and employment. For this classification, we consider three different measures of entrepreneur "success" over different time frames: creating a limited liability firm; being an employer; and employing at least two people at some point.

We follow Farias and Hsu Rocha (2025) and use a difference-in-differences at the industry

level.[14] While the specification is similar to theirs, we depart from them by considering the number of new entrepreneurs instead of firms. More specifically, we aggregate our entrepreneur information to the industry-month-year level, classifying entrepreneurs by the industry, type and month of the first firm they opened.[15] By aggregating employment and firm creation at the entrepreneur level – and therefore considering all firms the individual has opened –, we focus on answering if the MEI potentially served as a starting point for some entrepreneurs who later went on to open more and bigger firms. Appendix C goes into further detail on the comparison of our results with Farias and Hsu Rocha (2025). We then use a difference-in-differences specification comparing the number of new (successful) entrepreneurs in industries that were eligible for MEI creation relative to those where MEIs were not allowed.[16]

Our panel has 367 treated and 939 control industries and runs from January 2005 to December 2017 (we exclude the last two years of data for entrepreneurs to be able to meet our "success" criteria). To have a balanced panel, we keep industry-year-months observations where no new (successful) entrepreneurs start. To estimate our difference-in-differences design, we run the following two-way fixed effects specifications for industry i (seven-digit CNAEs) in sector s (two-digit CNAEs) at time t:

$$Y_{ist} = \alpha_i + \phi_{st} + \beta \cdot D_{it} + \varepsilon_{ist} \tag{1}$$

$$Y_{ist} = \alpha_i + \phi_{st} + \sum_{t \neq \text{June 2009}} \beta_t \cdot E_i + \varepsilon_{ist}, \tag{2}$$

where Y_{ist} is the outcome of interest – the number of new (successful) entrepreneurs that started in industry i at time t – α_i are industry fixed effects and ϕ_{st} are aggregate sector-time fixed effects, capturing within-sector aggregate trends. D_{it} is a dummy variable indicating if

[14] We define industries using the *Classificação Nacional de Atividades Econômicas* (CNAE). CNAEs are granular seven digit codes that are used to assign eligibility for the MEI program, with the first two digits designating aggregate sectors. For further details, see Farias and Hsu Rocha (2025).

[15] 87% of entrepreneurs and 94% of MEIs in our panel open only one firm. For those that open two or more firms, 27% of entrepreneurs and 32% of MEIs specialize in only one seven-digit CNAE. Looking at two-digits CNAEs, which define aggregate sectors, the numbers are 40 and 46%, respectively. While we lose this granularity by classifying entrepreneurs based on the industry of the first firm, the classification is consistent with our focus on the MEI program as a potential starting point for more dynamic entrepreneurship.

[16] Eligibility for the MEI program is determined by the *Conselho de Gestão do Simples Nacional* (CGSN). While the eligibility criteria has slightly changed over the years, we follow Farias and Hsu Rocha (2025) and use only the initial set of eligible industries, available in CGSN Resolution No. 58 from April 28, 2009.

industry i was treated in period t, while E_i indicates industry eligibility. We cluster standard errors at the industry level and estimate the equations with OLS.

While E_i is constant within an industry, D_{it} is not. We assign it to eligible CNAEs starting in February 2010, which, despite not being the start of the MEI program, is when MEI creation took off due to the near-zero entry costs (Farias and Hsu Rocha, 2025). We do not consider July 2009 as the start of the treatment because MEIs were not required to report their name and CPF information as firm legal names until February 2010, and so we fail to identify most of MEI entrepreneurs in this period. Figure C1 and Figure C2 show that, with the exception of this early period, our results generalize to the number of firms and entrepreneurs, without restricting to those with identifying information or only the first firm opening.

Equation 1 is a static specification, while Equation 2 is an event study which allows us to assess the dynamic effects of the MEI program between January 2005 and December 2017 relative to June 2009. The identification assumption in both cases is that of parallel trends: in the absence of the MEI program, the number of new (successful) entrepreneurs in treated and control industries would have the same trajectory. While untestable by definition, Equation 2 allows us to assess its plausibility with pre-trends tests.

DiD Results. Our first set of results are in Table 8, where we report the coefficients β from Equation 1. We also include the number of new successful entrepreneurs according to three different measures: ever creating a limited liability (LL) firm; ever employing someone; or ever employing more than two people at any given time. To get the results segmented by type of firm, we classify entrepreneurs based on their first firm and separately aggregate the number of new entrepreneurs per industry-time that started as MEIs and in limited liability firms. Therefore, we have three samples for each set of outcomes: MEI, limited liability and their sum.

Table 8. Static DiD Estimates

			Number of New Successful Entrepreneurs					
	Number of New Entrepreneurs		Create a LL Firm		Employ at Least One		Employ at Least Two	
	Pre-Mean	β	Pre-Mean	β	Pre-Mean	β	Pre-Mean	β
LL + MEI	35.6	159.64***	35.6	1.25	19.9	2.90	16.3	-1.79
		(28.20)		(3.54)		(2.16)		(1.93)
LL	35.6	-2.45	35.6	-2.45	19.9	-3.79	16.3	-3.52*
		(3.68)		(3.68)		(2.36)		(2.04)
MEI	0.0	162.09***	0.0	3.70***	0.0	6.69***	0.0	1.74***
		(28.68)		(0.57)		(1.04)		(0.26)

Note: The table shows the estimation of Equation 1 using as outcomes the number of new entrepreneurs and different success measures. Pre-period means are calculated until January 2010. Standard errors clustered at the industry (seven-digit CNAEs) level. By definition, the LL coefficients on the number of new entrepreneurs and "create a LL firm" are same. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

