Universidade de Brasília

Faculdade de Administração, Economia, Contabilidade e Gestão Pública

Labor market transformations: Essays on outsourcing and its implications for workers

Cristina Oliveira Roriz

TESE DE DOUTORADO

ECONOMIA

Brasília

2025

Universidade de Brasília
Faculdade de Administração, Economia, Contabilidade e Gestão Pública

Transformações no mercado de trabalho: ensaios sobre terceirização e suas implicações para os trabalhadores

Cristina Oliveira Roriz

Tese de doutorado submetida como requisito parcial para obtenção do grau de doutora em Economia.

Orientador: Prof. Dr. Christian Lehmann

Brasília
2025

FICHA CATALOGRÁFICA

Oliveira Roriz, Cristina.

Labor market transformations: Essays on outsourcing and its implications for workers / Cristina Oliveira Roriz; orientador Christian Lehmann. -- Brasília, 2025.

127 p.

Tese de Doutorado (Economia) -- Universidade de Brasília, 2025.

1. Informality. 2. Outsourcing. 3. Entrepreneurship. 4. Formalization.. I. Lehmann, Christian, orient. II. Título.

Universidade de Brasília
Faculdade de Administração, Economia, Contabilidade e Gestão Pública

Labor market transformations: Essays on outsourcing and its implications for workers

Cristina Oliveira Roriz

Tese de doutorado submetida como requisito parcial para obtenção do grau de doutora em Economia.

Trabalho aprovado. Brasília, 30 de junho de 2025:

Prof. Dr. Christina Lehmann,
UnB
Orientador

Prof. Dr. Rafael Terra de Menezes,
UnB
Examinador interno

Prof. Dr. Daniel F. P. Goncalves da Mata,
FGV
Examinador externo

Prof. Dr. Marcelo Araujo Castro,
UFU
Examinador externo

Dedico este trabalho ao meu marido Diogo, pela parceria construída com amor ao longo de tantos anos e pelo apoio em cada passo dessa jornada. Às minhas filhas Beatriz, Luiza e Isadora, que me motivam todos os dias a ser uma pessoa melhor. Vocês são minha força, minha alegria e minha maior fonte de inspiração!

Dedico também à minha mãe e, por meio dela, a toda a minha família, que sempre estiveram ao meu lado, celebrando cada conquista com entusiasmo e me oferecendo o suporte necessário para que eu pudesse chegar até aqui.

Agradecimentos

Este doutorado não é apenas fruto de esforço individual, mas também da rede de apoio e cuidado que me envolveu ao longo da caminhada. A todos que confiaram em mim e estiveram presentes, oferecendo generosamente seu tempo, ensinamentos e inspiração, deixo minha mais profunda gratidão.

Meu sincero agradecimento ao professor Christian Lehmann, que me orientou com competência, paciência e comprometimento. Sinto-me privilegiada e honrada pela oportunidade de ter trabalhado com você.

Um agradecimento especial ao professor Tomás Martinez, que me ajudou a dar os primeiros passos nesta pesquisa, e também aos professores Rafael Terra, Daniel da Mata e Marcelo Castro, membros das bancas de qualificação e defesa, pelas leituras atentas e pelas contribuições valiosas. Suas observações e sugestões não apenas ajudaram a aprimorar a tese, mas também abriram novos caminhos de reflexão para pesquisas futuras. Meu reconhecimento ainda aos professores que despertaram em mim o desejo de aprender sempre mais — Daniel Cajueiro, Daniela Freddo, Bernardo Mueller e Carolina Zoghi — a cada um, minha sincera admiração.

Agradeço ao Sérgio Mikio e ao Gabriel Garber pelos anos de aprendizado e parceria. Vocês me inspiraram a seguir como pesquisadora e apoiaram cada passo do meu desenvolvimento. Sou também grata ao Gabriel Garber e ao Fernando Chertman pelas revisões atentas e pelas sugestões valiosas a este trabalho. Cada um de vocês contribuiu de forma marcante para minha trajetória, não apenas pela competência técnica, mas sobretudo pela generosidade com que compartilham conhecimento.

Agradeço também ao Annibal, meu chefe direto, e, por meio dele, a todos os colegas do Departamento de Pesquisa do Banco Central, pelo apoio institucional e pela convivência inspiradora. Trabalhar com pessoas tão qualificadas e comprometidas foi um privilégio e uma fonte constante de aprendizado e motivação.

Agradeço ao Carlos, que esteve presente em cada etapa desta jornada. Sou também grata aos colegas que estiveram ao meu lado durante as disciplinas e na elaboração da tese, tornando o caminho menos árduo e mais feliz: Marina, Maria Salete, Renan, Pedro Borges, Elvis, Dea, Carol, Raphael, Pedro Campelo, Jordana, Johnny e Pedro Lang. Guardarei com carinho as lembranças dos nossos anos de convivência.

Por fim, agradeço aos amigos da engenharia - Mateus, Rafael, Adalberto, Gustavo, André e Darlan - pelos bate-papos descontraídos e pelas polêmicas inspiradoras que enriqueceram ainda mais essa jornada.

Abstract

This work comprises two studies that examine trends in the labor market and outsourcing. The first study analyzes the impacts of Brazil's 2017 labor reform and outsourcing laws on employment patterns, highlighting a shift from traditional formal employment to more flexible and independent work structures, such as Individual Microentrepreneurs (MEI). The findings indicate that labor reforms and flexibilization have accelerated the expansion of individual businesses, with heterogeneous effects across industries and regions. Contrary to expectations of increased precariousness, outsourcing did not lead to a decline in formal employment. Instead, evidence points to stability in job tenure, and average wages. These dynamics contributed to the consolidation of a dual labor market structure, in which the majority of the workforce is concentrated either in large firms or in a growing segment of individual enterprises. The second study aims to investigate the incentives behind labor outsourcing and the formalization of workers as individual entrepreneurs, along with the financial implications of this transition for different worker profiles. The study finds that entrepreneurship can offer a voluntary and beneficial path for many workers, with varied impacts across age groups and occupations. The findings of both studies underscore the complexity of entrepreneurial transitions and point to the importance of adapting labor regulations and social protections to support more flexible work arrangements. Brazil's MEI regime offers a promising example, although further evaluation is needed to ensure its long-term sustainability and coverage.

Keywords: Informality. Outsourcing. Entrepreneurship. Formalization.