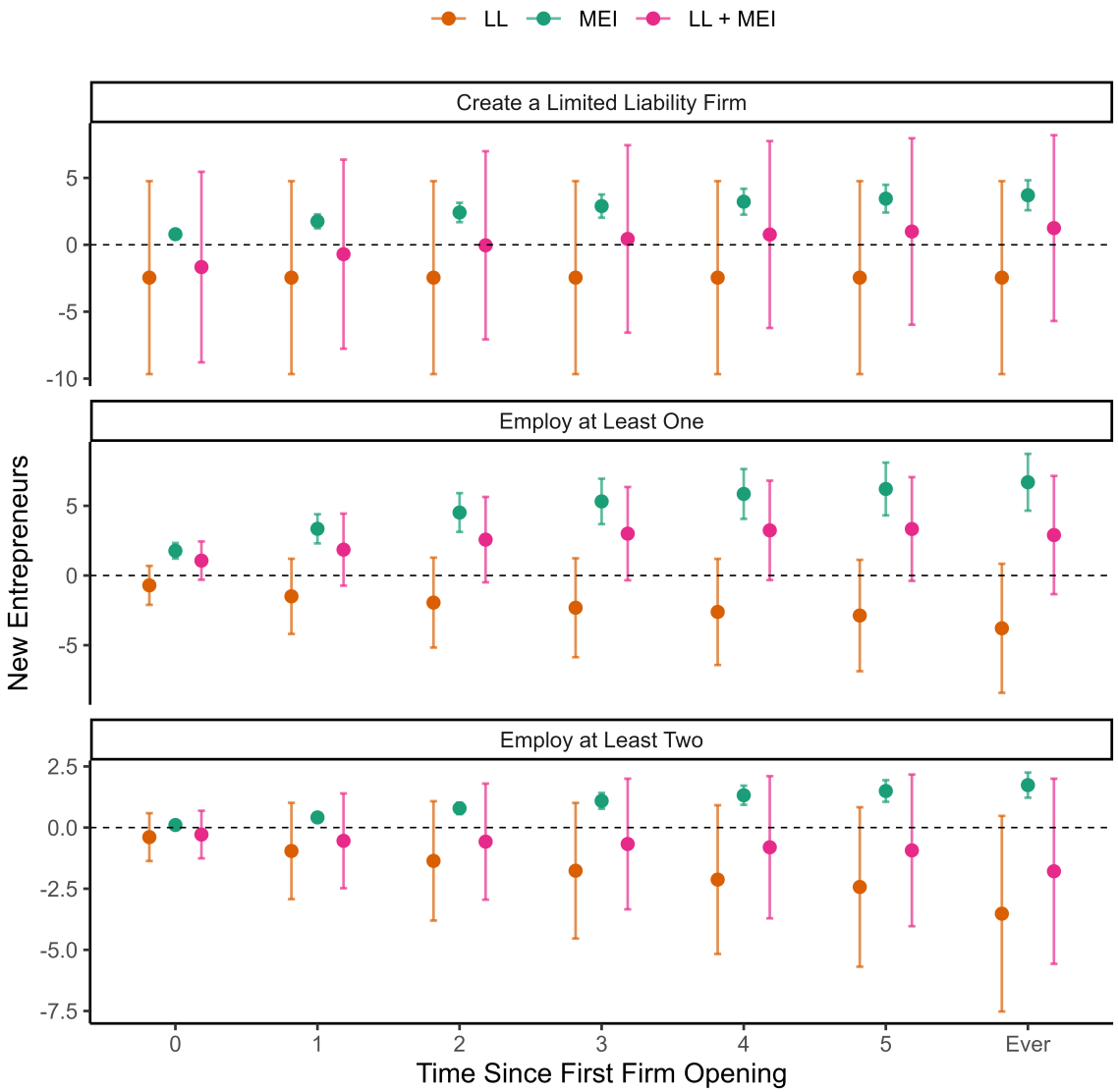
Consistent with Figure 1, the first row shows that MEI program is associated with a large increase in the number of new formal entrepreneurs, while the decrease in the number of new entrepreneurs who start in LL firms is not significant. Despite this, the net effect of the program in the number of new successful entrepreneurs is statistically indistinguishable from zero in all measures considered. It is worth noting that these statistical zeros are not precisely estimated, reflecting large standard errors from our year-month-sector fixed effects.

The second and third rows indicate that potential entrepreneurs may have substituted between firm types: the boom in new MEIs is associated with a smaller decline in the number of entrepreneurs that choose to start in a limited liability firm. The same is true for the number of successful entrepreneurs, which is particularly apparent considering those that employ at least two people, surpassing the limit of the MEI program of at most one worker. Indeed, this is the only metric where the decrease in the number of successful entrepreneurs that start in limited liability firms is significant at the 10% level.

Heterogeneity in Time. Despite this net effect being null and even slightly positive, MEIs may take longer to grow than entrepreneurs that start in limited liability firms. To assess these dynamics, we estimate the effects of the number of new successful entrepreneurs in Equation 1 considering different time limits for success. For example, instead of considering those that ever employ someone as successful, we restrict the classification to those that

employ a worker within the first year of being an entrepreneur, within the first two years, and so on. Figure 5 shows the results.

Figure 5. DiD Heterogeneity in Time for Success



Note: This figure shows the estimates of β from Equation 1 by restricting the time horizon from the first firm opening for classifying entrepreneurs as successful.

Especially for the measures of creating a limited liability firm and being an employer, Figure 5 shows there is an aggregate catch-up from MEIs over the years, with the pink

coefficients from total firm opening ("LL + MEI") trending upwards. However, MEIs do not catch-up when considering employment of at least two people, which would require these entrepreneurs to open another firm or switch the legal status of the original MEI, i.e., become Switchers. We note that we lack statistical precision to distinguish most estimates from zero at the 95% level.

Dynamic Effects. We now move on to Equation 2, plotting the estimates for β_t alongside 95% confidence intervals in Figure 6. Focusing first on the number of new (successful) entrepreneurs who start in limited liability firms, we have some violations of pre-trends – especially on the number of new entrepreneurs and on the amount that start a limited liability –, although most coefficients are not statistically distinguishable from zero.

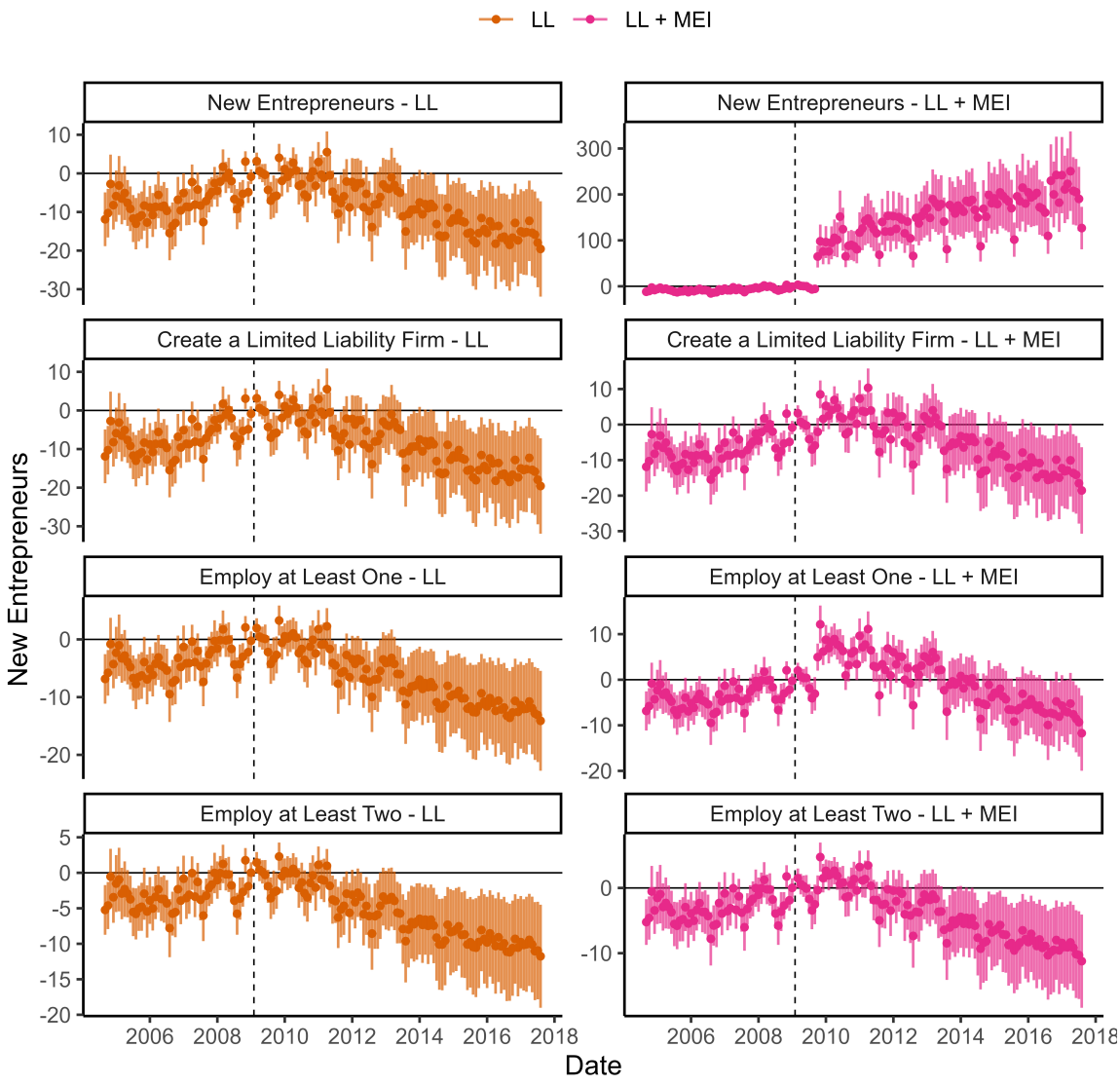
We see that the MEI program – more specifically, the phase starting in February 2010 that nearly removed entry costs – had an immediate impact on the number of new entrepreneurs. Additionally, industries where MEIs were allowed had a bigger number of successful entrepreneurs in the beginning of the program, with the effect decreasing over time. The decrease was driven both by successful limited liability entrepreneurs and MEIs.

We hypothesize that there may have been a compositional shift in entrepreneurs that start in the MEI program. At first, individuals that were at the margin of entrepreneurship and had the ability, but not the resources, to start a firm were the most benefited. In the nomenclature used by Ulyssea (2018), these would be "De Soto" entrepreneurs, kept out of formal entrepreneurship due to its larger entry costs and the most benefited in counterfactuals policies that equalize entry costs in the formal and informal sector. As the program went on, individuals with lower entrepreneurial ability and lower propensity to create dynamic firms may have joined, which explains the decrease in the number of successful MEIs over time.

Heterogeneity by Groups. We are able to conduct heterogeneity in two ways. First, we can distinguish entrepreneurs who were and who were not matched with RAIS. Entrepreneurs that were not matched were not formal employees at any point between 2000 and 2019, reflecting either serial entrepreneurship characteristics or low human capital and persistence in the informal sector.

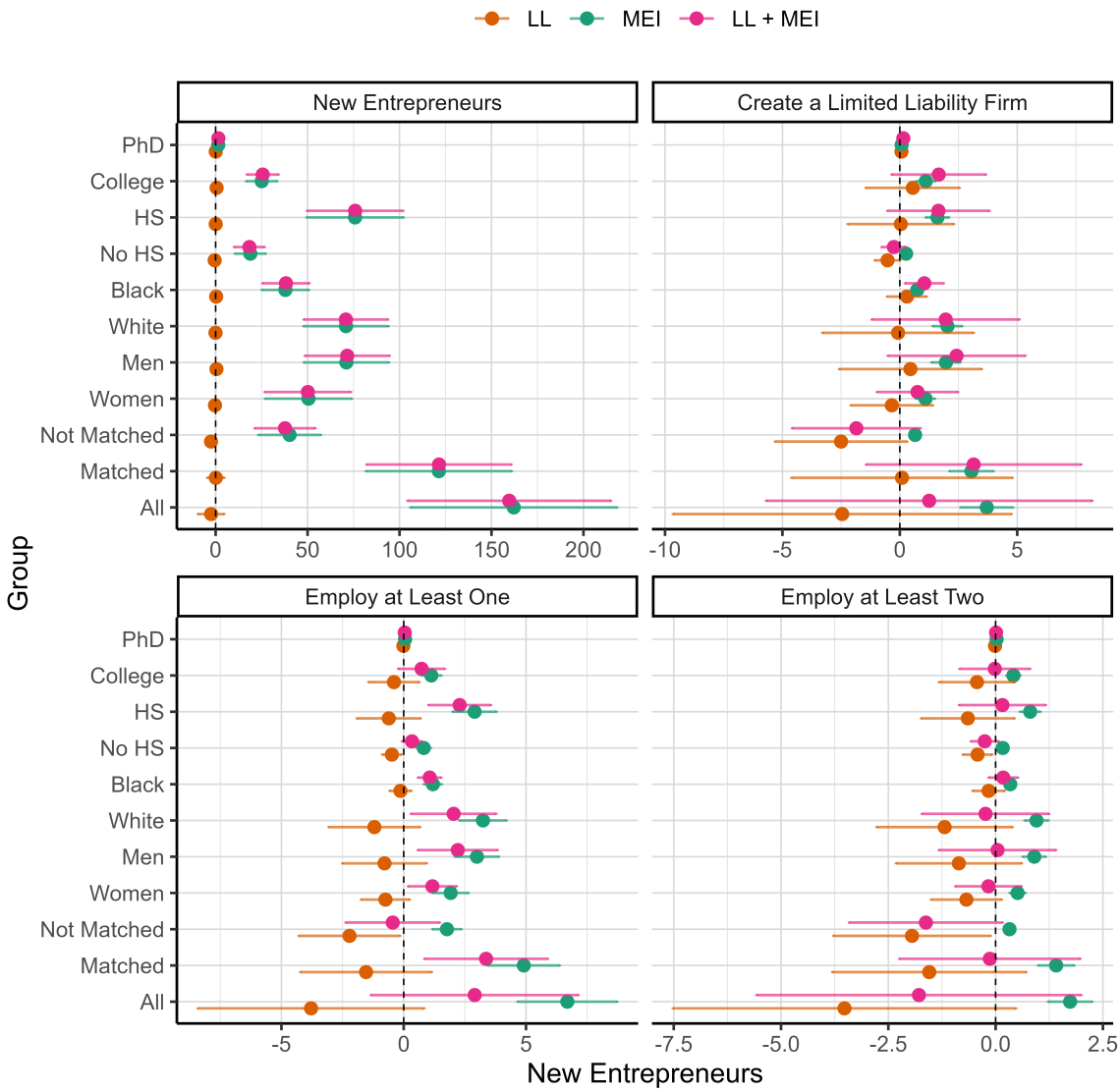
For those that we can match with RAIS, we can distinguish by sex, race and education. Therefore, we first filter our entrepreneur dataset to the group of interest and then aggregate to the industry-time level; the results for Equation 1 are in Figure 7.

Figure 6. Event Studies



Note: This figure shows the estimates of β_t from Equation 2. Each facet considers a different combination of type of first firm (limited liability or any firm) and outcome. We omit the results from MEIs as all pre-trends coefficients until July 2009 are zero.

Figure 7. DiD Heterogeneity by Individual Characteristics



Note: This figure shows the estimates of β from Equation 1 by first restricting the data to only entrepreneurs of a given group, then aggregating to the industry-month-year level.