Resumo

Este trabalho compreende dois estudos que analisam tendências no mercado de trabalho e na terceirização. O primeiro estudo analisa os impactos da reforma trabalhista de 2017 e das leis de terceirização no Brasil sobre os padrões de emprego, destacando uma transição do emprego formal tradicional para estruturas de trabalho mais flexíveis e independentes, como os Microempreendedores Individuais (MEI). Os resultados indicam que a flexibilização das leis trabalhistas aceleraram a expansão das empresas individuais, com efeitos heterogêneos entre setores e regiões. Contrariando as expectativas de maior precarização, a terceirização não levou a uma redução do emprego formal. Ao contrário, as evidências apontam para a estabilidade da duração dos vínculos de trabalho e dos salários médios. Essas dinâmicas contribuíram para a consolidação de uma estrutura dual do mercado de trabalho, na qual a maior parte da força de trabalho se concentra tanto em grandes empresas quanto em um segmento crescente de empreendimentos individuais. O segundo estudo busca investigar os incentivos por trás da terceirização da mão de obra e da formalização de trabalhadores como empreendedores individuais, bem como as implicações financeiras dessa transição para diferentes perfis de trabalhadores. O estudo aponta que o empreendedorismo pode representar uma trajetória voluntária e vantajosa para muitos trabalhadores, com impactos variados entre faixas etárias e ocupações. Os resultados dos dois estudos ressaltam a complexidade das transições empreendedoras e apontam para a importância de adaptar as regulamentações trabalhistas e os sistemas de proteção social para apoiar arranjos de trabalho mais flexíveis. O regime do MEI no Brasil representa um exemplo promissor, embora ainda seja necessário avaliá-lo mais profundamente para garantir sua sustentabilidade e cobertura no longo prazo.

Palavras-chaves: Informalidade. Terceirização. Empreendedorismo. Formalização.

List of figures

List of tables

List of abbreviations and acronyms

AIC	Akaike Information Criterion
BCB	Banco Central do Brasil (Central Bank of Brazil)
BIC	Bayesian Information Criterion
BRL	Brazilian Real (currency of Brazil)
CBO	Classificação Brasileira de Ocupações (Brazilian Classification of Occupations)
CGSIM	Comitê Gestor do Simples Nacional (Managing Committee of the National Simple Tax Regime)
CNAE	Classificação Nacional de Atividades Econômicas (National Classification of Economic Activities)
CNPJ	Cadastro Nacional da Pessoa Jurídica (National Registry of Legal Entities)
CPF	Cadastro de Pessoas Físicas (Brazilian Individual Taxpayer Registry)
DAS	Documento de Arrecadação do Simples Nacional (Unified Tax Payment Form for the Simples regime)
DAS-MEI	Documento de Arrecadação do Simples Nacional para Microempreendedor Individual (Unified Payment Form for Individual Microentrepreneurs)
DID	Difference-in-Differences (econometric method)
DIEESE	Departamento Intersindical de Estatística e Estudos Socioeconômicos (Inter-Union Department of Statistics and Socioeconomic Studies)
FGTS	Fundo de Garantia do Tempo de Serviço (Severance Indemnity Fund for Employees)
GDP	Gross Domestic Product
IBGE	Instituto Brasileiro de Geografia e Estatística (Brazilian Institute of Geography and Statistics)
INSS	Instituto Nacional do Seguro Social (National Institute of Social Security)
IPEA	Instituto de Pesquisa Econômica Aplicada (Institute of Applied Economic Research)

IRRF	Imposto de Renda Retido na Fonte (Withholding Income Tax)
MDIC	Ministério da Indústria, Comércio Exterior e Serviços (Ministry of Industry, Foreign Trade, and Services)
ME	Microempresa (Microenterprise)
MEI	Microempreendedor Individual (Individual Microentrepreneur)
MSE	Mean Squared Error
MTE	Ministério do Trabalho e Emprego (Ministry of Labour and Employment)
MW	Minimum Wage
NAIRU	Non-Accelerating Inflation Rate of Unemployment
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PEA	População Economicamente Ativa (Economically Active Population)
PJ	Pessoa Jurídica (Legal Entity)
PL	Projeto de Lei (Bill of Law)
PNAD	Pesquisa Nacional por Amostra de Domicílios (National Household Sample Survey)
RAIS	Relação Anual de Informações Sociais (Annual Social Information Report)
RST	Robust Standard Errors (or Robust Standard Test)
SCR	Banco Central do Brasil (Credit Information System)
SELIC	Sistema Especial de Liquidação e Custódia (Brazilian Central Bank's policy interest rate)
SENAI	Serviço Nacional de Aprendizagem Industrial (National Service for Industrial Training)
SIMPLES	Simples Nacional (Brazil's unified tax regime for small businesses)
SME	Small and Medium-sized Enterprises
TST	Tribunal Superior do Trabalho (Superior Labour Court)
TWFE	Two-Way Fixed Effects (panel data estimation method)

Contents

1 Introduction

Employment relationships are undergoing profound transformations globally, driven by the rise of the gig economy, the expansion of remote work, and corporate restructuring in response to competitive pressures and shareholder demands. These shifts have led to the "fissuring" of the workplace, characterized by increased reliance on outsourcing, subcontracting, franchising, and independent contracting (Appelbaum; Batt; Lee, 2014).

In this evolving labor market, sole entrepreurships and other forms of self-employment have become increasingly prominent, enabling individuals to operate outside the traditional employer–employee structure. Although these arrangements may enhance market flexibility and efficiency, they also introduce risks, including job insecurity, income volatility, and the weakening of social protections such as pensions and health insurance.

The challenges faced by temporary workers, including those in advanced economies, often mirror those observed in the informal labor markets of developing countries. Examining labor dynamics across these contexts offers valuable insights into the global rise of non-standard work arrangements, shedding light on underlying drivers, the financial implications for workers, and the effectiveness of policy responses. Brazil offers a particularly relevant case. The country has long struggled with high levels of informality and has pursued a dual legal strategy to address it. On one hand, the 2017 Labor Reform sought to modernize labor laws by easing contract regulations, reducing hiring barriers, and allowing outsourcing of core activities. On the other, Brazil progressively expanded legal frameworks to promote the formalization of micro- and individual entrepreneurs (MEIs), granting them simplified registration and access to key social protections, including retirement and paid health leave.

This thesis includes two complementary studies. The first investigates the effects of Brazil's 2017 Labor Reform on labor outsourcing, focusing on the transition of workers from traditional formal employment (as recorded in RAIS) to more flexible and autonomous arrangements, such as Individual Microenterprises (MEIs). By accounting for sectoral and regional heterogeneity, the study explores how industry characteristics and local economic conditions influence the adoption of outsourcing practices. This approach provides a nuanced understanding of how national-level policy changes interact with local labor market structures, shedding light on the broader implications of flexibilization for employment quality and labor protections.

The second study evaluates the impact of formalization as a solo entrepreneur on workers' financial well-being. Using indicators such as access to credit, credit card balances, and default rates, it assesses whether transitioning to formal entrepreneurship improves or undermines economic stability. The unique integration of three administrative datasets—RAIS, Business Registration Records, and the Credit Information System (SCR)—enables a com-

prehensive analysis of employment and entrepreneurial trajectories. By comparing the financial outcomes of newly formalized solo entrepreneurs with those of formal employees and unregistered workers, both before and after formalization, the study the study provides empirical evidence on the economic drivers behind outsourcing and entrepreneurship, as well as their implications for worker welfare.

Together, these studies offer a multifaceted perspective on the effects of labor market deregulation in Brazil, contributing to ongoing debates about the role of labor law in shaping inclusive and sustainable employment systems.

2 Work, law, and labor market structure: insights from regulatory changes in Brazil

2.1 Introduction

Employment relationships are being reshaped by the rise of the gig economy, the proliferation of remote work, and the evolving dynamics of contemporary labor markets. Appelbaum, Batt, and Lee (2014) and Stansbury and Summers (2020) claim that the increase in shareholder power and shareholder activism has led to pressure on companies to cut labor costs, resulting in wage reductions within firms and the “fissuring" of the workplace, as companies increasingly outsource and subcontract labor, engage in franchising, and rely more on independent contracting and the gig economy. In line with these trends, and central to the present study, individual firms (sole proprietorships) and independent contracting have emerged as key forms of self-employment. In such arrangements, workers operate their own businesses and offer services without the traditional employer-employee relationship.

Individuals or companies that perform outsourced work for major companies are subject to strict standards and strong incentives to ensure that they meet core objectives. According to Weil (2019), this is operationalized through detailed subcontracting and supply chain requirements, franchise agreements, and most recently the highly calibrated incentive systems created by platform algorithms. The author explains that these arrangements allow companies to benefit from work that aligns with corporate objectives while avoiding the responsibilities associated with direct employment. In the same line, DIEESE (2007) highlights that outsourcing helps companies reduce labor related expenses and manage various aspects of human resources more efficiently, including personnel selection, hiring, and dismissal, managing vacations, absences, illnesses, leave of personnel, bonuses, and overtime, thus reducing the burden of labor management. In addition, by outsourcing, companies can minimize union issues, negotiations, and strikes, as well as reduce the likelihood of judicial issues with personnel.

Although increasing market flexibility and efficiency, this trend has introduced new risks, such as job insecurity, income volatility, and the erosion of worker protections, particularly for those engaged in non-standard employment arrangements, such as individual firm contractors. These evolving work patterns contribute to a long-standing dilemma that predates modern technological innovation. Emerging economies have long struggled with similar challenges, as persistent informality continues to pose significant obstacles to inclu-

sive labor market development. As noted by WorldBank (2018), *"Because recent technological developments are blurring the divide between formal and informal work, there is something of a convergence - most of the challenges faced by short-term or temporary workers, even in advanced economies, are the same as those faced by workers in the informal sector. This type of convergence is not what was expected in the 21st century. Traditionally, economic development has been synonymous with formalization."*

A deeper understanding of this phenomenon and its impacts is increasingly important for both developing and developed economies. Brazil serves as a compelling case study, as it has implemented a comprehensive legal strategy to tackle these challenges. On the one hand, the country pursued the flexibilization of the labor market through a major reform in 2017, aimed at modernizing labor laws by allowing greater flexibility in employment contracts, lowering hiring barriers, and allowing outsourcing of core activities. On the other hand, Brazil has progressively strengthened its legal framework to promote the formalization of micro- and individual entrepreneurs, granting them access to essential social protections, including retirement, maternity leave, and paid health leave, via simplified registration processes.

This study contributes to the academic literature by examining the consequences of labor law flexibilization following Brazil's 2017 Labor Reform on labor market dynamics. Expanding upon existing research, this study delves into the reform's implication for labor outsourcing, with a focus on how it has influenced worker transitions from traditional formal employment (RAIS-registered) toward more flexible and independent work arrangements like Individual Microenterprises. Furthermore, by analyzing sectoral and regional heterogeneity, the study sheds light on how industry type and local economic factors shape the adoption of outsourcing practices. This nuanced approach provides a deeper understanding of how national labor reforms intersect with local and sectoral conditions to influence labor market outcomes, offering valuable insight into the broader implications of deregulation for labor protections and employment structures.

This research makes an additional contribution by integrating two administrative datasets: the Annual Social Information Report (RAIS) and the Business Registration Records, which cover all active firms registered in the country linked to owner identification data. This integration captures both formal employment trends and entrepreneurial activity across the full spectrum of Brazilian businesses, including MEIs and other non-employing firms. By combining employment and firm-level data, the analysis enables a detailed tracking of transitions between formal employment and entrepreneurship, providing insights into labor market restructuring and the expanding role of small and micro-enterprises in the Brazilian economy.

The results reveal that although individual firm creation was already a growing trend, the 2017 outsourcing law significantly accelerated this process by further encouraging

workers to transition from traditional employment relationships to more flexible and lower-cost contractual arrangements. Regression results by occupation show a consistent post-2017 increase in firm creation across sectors, with particularly strong growth among sellers and beauty service providers. The labor reforms and liberalization of outsourcing appear to have been particularly influential in industries such as food services and construction. These patterns highlight that the impact of labor reforms is shaped by sector-specific dynamics, as uniform policies yield heterogeneous outcomes. Regionally, firm creation expanded throughout the country, but growth was more pronounced in the Southeast and South after 2017, indicating that federal reforms interacted with local economic and institutional contexts to produce varied regional effects.

Finally, the analysis of changes in the RAIS composition along with the evolving distribution of workers (both employees and the self-employed) and firms points to a disproportionate growth of individually operated formal firms and the consolidation of a dual structure within the formal labor market: a large and expanding base of firms without employees and a relatively small group of large firms that continue to account for most formal employment. The coexistence of these two poles may reflect persistent barriers to firm growth, regulatory rigidities, and strategic segmentation within the labor market.