The net effect of the MEI program on new successful entrepreneurs is entirely driven by the matched sample, which are about 70% of the individuals in the data used for this analysis.[17] Within these entrepreneurs, the effect is larger for white males with high school education – that is, those with some education, but not the most qualified in terms of schooling. The

[17]We plan to work on this by conducting heterogeneity on the degree of attachment with the formal sector.

negative results on the unmatched sample suggest these individuals are less likely to be perennial entrepreneurs who were never formal employees.

Summary. Overall, our results indicate that the MEI program was successful in promoting the formalization of new entrepreneurs. However, these entrepreneurs are less likely to become employers and grow into more dynamic firms. Combining these two fronts, our difference-in-differences analysis shows that the aggregate impacts of the MEI program on dynamic firms were slightly positive, but less so when considering the creation of bigger entrepreneurs, that is, who employ at least two people across all their firms.

When varying the time horizon for considering entrepreneurs as successful, we see that, in the aggregate, MEIs' performances catches-up with limited liability entrepreneurs as time passes, with the exception of employment at least two workers. This may be because it requires MEIs to become Switchers, i.e., open another firm or change the legal status of their MEI CNPJ. However, we lack statistical precision in most of our estimates.

Our heterogeneity results suggest that these positive effects were concentrated in the beginning of the MEI program – which suggests a compositional shift in MEI entrepreneurs towards individuals less likely to construct more dynamic firms – and on those who were formal workers at some point. Within this group, the effects were bigger for white males with at most high school education.

5 Conclusion

[to do]

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Appendices

A Matching Procedure Between RAIS and CNPJ Data

This appendix describes the procedure used to match firm owners from the ownership dataset (CNPJ) to individuals in the labor registry (RAIS). First, the ownership data were restricted to firms created from 2000 to 2019. Within this subset, only records containing information on CPF and name of the owner were retained. Because Sole Proprietorships/Unlimited Liability Individual Firms ("Empresários Individuais") that are not MEIs lack owner information, they were excluded. After these filters, 77.5% of entrepreneurs in the CNPJ dataset remained.[18] Note that CPFs in the ownership data appear in one of two forms: complete (11-digit) CPFs for MEIs and masked CPFs (e.g., ***123456**) for limited liability entrepreneurs.

We aggregate RAIS data for the years 2000 to 2018, retaining only the CPF, name, and municipality. We exclude CPFs that are mapped into different names in the RAIS dataset, as measured by differences in at least two of the name's first three letters. For both RAIS and CNPJ data, we clean names by removing special characters, extra white spaces, upper case letters and common Brazilian prepositional particles such as "de", "da(s)" and "do(s)".

The matching procedure proceeded in four main stages. First, an exact match was performed on the complete (11-digit) CPFs. Occasionally the same individual (same CPF) appeared in RAIS with slightly varying names (e.g., "thiago santos" vs. "tiago santos"). In these cases, we keep only the name that has the lowest Jaro–Winkler distance (with prefix parameter equal to 0.1) from the matched name in the ownership data. We exclude matches with different names in the CNPJ and RAIS datasets, as measured by differences in at least two of the name's first three letters. In the end, we have a set of uniquely matched observations.

Next, any CNPJ records that had not matched on complete CPF were stripped of their unmasked CPFs, leaving only the masked form (***123456**). These masked CPFs, combined with exact names, were used to perform a second round of matching. While the masked CPF does not uniquely identify an individual, it is highly unlikely that two different persons would share both the same six digits and the same exact full name. Newly matched observations were appended to the already matched dataset.

[18] Throughout the paper, we exclude political candidates – which must register a CNPJ to run for office –, religious institutions and public firms. As mentioned in the main text, the types of firms we consider are MEIs, Sole Proprietorships and Limited Liability Firms (both individual and partnerships).

A third stage employed fuzzy matching to capture minor name variations. At this point, still unmatched ownership records (with masked CPFs) were paired to RAIS entries with the same masked CPF, after which the Jaro–Winkler distance between names was computed. Any pairs with distance below 0.1 were considered valid matches and were added to the matched dataset, again retaining only the single best match for each CPF to avoid duplicates.

The final stage targeted the remaining unmatched cases by checking whether the masked CPF and municipality were identical in both datasets and whether the name initials also aligned. Those pairs were then merged into the matched dataset, and once more, any duplicates were resolved with the same single-best-match rule based on name similarity. After implementing these four stages, we were able to match 69% of the sample of MEI and limited liability entrepreneurs who opened a firm between 2000 and 2019 and had name and CPF information.

B Identifying Transitions Between Firm Types

To calculate the transitions in Table 4, we construct a panel of the universe of firm owners in Brazil based on our snapshots of the CNPJ data. As mentioned in Appendix A, we have full information on the 11-digit tax identifiers (CPFs) for MEIs, but only a masked version (e.g., ***123456**) for non-MEIs.

For this reason, we can't use the CPF as an identifier for the panel. To identify entrepreneurs across time and types of firms, we use a combination of their first and second name, excluding prepositional particles, with the middle CPF digits. For example, an entrepreneur named "José da Silva" with masked CPF ***123456** has an ID of `jose_silva_123456`. We choose this name combination because it did better on Type-I and Type-II errors on the subset of MEIs, which can be calculated since we have their full CPF information.

Specifically, we built IDs using several combinations of first, second and last name and the middle CPF digits. Given the full CPFs for MEIs, we can calculate, for this subset of entrepreneurs, the rate of Type-I and Type-II errors. Type-I errors (false negatives) occur when a CPF is associated with multiple IDs, which can happen if the entrepreneur changes their name (due to marriage or typos, for example). Type-II errors (false positives) occur when a single ID matches with multiple CPFs, that is, entrepreneurs with same names and middle CPF digits. These results are in Table B1. IDs with first and second name have the lowest sum of errors, with both rates being below 0.11%. Using these IDs, we compute the transition numbers in Table 4.

Table B1. Type I and Type II Errors for MEIs

Matching Method (with Middle CPF Digits)	Type I Rate (%)	Type II Rate (%)
First and Second Name	0.03	0.11
First and Last Name	0.15	0.11
First Name and Second Initial	0.02	0.33
First Name and Last Initial	0.14	0.41
First Name Only	0.01	2.77
Last Name Only	0.15	9.69

Note: Error rates calculated based on all MEIs in 2010–2018, the last year where we have the full CPF information for MEIs in the CNPJ data. "Initial" refers to only using the first letter of the name. Results are in percentage terms, so should read 0.03%, 0.13% and so on.

We focus on the comparison between MEIs and Limited Liability Firms (Partnerships or Individual) because we only have some CPF information for approximately 6% of Unlimited Liability Individual Firms in our sample period. For this reason – and to maintain consistency with our main analysis –, we drop them from our transition analysis. We also only have the name and full CPFs for MEIs between 2010 and 2018, so focus on firms opened in this period.

To compute the transitions to non-entrepreneurship, we construct an indicator if the individual is the owner of any active MEI or limited liability firm t years after opening their MEI; if not, we classify them as Non-Entrepreneurs, regardless of their employment status. Due to the lack of CPF information, those that transitioned to Unlimited Liability Individual Firms also fall into this category.