The paper is structured as follows: in Section 2.2 we provide a brief introduction to the literature, in Section 2.3 we discuss the context and motivation of the research, and in Section 2.4 we draw the hypothesis considered. In Section 2.5 we present the data sources and descriptive analysis, and in Section 2.6 we describe the methodology applied and the variables used in our analysis. Section 2.7 presents the main results found and Section 2.8 concludes.

2.2 Literature review

2.2.1 Transaction costs, uncertainty and incentives: classical insights on Labor Market and Firm Dynamics perspectives

Why do we need firms? Key factors such as transaction costs, uncertainty, and incentives have long been considered to be central to understanding firm equilibrium in the classical literature. These elements remain highly relevant, offering valuable insight into the ongoing evolution of firm structures and how it shapes employment dynamics.

In *The Nature of the Firm* (1937), Coase investigates the reasons behind the existence of firms within an economy primarily governed by the price mechanism. He posits that firms emerge because of the high costs associated with relying on the market — such as discovering prices, gathering information, negotiating contracts, protecting trade secrets, and enforcing agreements. These transaction costs are especially pronounced in industries

dealing with services, labor, or complex transactions that require a high degree of flexibility and coordination.

Expanding on this perspective, Alchian and Demsetz conceptualize the firm as a system of incentives in which individual contributions are monitored and compensated, except in the case of the owner. The owner is not subject to monitoring, but instead incentivized by a residual claim on the firm's profits (Holmstrom, 1999). This framework highlights the central role of monitoring within the firm, echoing Maurice Dobb's analysis of coordination and supervision costs. *"It is the essence of serfdom that the price mechanism is not allowed to operate. Therefore, there has to be direction from some organizer. When, however, the serfdom passed, the price mechanism was allowed to operate. It was not until the introduction of power machinery after 1846 drawing workers into one locality that it paid to supersede the price mechanism and the firm again emerged"* (Maurice Dobb, Russian Economic Development, apud (Coase, 1937)).

Approaching the issue from another perspective, Knight (1921) emphasizes the uncertainty as central to the function of the firm. He argues that entrepreneurs assume the risks associated with uncertain outcomes, guaranteeing fixed/regular payments to employees while bearing the residual profits or losses. This mode of payment distinguishes entrepreneurs from wage workers and underpins the structure of an industrial organization.

Finally, Coase (1937) anticipated that technological advancements that improve managerial techniques and reduce spatial distribution tend to increase the size of the company. However, he noted that most inventions affect both organizational costs and the costs of using the price mechanism. Whether a firm grows or shrinks would depend on which set of costs is reduced more. If new technologies lower the costs of using the price mechanism more than they reduce organizational costs, they will lead to smaller firms.

2.2.2 The changing nature of the firm and impacts on work.

As technology advances, firms increasingly adopt new production methods and rely on digital tools to improve capital efficiency, reduce information asymmetries, outsource tasks, and drive innovation. Digital technologies not only facilitate automation and the substitution of labor with machines, but also accelerate organizational transformation. As anticipated by Coase (1937), these technological changes are reshaping production processes and challenging traditional firm boundaries. Firms have become less vertically integrated, with managers outsourcing a growing number of activities to external providers (WorldBank, 2018).

2.2.2.1 Impacts bargaining power and on wages

There is increasing evidence that outsourced workers receive wage penalties and that this is related to a loss of rents. Studying tendencies in the US economy, Stansbury and Summers (2020) argue that 'fissuring' of the employment relationship has decreased the ability of workers to organize. Workers employed as independent contractors or employees in franchises often have their terms of employment to some extent dictated by the end employer or franchise (respectively) but lack the legal ability to collectively bargain with that end employer. The authors also highlight that increased competition for labor from technology or from low-wage countries has increased the elasticity of demand for US labor. As a result, over recent decades, the bargaining power of workers and labor rents have been reduced, particularly for lower wage workers.[1]

In the same line, examining the relationship between labor market slackness indicators and real wages in Brazil, Guillén and Leão (2023) show a notable decline in real wages despite the labor market being relatively tight after the pandemic outbreak. Their analysis reveals that the real wages of more educated workers experienced the sharpest declines post-pandemic and have exhibited a slower pace of recovery compared to other groups.

Another important aspect of the restructuring of labor demand driven by technological advancement is what Autor and Dorn (2009) describes as labor market polarization. According to the authors, routine tasks - those governed by explicit and codifiable procedures - are increasingly subject to automation or offshoring. This shift has led to a reallocation of labor demand toward non-routine tasks, in which human workers maintain a comparative advantage over technology. These tasks are broadly divided into two categories: high-skill "abstract" tasks that involve problem solving, creativity, and complex social interactions (e.g., attorneys, scientists, and managers), and low-skill "manual" tasks that require physical adaptability, visual and language recognition, and face-to-face interaction, but little formal education (e.g., janitors, home health aides, and motor vehicle operators). While both types are classified as non-routine, they differ significantly in terms of skill level and compensation.

2.2.2.2 Impacts on firm hierarchy and composition

The dynamics of the labor market has been transformed by the interplay of automation, digitalization, and the dissemination of Internet technologies, whose impacts remain ambiguous due to their dual role as information and communication technologies (ICT). As an information technology, the Internet reduces the costs of acquiring and processing

[1] Stansbury and Summers (2020) argue that the decline in worker power aligns with another notable aspect of macroeconomic trends in recent decades: the significant reduction in both average unemployment and inflation. They conclude that the decline in worker power offers a coherent explanation for various macroeconomic phenomena, including changes in labor and capital income shares, increased profitability, and changes in the NAIRU.

information, fostering knowledge accumulation, enhancing worker autonomy, and encouraging decentralized organizational structures. In contrast, as a communication technology, it facilitates closer interactions between managers and workers, often promoting centralized decision-making and reduced autonomy.

Barbosa *et al.* (2021) examine the impact of the fast internet on the occupational and educational structures of firms in Brazil and find that access to the fast internet leads to job losses across all organizational layers, reducing overall employment, although displacements are less severe for higher-level positions[2]. The educational composition of the workforce also changes, with an increase in highly educated and low-educated employees, accompanied by a reduction in medium-educated roles. In general, the wage bill declines, reflecting reductions in both total payroll and average wages, although the total hours worked remain unchanged. These findings suggest that broadband adoption induces efficiency-driven labor restructuring, reshaping internal hierarchies, and lowering wage expenditures. According to the authors, such organizational adjustments help firms reduce labor costs and improve short-term performance, ultimately contributing to lower firm exit rates.

Barbosa *et al.* (2021) finds align with Autor and Dorn (2009)'s framework on educational polarization, showing growth in the shares of highly and low-educated workers alongside a decline in medium-educated workers across sectors. However, the results of occupational polarization do not fully conform, as only the share of management positions consistently increases, while other high-skill occupations, such as professionals, associate professionals, and technicians, either decline or remain unchanged.

One possible explanation for this divergence is the growing reliance on outsourcing and individual contractors, which may be increasingly seen as viable alternatives for fulfilling professional tasks outside the firm's internal hierarchy. In this line, Besanko *et al.* (2009) argue that advances in technology and mechanization have reduced the need for physical worker concentration in many industries. This shift reduces the requirement for direct oversight, as automation and technological tools enable a more decentralized and flexible labor organization. In this context, price mechanisms may become more efficient, particularly for tasks that are well defined and/or easily routinized.

2.2.3 How institutions and industries shape firm structure

2.2.3.1 The role of economic and regulatory environment

State efficiency is crucial for firm operations, and businesses rely on it for licenses, permissions, and the overall improvement of the business climate. Regulatory costs may arise from poorly designed regulations or inefficiencies in their implementation. Enhancing

[2] According to the authors, fast internet increases the share of management roles by 11%, driven entirely by growth in middle management, while the share of top managers declines.

the business environment allows productive companies to emerge and grow (WorldBank, 2018).

An intriguing dimension of the local variance in the business environment arises from the judicial system. Considering the random assignment of judges to cases, Corbi *et al.* (2022) examine the role of labor courts in shaping labor market outcomes in Brazil. They find that small firms that face a more pro-worker judge hire less, experience greater financial distress, and exhibit lower survival rates. Simulating the changes brought about by the outsourcing law, they concluded that the law had significant positive effects on employment and aggregate output by improving legal clarity, stability, and predictability in legal text and also in the application of law. They conclude that changes in labor law can play a fundamental role in investment decisions, positively impacting entrepreneurship and stimulating job creation.[3]

A similar picture emerges when examining local variation in labor regulation enforcement. Analyzing municipal differences in enforcement levels in 2000, Almeida and Carneiro (2012) examine the impact of labor inspections on labor market outcomes in Brazil, revealing that while increased inspections promote higher formal employment and reduced informal employment, they also result in higher unemployment, lower wages at the upper end of the formal wage distribution, and higher wages in the informal sector.

Regional differences in formalization and labor practices are closely related to economic and regulatory dynamics. Regions where economic activities generate higher productivity and stronger enforcement capacities typically see higher levels of formalization, both in terms of firm registration (extensive margin) and adherence to labor laws (intensive margin). Additionally, the extent to which minimum wage policies are "binding" across regions can influence firm behavior. In regions where businesses struggle to comply with formal wage requirements, informality remains an attractive option for all but the most productive firms. In contrast, minimum wage policies are less likely to drive formalization as local economies expand, creating environments where formal compliance becomes increasingly viable (Saltiel; Urzúa, 2022; Lemos, 2004; Corbi; Ferraz; Narita, 2021).

2.2.3.2 Industry-Specific influencing factors

The characteristics of the industry and the companies are also relevant. Sectors with high competition and low entry barriers, such as retail and services, are more likely to experience a pronounced shift to individual contracting, as firms in these industries are forced to reduce labor costs and increase operational flexibility (Weil, 2019). The challenges of coordination and monitoring are also dependent on the specific characteristics of industries.

[3] The potential costs for formal firms associated with labor court disputes—arising when a worker is terminated and chooses to file a lawsuit—represent a significant operational burden in the formal sector, especially for smaller businesses. According to Araujo, Ferreira, and Funchal (2012), the judges decide in favor of the workers in almost 80% of the cases.

Using a database of Brazilian startups, Lawrence and Poliquin (2023) show that a greater variety of knowledge used in a firm is associated with the expansion of hierarchy. Their results show the importance of knowledge for organizational structure and suggest that teams with shared experience reduce coordination challenges. [4]

In sectors such as retail and services, tasks are often more standardized, with less diversity in the types of work performed (and knowledge involved) within each firm. These sectors would benefit from the simplified hierarchical structures necessary to coordinate labor. In addition, the reduced scope of activities carried out makes it easier to be clearly specified in contracts, making the transition to outsourced labor more straightforward.

In contrast, industries such as construction and manufacturing, which rely heavily on specialized tasks and skilled labor and are subject to stringent regulatory requirements, tend to respond differently to labor law reforms. These sectors face more complex workforce coordination and management challenges and frequent need for on-the-job training alongside stricter safety standards. Furthermore, the need for flexibility and real-time adjustments in production processes complicates the creation of detailed labor contracts. Finally, the nature of on-site work and the physical concentration of workers in the construction and manufacturing industries allow easier government enforcement of labor regulation, making the transition to individual contracting more challenging and more dependent on the regulatory framework.

2.3 Context

Balancing labor law with current market changes presents significant challenges. Stringent employer requirements, while aimed at protecting workers, can have unintended consequences. When regulations are too rigid, they may discourage hiring and, in some cases, exacerbate inequities by increasing the proportion of workers who are unemployed or pushed into the informal sector. This is particularly concerning in economies where a substantial share of the workforce operates outside formal structures. In such cases, financing pensions and other social protections through payroll taxes on formal employees becomes inefficient, raising concerns about the sustainability and relevance of current labor laws (WorldBank, 2018).

At the same time, while the shift toward a more decentralized and technology-driven labor market offers benefits, such as increased efficiency and flexibility, it also presents significant risks. With decentralized and gig-based work, traditional labor protections may erode, leading to less job security, fewer benefits, and weaker bargaining power for workers, leaving workers more vulnerable to economic fluctuations. This evolving landscape intensi-

[4] See also (Barbosa *et al.*, 2021; Acemoglu *et al.*, 2007; Autor; Dorn, 2013) for discussions on changes in the firm structure in response to technological changes and managerial issues.

fies the challenges of protecting workers while adapting labor laws to reflect these changes, ensuring that both employers and workers can thrive in this new environment.