To compute the transition numbers for non-entrepreneurs, we start from the matched dataset described in Appendix A and sample workers which are not firm owners between 2010 and 2015. We build their IDs following the procedure above and follow their firms in the CNPJ data (if they exist).

We define as "MEI Switchers" those entrepreneurs that started as MEIs and opened a limited liability firm afterwards. Given that we have their full CPF information in the CNPJ data, we use that to match with RAIS, which has their demographic and labor market characteristics. Importantly, Table 5 only contains information on switchers that appeared in RAIS, i.e., that were formal workers at some point.

A caveat with our analysis is that MEIs can switch to opening a limited liability in two ways: either by creating a new firm – which generates a new firm identifier (CNPJ) – or by changing the legal status of the existing MEI. In the second case, we do not observe *when* the change happened, only if it occurred. Table 4 classifies it as the type of firm the MEI switched to it. In this case, all switches are coded as occurring in year zero. Figure 4 assigns equal probability of switching to each year the MEI has been open.

C Comparison with DiDs of Farias and Hsu Rocha (2025)

This appendix compares our results in Section 4 with those from Farias and Hsu Rocha (2025). For comparability, we restrict attention to their sample period of January 2005 to December 2015.

First, and as mentioned in the main text, our focus is on new entrepreneurs, and not firms. Additionally, we restrict attention to entrepreneurs with identifying information, which does not allows us to assess the first phase of the MEI program between July 2009 and January 2010, where MEIs were not required to disclose their full name and CPF.

Another difference is that we focus on outcomes in levels, while their main focus is on logs, although they have robustness tests in that regard. In those tests, their pre-trends coefficients are less well-behaved, but most of them are insignificant (their Figure A4).

We suspect the main difference is in how we deal with CNAEs without firm entry. We impute zeros in order to have a balanced panel, which leads to those observations being dropped when we use outcomes in logs. When we do so, our number of observations closely matches the 143,433 observations Farias and Hsu Rocha (2025) have between January 2005 and December 2015. In our panel, 61,112 industry-month-year triples have zero new entrepreneurs, while 142,624 have positive entries.

Figure C1 and Figure C2 show the results on firm entry and on new entrepreneurs, without restricting for those with identifying information or first-time entrepreneurs and using July 2009 as the treatment date (and June 2009 as the reference for the dynamic specification). Outside of the period between July 2009 and January 2010, the results are very similar. Figure C3 plots the β_t coefficients in Equation 2 using log as outcomes and dropping all zeros. Again, outside of the second semester of 2009, the results both in trends and magnitudes closely follow those of firm entry in Figure 2 of Farias and Hsu Rocha (2025). However, there are clear pre-trends in the number of new successful entrepreneurs.

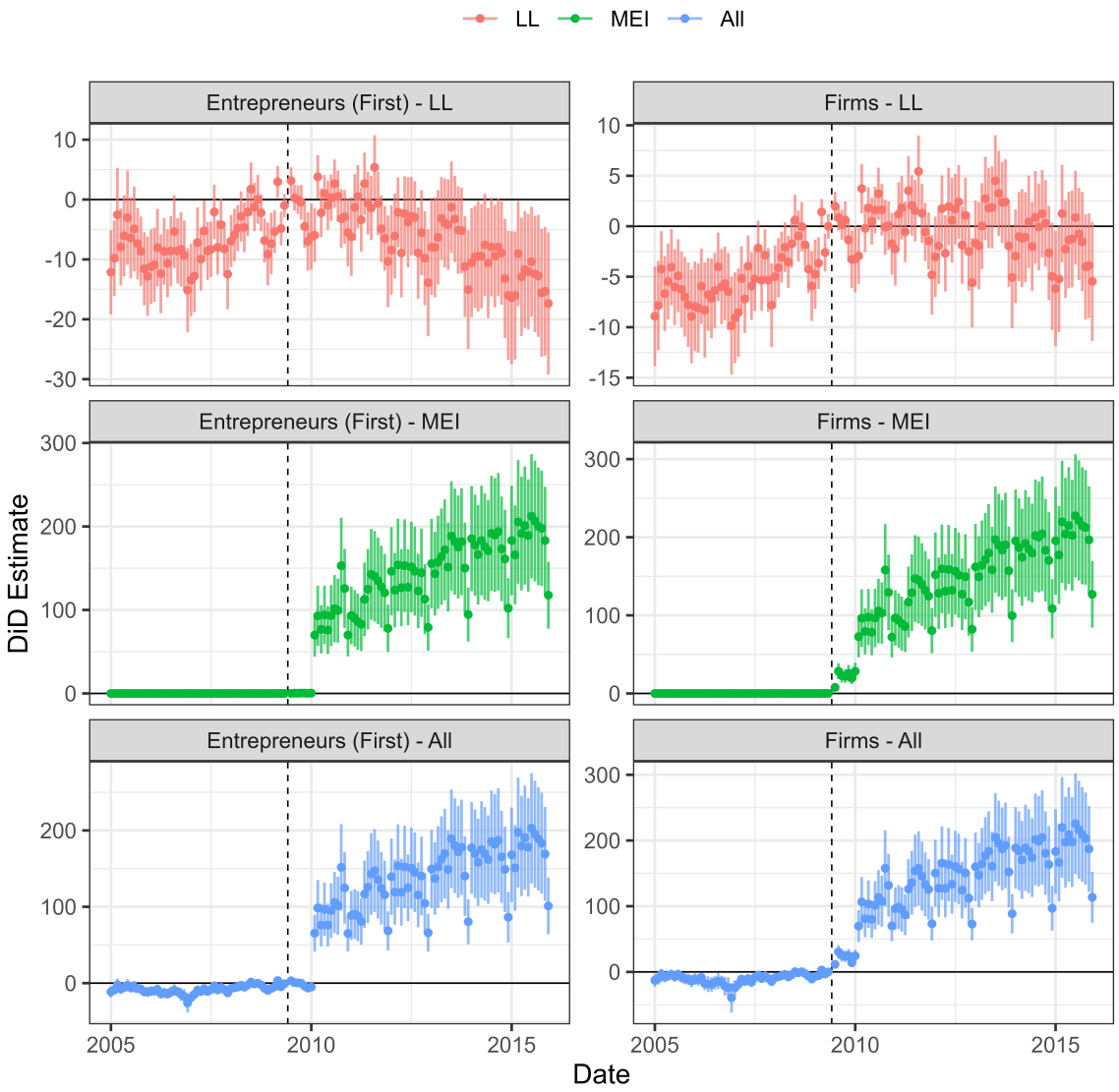

Figure C1. Comparison with Farias and Hsu Rocha (2025) – First Time Entrepreneurs and Firms