To address these challenges, Brazil has implemented a comprehensive legal strategy that makes it a particularly compelling case study. On the one hand, the country pursued labor market flexibilization through labor regulatory changes passed in 2017. The reforms aimed to modernize labor laws by allowing greater flexibility in employment contracts, reducing barriers to hiring, and promoting a more adaptable labor market. On the other hand, Brazil has also been improving the legal framework in order to foster formalization of micro- and individual entrepreneurs, providing them with access to basic social protections, such as retirement and health paid leave, through simplified registration processes.

Together, these policies offer a unique blend of labor flexibility and social protection, making Brazil an important case for examining how legal reforms can simultaneously promote economic dynamism and worker security in the face of global technological and labor market changes.

2.3.1 Entrepreneurship as a way to formal job: The SIMPLES/MEI Law Experience

Implementing policies that promote fair labor practices and protect workers in transitional or precarious employment is essential to reducing inequality and ensuring that the benefits of labor market transformations are broadly shared. One common approach adopted by governments to promote formal job creation is what Peters and Zilibotti (2021) refers to as the *"traditional view strategy"*, which focuses on stimulating employment through financial support and policies that encourage small business development, including the formalization of solo entrepreneurs.

In Brazil, this approach materialized with the enactment of Supplementary Law No. 128/2008, commonly known as the MEI Law, which came into effect on July 1, 2009, and formally established the Individual Microentrepreneur (Microempreendedor Individual, or MEI) as a recognized legal entity.[5] MEI is defined as a person who works for herself and is legalized as a small business owner.[6] They can only have one employee working for the minimum wage or the category's floor and they must operate in one of the approximately 490 activities permitted for the segment. The MEI framework aims to facilitate the formalization of self-employed individuals and small business owners, with the ultimate objective of enhancing contributions to the social security system and providing access to social security

[5] The law amended the General Law for Micro and Small Companies (Complementary Law 123/06), commonly known as the SIMPLES Law, enacted in Brazil on December 14, 2006, to simplify the tax regime for micro and small firms, aiming to promote the formalization of small businesses.

[6] As defined by Complementary Law No. 155, dated October 27, 2016, they can earn a maximum of R$81,000 and cannot have partisanship in any other enterprise.

benefits (Alvarez, 2023). Designed to simplify the formalization process for self-employed workers, the MEI law offers a reduced tax burden and a streamlined registration process while granting access to social security benefits. By targeting low-income entrepreneurs operating in informal sectors, the MEI aims to promote inclusive economic participation and expand the scope of labor protections to previously unregulated forms of work.

In addition to the creation of the MEI Law, subsequent legislative changes were made. Law 147/2014, which came into effect in January 2015, was one of them and extended the tax benefits of MEI to a wider range of sectors, including animal caregivers, housekeepers, security professionals and transportation professionals. Furthermore, the law eased the regulatory requirements for companies that hire MEI firms by eliminating the 20% employer's social security contribution and registration requirements.[7] However, the law explicitly excluded certain categories of MEI such as those providing services in the construction industry (plumbers, electricians, painters, masons, and carpenters), as well as vehicle maintenance or repair, which were not eligible for the same hiring benefits.[8]

2.3.1.1 Informality, outsourcing and Entrepreneurship

Independent contractors are connected to three key concepts—outsourcing, informality, and entrepreneurship—in distinct ways.

The individual contractor status allows individuals to officially establish and operate a small business, serving as a crucial tool to foster entrepreneurship in Brazil. By simplifying bureaucratic procedures and reducing financial barriers, it encourages more people to start their own businesses. This status is specifically designed to help self-employed entrepreneurs formalize their work, enabling them to manage their businesses independently, expand in their fields, and access benefits such as credit, public tenders, and basic social security protections.

However, individual contractors can also function as a mechanism for outsourcing, allowing firms to hire them for specific tasks or services while classifying them as independent entities. This arrangement enables companies to offload responsibilities to external workers rather than hiring them directly, thereby reducing labor costs. As noted in Alvarez (2023), one of the main benefits of hiring independent contractors lies in the lower costs for employers, as these workers are not entitled to the same obligations as formal employees, including severance pay, the 13th salary, social security contributions and paid vacation. Moreover, employers are not required to contribute to the unemployment insurance fund or

[7] In comparison, according to Law 10.666 of May 8, 2003, which regulated the individual taxpayer providing services to a company or equivalent legal entities, the contribution of 11% of the individual taxpayer's remuneration, up to the contribution salary ceiling should be deducted from the MEI´s by hiring company which was responsible for the tax payment, along with its monthly contribution, by the 20th of the month following the service provision (Honorato, 2022a).

[8] The rationale for this exclusion is not explicitly addressed in the law.

the severance indemnity fund.[9] On the worker's side, many opt for individual contracting because it offers more flexible working hours[10] and often reduces the tax burden. However, this comes at the cost of forfeiting labor rights and bearing full responsibility for compliance with social protection regulations, including contributions to social security, health insurance, and other benefits typically covered by employers, as well as managing all taxes associated with their business.

Although individual contractors are legally classified as entrepreneurs, they often operate in sectors historically linked to informal employment, such as small-scale commerce and personal services. These dynamics are particularly evident among workers in occupations with low entry barriers and high turnover, including food and beauty service providers, construction laborers, delivery personnel, and sellers. Predominantly low-income earners, a significant share of these workers operate in a regulatory gray area, frequently falling short of full compliance with tax and social security obligations. As a result, the boundary between formal entrepreneurship and informality becomes blurred.

2.3.2 The Evolution of Labor Laws in Brazil

The persistence of informality is frequently attributed to burdensome regulations, high tax burdens, and rigid social protection schemes that discourage business growth and formal hiring (Dabla-Norris; Inchauste, 2008; Ulyssea, 2020; Djankov; Ramalho, 2009). In addition to implementing initiatives aimed at reducing informality through simplified formalization processes, Brazil has also enacted legislation to flexibilize hiring, in order to lower barriers to formal employment.

2.3.2.1 Outsourcing Law

Outsourcing is a process in which a company transfers certain tasks or services, previously performed by its own employees, to another company or to an individual contractor. This process can involve either stopping the internal production of goods/services and buying them from another company or hiring external firms to perform tasks within the contracting company. This second form of outsourcing can refer to both core activities and support activities, such as cleaning, security, and catering (DIEESE, 2007).

The regulation of outsourcing in Brazil began with Decree 200/1967, which allowed the public administration to hire companies for tasks of planning, coordination, supervision, and control. Another key development came in 1993 with a decision by the Superior Labor Court (TST), which established the "Súmula" 331. This ruling restricted outsourcing to non-core

[9] Almeida and Carneiro (2012) provides more detailed information on labor regulation and worker rights in Brazil.