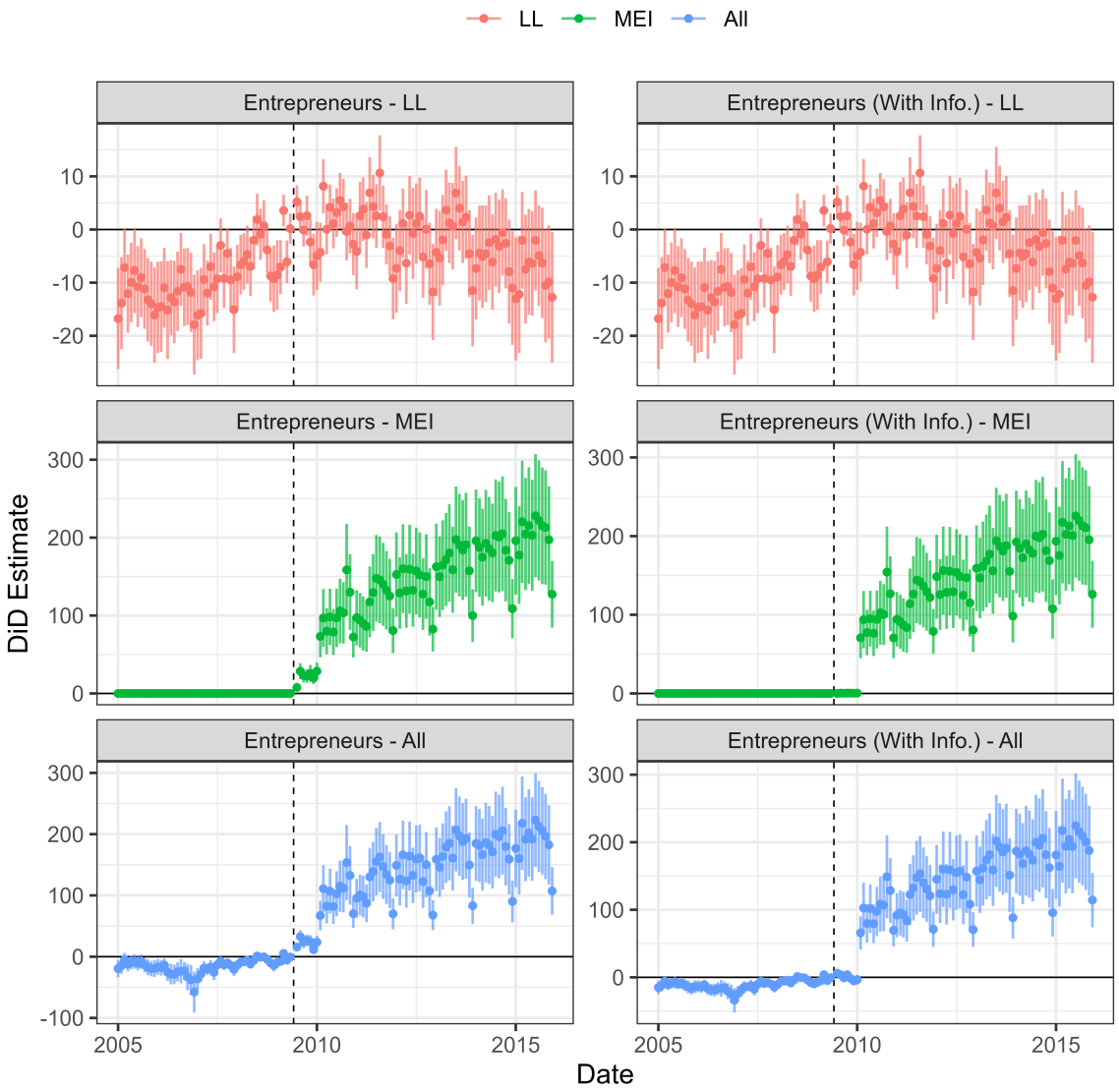

Figure C2. Comparison with Farias and Hsu Rocha (2025) – All Entrepreneurs and With Information

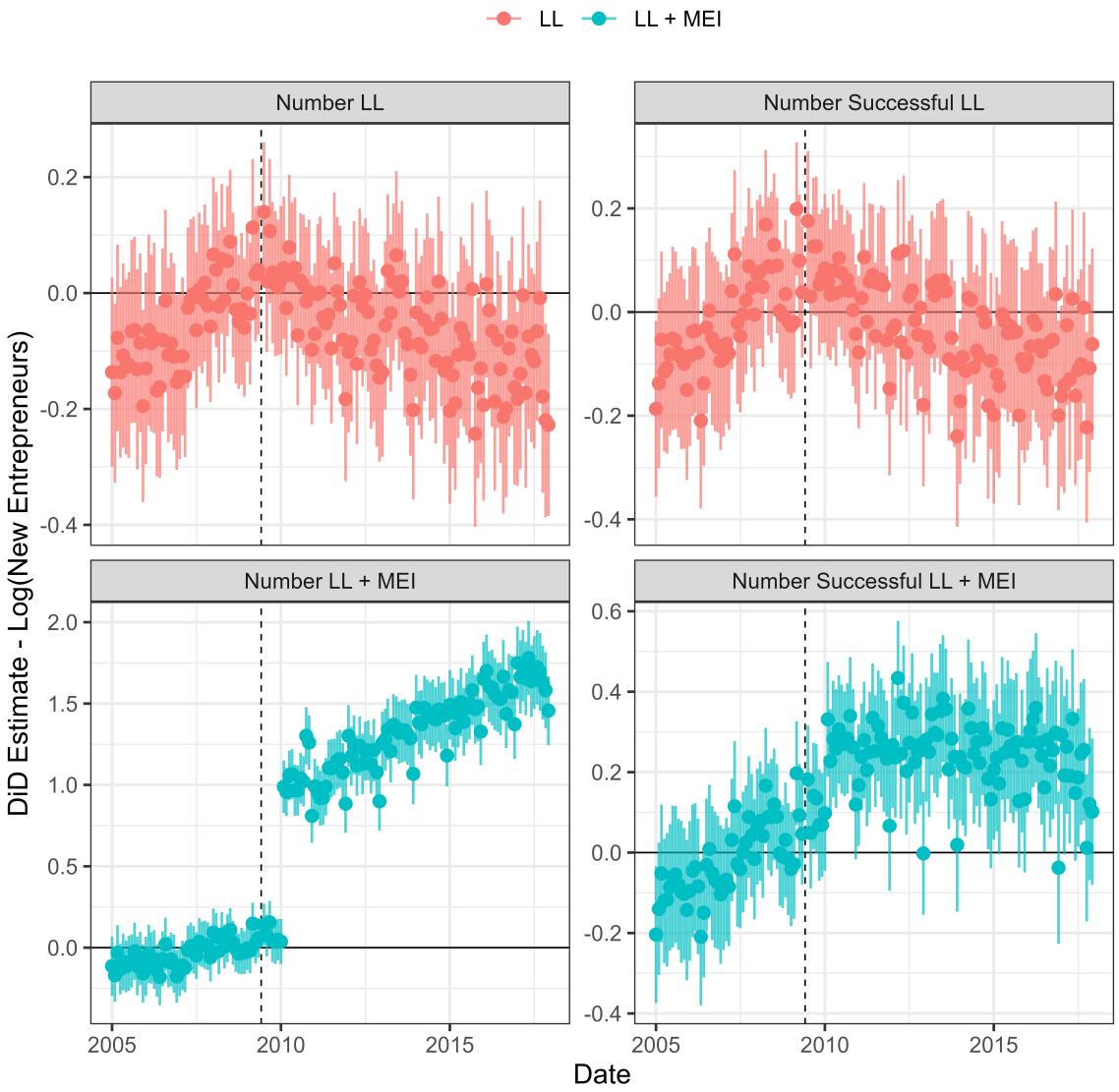

Figure C3. Event Study in Log (Success: be an employer)