[10] Studies like Guillén and Leão (2023) indicates that workers are increasingly valuing labor flexibility.

activities, prohibiting the outsourcing of essential business functions while allowing it for support services such as cleaning, security, and maintenance.[11] “Súmula" 331 also reinforced the subsidiary liability of the contracting company, which means that if the outsourced company failed to meet its labor obligations, the hiring firm could be held responsible.

This judicial interpretation remained the main legal framework governing outsourcing in Brazil until 2017, when strong lobbying efforts by employer associations revived and expedited Bill 4.302/1998, previously archived and inactive since 2008. Originally aimed at expanding the scope of temporary employment contracts, the bill was subsequently amended to include provisions regulating firms that mediate the hiring of temporary workers. In a notably swift legislative process, the Chamber of Deputies approved the bill on March 23, 2017, and by March 31 it was enacted as Law No. 13.429/2017, the “Outsourcing Law", significantly broadening the legal scope for outsourcing by allowing companies to hire outsourced employees for their core activities.

According to the terms of the sanctioned law, the third party company is a private legal entity that provides specific services to third parties. This definition enables the so-called "pejotization," which means the provision of services by a single-person company (Article 4 and, even more evidently, in the second paragraph of Article 4-A). The contracting company is defined as the individual or legal entity that enters into a contract with a company that provides specific services (Article 5)(DIEESE, 2017).

2.3.2.2 Labor Law Reform

Soon after the approval of the Outsourcing Law, Brazil enacted Law No. 13.467, commonly known as the Labor Reform Law, in July 2017, introducing substantial changes to the country’s labor law. As summarized by Carbonai (2019), the reform incorporated key legal instruments to increase the flexibility of the labor market. These include the authorization of freelance and intermittent work arrangements (Articles 442–443), the formal introduction of remote work (Article 75-A), revisions to part-time work regulations (Article 58-A), and increased flexibility regarding vacation scheduling (Article 134). The reform also improved firm-level flexibility in labor relations (Article 444) and simplified layoff procedures (Article 477).[12].

[11] The main functions of a company, or core activities, are those central to its strategy, revenue generation, and typically require specialized expertise. These functions vary by industry; for example, a hospital’s core activities include providing medical care and performing surgeries, while a tech company focuses on software development and customer support.

[12] Specifically, it introduced a new form of mutual termination agreement, which allowed both the employer and employee to agree on ending the contract. In this scenario, the employer is required to pay half of the notice period compensation and half of the fine on the worker’s severance fund (FGTS). This mechanism provided an alternative to the traditional dismissal process, which often led to disputes and higher costs for employers. Furthermore, the reform established clearer guidelines on termination procedures, limiting the potential for litigation by reducing ambiguities about employers’ obligations in severance payments and

Importantly, the reform expanded the role of collective bargaining by granting greater autonomy to employees in negotiations with employers and recognizing the primacy of union-negotiated collective agreements over statutory provisions in several areas, such as working hours, breaks, career plans, incentive compensation, and profit-sharing schemes (Article 611-A). Furthermore, it eliminated mandatory union dues, moving to a voluntary contribution model and significantly altering the dynamics of collective bargaining in Brazil.[13]

Fundamental labor rights guaranteed by the Brazilian Constitution, such as the minimum wage, the 13th salary (Christmas bonus), paid weekly rest, and annual vacation, have been preserved.

2.3.3 Implications of these changes for the labor market in Brazil

Figure 2.1 summarizes key milestones in Brazil's recent labor law reforms.

Figure 2.1 – Timeline of Labor Law Changes in Brazil: Key Milestones

Source: Author's elaboration.

Collectively, these legislative changes represent a substantial reconfiguration of labor relations in the country and have sparked ongoing debates regarding their long-term implications for workers and the broader economy. The proponents argued that these reforms would modernize Brazil's labor market, reduce informality, and encourage job creation. However, critics contended that the changes disproportionately favored employers, potentially undermining workers' rights and job security, while fostering precarious work arrangements and increasing income inequality. This raises a central question: How have these reforms effectively influenced the labor market?

One of the most significant changes brought about by the reform concerns legal certainty. At the time of the approval of the law, firms frequently cited legal uncertainty as one of the main obstacles to outsourcing decisions (Campos, 2018). A central issue was the absence

dismissal justifications

[13] Until 2017, the Brazilian government directly subsidized sindicatos through mechanisms like the imposto sindical, a mandatory deduction of one day's wages per year from all workers, regardless of union membership (Carbonai, 2019).

of clear legal definitions distinguishing core from auxiliary activities, which contributed to approximately 20,000 ongoing labor lawsuits challenging outsourcing practices. Prior to the reform, Súmula No. 331 served only as a general guideline, leaving ample room for varied judicial interpretations. The new law addressed this ambiguity by explicitly legalizing all forms of outsourcing, including those that involve core business activities, thus significantly reducing legal uncertainty. It also established the principle of minimal judicial intervention in the review of collective agreements, thus limiting the discretion of labor courts to adjudicate essential labor rights.[14]

The impact on union financing and operations has been significant. However, studies such as Stansbury and Summers (2020) document a decline in the share of unionized workers, along with a reduction in wage differentials between unionized and non-unionized employees in the United States and other countries. These patterns suggest that the weakening of unions may reflect a broader global trend, particularly in the context of increasing labor market fragmentation.

Finally, by broadening the definition of temporary employment, extending the durations of contracts, and authorizing its use for core and support activities, the reform aims to improve the flexibility of labor arrangements (DIEESE, 2007). However, despite these efforts, the participation of temporary workers in Brazil's formal labor market remains limited, indicating that this form of employment continues to play a relatively minor role compared to other contracting modalities.

2.3.3.1 Worker Rights Under Different Employment Models

In light of the regulatory changes discussed, Table 2.1 presents a comparison of worker rights and protections across three contracting arrangements: direct employment, outsourced work, and independent contracting.

It should be noted that MEI - and other forms of individual enterprises - occupies a unique position in Brazil's labor market, functioning simultaneously as a legal business entity and, in many cases, a de facto employee. As formally registered firms, these individual entities allow companies to outsource tasks while shifting labor obligations to a third-party arrangement. However, many of these contractors work under conditions that closely mirror traditional employment, including fixed hours, direct supervision, and exclusive service to a single client. This dual character raises important questions about the boundaries between genuine entrepreneurship and disguised employment.