D Additional Figures and Tables

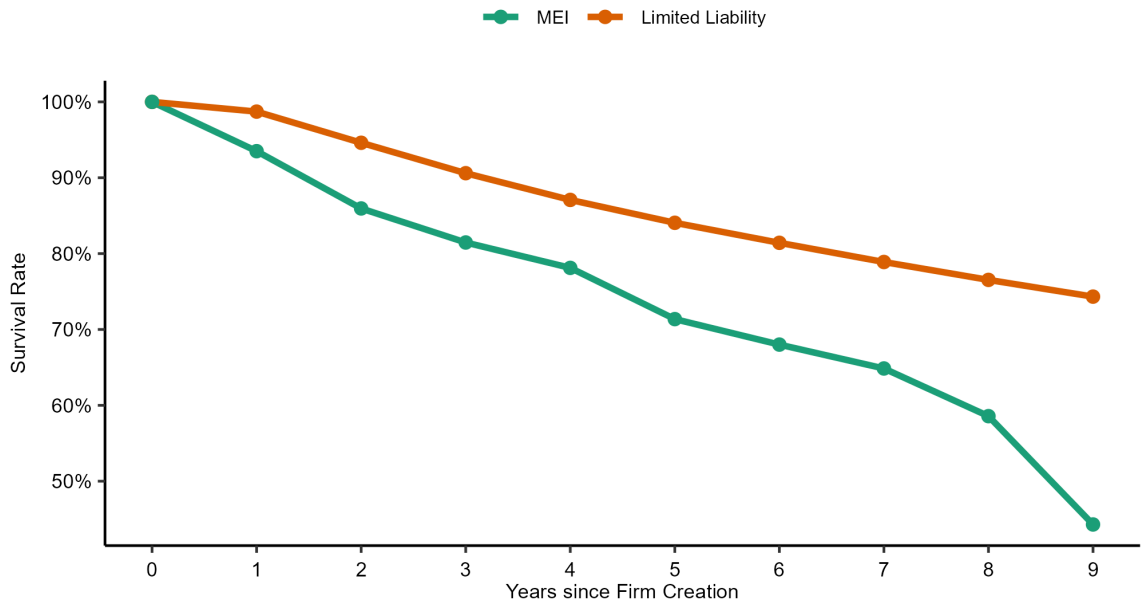

Figure D1. This figure plots the share of firms that remain opened t years after the opening year.

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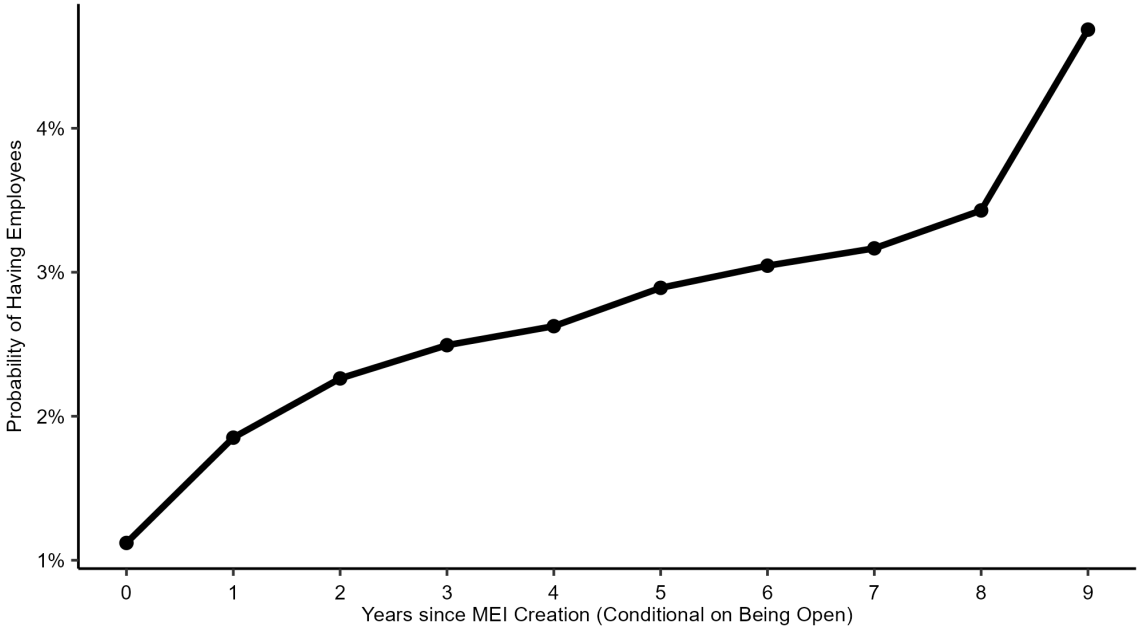

Figure D2. This figure shows the probability of having employees conditional on survival for all MEIs.

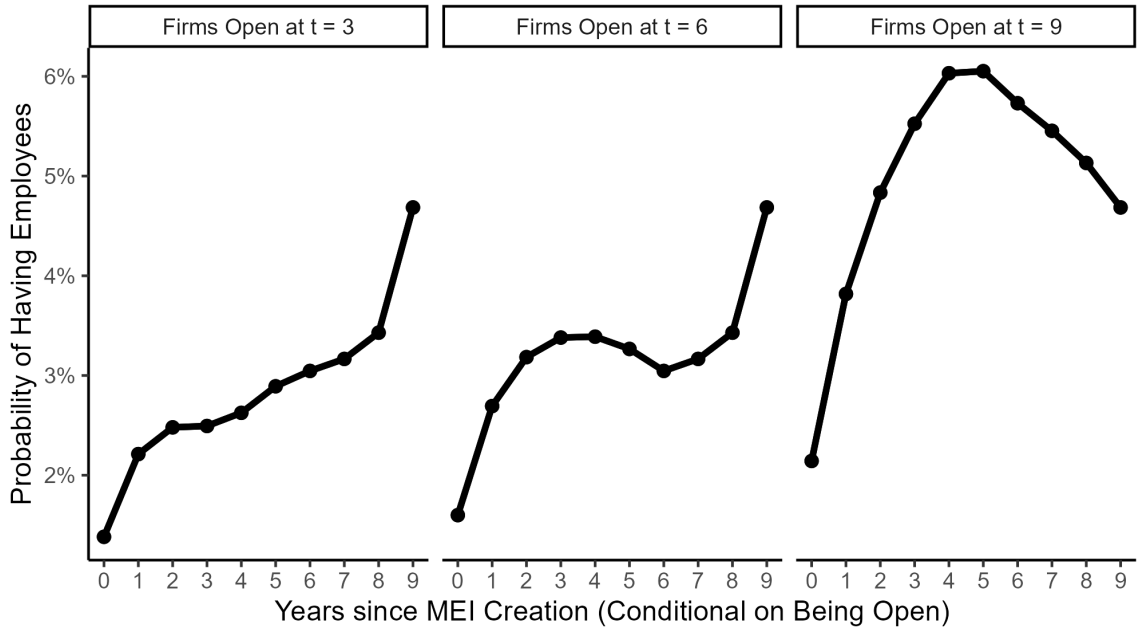

Figure D3. This figure shows the probability of having employees conditional on survival for three different samples of MEIs. From left to right, we report the share of firms with employees among those that survived at least three years, six years, and nine years, respectively.

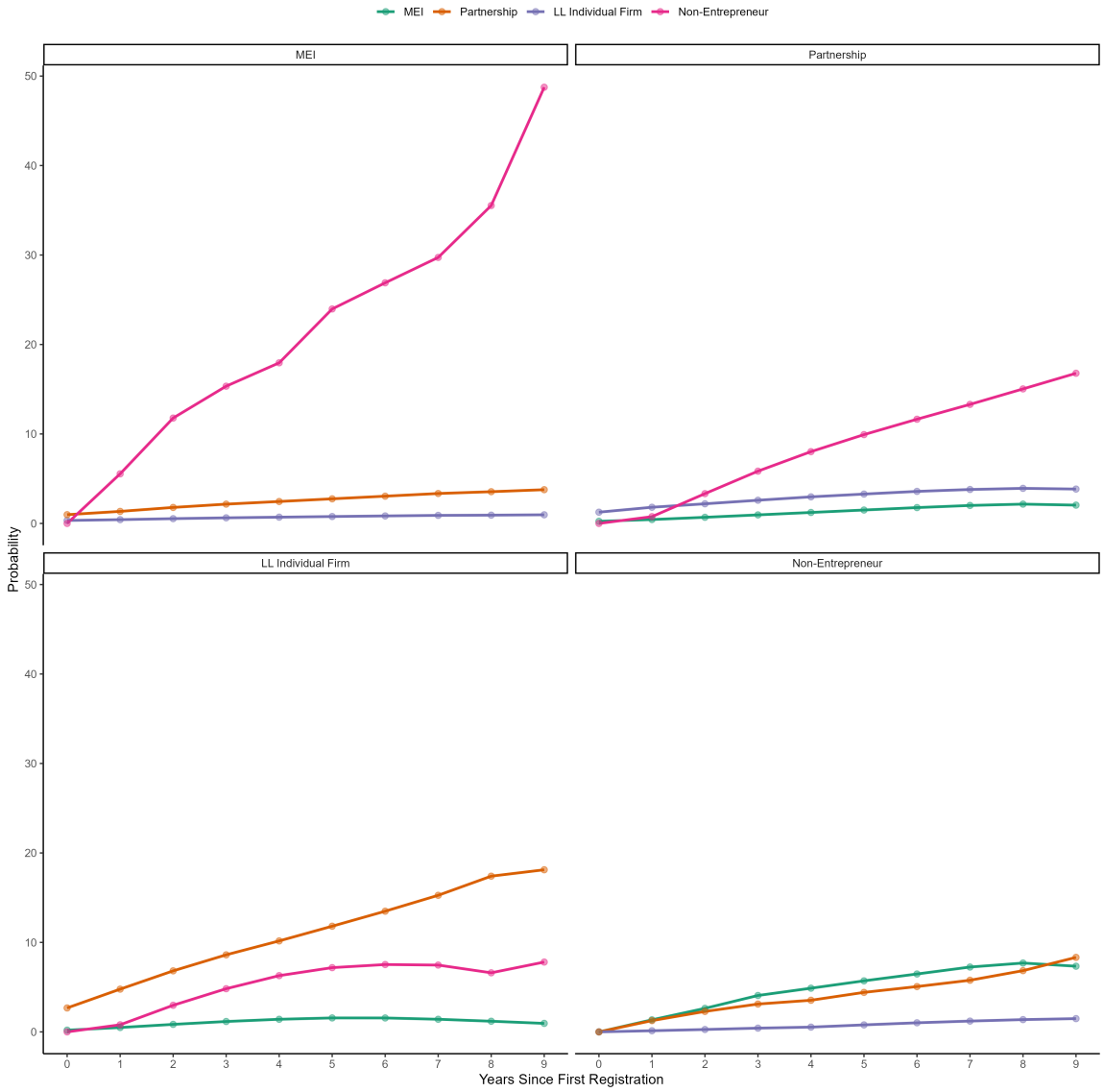

Figure D4. Each facet shows the probability of being a firm owner of a given type or a non-entrepreneur after t years, conditional on opening a firm of that facet's type. For example, the top-left panel shows the transitions of entrepreneurs who opened MEIs each year after the firm's opening. For visual clarity, we omit the corresponding type in each facet.

Table D1. Firm Performance: Summary Statistics

	MEI	Limited Liability	All Firms
A. First Three Years			
Number of Firms	14,262,538	3,662,280	17,924,818
Employers (%)	2.3	38.0	9.6
Number of Employees (Mean)	1.0	8.5	7.1
Number of Employees (Median)	1.0	3.0	2.0
Payroll (Mean)	1188.9	15929.6	13140.3
Payroll (Median)	1050.0	4746.8	3299.2
Average Wage (Mean)	1188.9	1688.3	1592.2
Average Wage (Median)	1050.0	1415.6	1336.9
B. Overall for Firms Opened in 2010–2019			
Survival Time (Mean)	3.2	4.5	3.5
Survival Time (Median)	2.6	4.2	2.9
Services (%)	89.1	92.4	89.8

Note: This table summarizes firm performance distinguishing firms by their legal status observed within the first three years since formal registration. The column "MEI" includes firms that initially registered under the MEI regime and do not exceed the legal limit of one employment. The column "Limited Liability" aggregates limited liability firms, while "All Firms" includes all firms in the dataset between 2010 and 2019. A firm is classified as an "employer" if it reports at least one employee in any of the three years. Payroll, average wages and employment metrics correspond to the maximum values observed during this period conditional on having employees. Monetary variables are in 2018BRL. Employment, payroll and survival metrics are winsorized at the 99% level within each type of firm. Sector classification is based on the 2-digit CNAE code and groups firms into Agriculture, Industry and Services.

Table D2. Detailed MEI Transitions Between Firm Types

Years since First Registration	MEI	LL Individual	Partnership	Non-Entrepreneur
0	99.12	0.33	0.98	0.00
1	93.37	0.42	1.35	5.55
2	86.71	0.54	1.79	11.78
3	82.81	0.63	2.16	15.34
4	79.92	0.70	2.45	17.95
5	73.59	0.77	2.75	23.97
6	70.39	0.84	3.05	26.89
7	67.27	0.90	3.35	29.73
8	61.19	0.93	3.55	35.53
9	47.30	0.97	3.77	48.75

Note: Transitions calculated based on all entrepreneurs in 2010–2018, the last year where we have the full CPF information for MEIs in the CNPJ data. The percentage of non-entrepreneurs is calculated as a residual (if the entrepreneur is not the owner of an active firm). Further details are in Appendix B.