[14] Some legal scholars argue, however, that a strict application of the new provisions may constrain judicial discretion. They emphasize the need for labor judges to retain the ability to interpret contracts in light of constitutional principles, ensuring a balanced approach to labor protections and contractual freedom (Carbonai, 2019).

Table 2.1 – Labor rights and costs for different working arrangements

Labor Rights	**Employee**	**Outsourced worker**	**Independent contractor (IC/MEI)**
Christmas bonus salary	✓	✓	**x**
Remunerated weekly rest	✓	✓	**x**
Annual vacation and one-third vacation bonus	✓	✓	**x**
FGTS (Severance Indemnity Fund)	✓	✓	**x**
INSS protections [a]	✓	✓	✓ (Worker is responsible for own contributions)
Payroll taxes and contributions - Employer	INSS (20% of the payroll); FGTS (8% of the employee's salary); other [b]	INSS (20% of the payroll); FGTS (8% of the employee's salary); other[b]	**x** [c]
Taxes and contributions - Employee (deducted from payroll)	INSS (7.5% to 14%); Withholding Income Tax (IRRF) (up to 27.5%).	INSS (7.5% to 14%); Withholding Income Tax (IRRF) (up to 27.5%).	INSS (5% of the minimum wage)
Legal Obligations	Direct Liability	Subsidiary Liability	**x** [d]
Main activities	70% Brazil's employed population [e]	About 30% work in maintenance, cleaning, and telemarketing activities.[f]	MEI: Food services, beauty, construction and sellers.

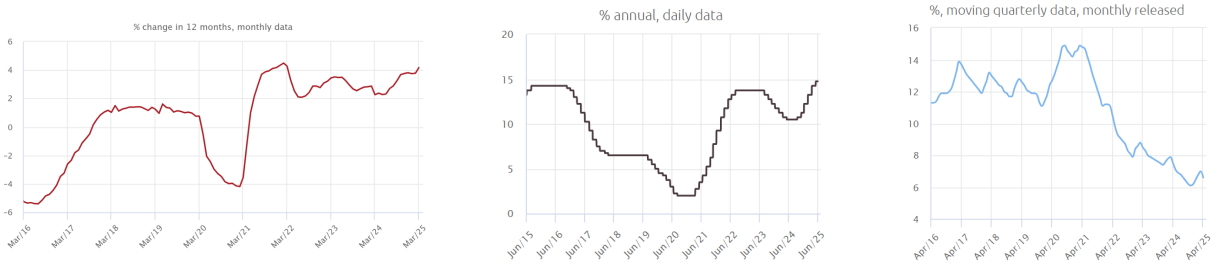
[a] The INSS (National Social Security Institute) in Brazil provides social protection benefits such as retirement, sickness benefits for temporary work incapacity, maternity pay, and family support through death pensions or benefits for dependents of incarcerated workers.
[b] Depending on the sector, the employer may have to pay additional rates, such as RAT (Work Accident Risk) and contributions to the "Sistema S" (SESI, SENAI, etc.).
[c] If an MEI hires an employee, they are responsible for contributing 3% of the employee's salary to INSS, 8% to FGTS, and for withholding and remitting the employee's INSS contribution (ranging from 7.5% to 14%) to the government.
[d] When a company hires a MEI (Microempreendedor Individual) or a IC (individual contractor), it is generally not responsible for the labor rights. However, subsidiary responsibility may apply in cases where there is fraudulent use of the MEI/IC status to avoid legal obligations or if the contractor work shows signs of subordination, suggesting an employment relationship.
[d] According to (IBGE, 2024), in the third quarter of 2024, Brazil's employed population reached 103.0 million people, comprising 69.9% employees (including domestic workers), 4.2% employers, 24.6% self-employed individuals, and 1.3% unpaid family workers.
[f] (Rebelo *et al.*, 2018).

2.3.4 Political and economic context

In 2017, Brazil was navigating a period of intense political turbulence and institutional uncertainty. The country was still grappling with the aftermath of the impeachment of President Dilma Rousseff in 2016, which had deeply polarized the political landscape. Her successor, President Michel Temer, faced historically low approval ratings and was implicated in corruption scandals. Despite these challenges, the Temer administration pursued an ambitious reform agenda aimed at restoring fiscal stability and improving investor confidence.

In economic terms, 2017 marked a turning point for the Brazilian economy, following one of the most severe recessions in the country's history. After contracting by more than 7% in 2015-2016, the Brazilian economy showed modest signs of recovery, with GDP growing by approximately 1% in 2017 and a continuing trend of recovery of economic activity (Figure 2.2). This recovery was accompanied by declining inflation and a gradual reduction in interest rates (Figure 2.2), stimulating investment and consumption.

Figure 2.2 – Economic Variables



Economic Activity Index | SELIC | Unemployment Rate

Source: Central Bank of Brazil

However, the labor market remained fragile, characterized by high unemployment (Figure 2.2) and slow job creation in the formal sector. In this context, the government implemented a broad labor reform intended to modernize labor relations by increasing contractual flexibility, reducing the regulatory burden on firms, and stimulating job growth. These changes were introduced amid ongoing political instability and fiscal constraints, which further shaped the economic environment and influenced how firms and workers responded to the new regulatory landscape.

2.4 Hypothesis

Incentives for individual firms have been in place since 2009, and the 2017 outsourcing law has further shaped entrepreneurial behavior and firm dynamics by allowing firms to outsource labor and services, including core activities. The initial hypothesis under inves-

tigation is that the flexibilization of labor laws promoted by the 2017 Labor Reform had a significant impact on labor outsourcing. This would appear in the administrative data as workers moving from formal job positions (registered in RAIS) to independent workers (registered as Individual Microenterprises - MEI or similar type of micro enterprises).

Should our initial hypothesis hold true, our subsequent inquiry will focus on investigating whether the relevance of the incentives is heterogeneous among different economic sectors. As mentioned, sectors with high competition and low entry barriers, such as retail and services, are more prone to adopting individual contracting due to the need to reduce labor costs and enhance flexibility. These industries benefit from standardized tasks and simplified hierarchical structures, which make workforce coordination easier and labor contracts more straightforward. In contrast, industries such as construction and manufacturing, characterized by specialized tasks, skilled labor, and stringent regulatory requirements, face greater challenges in transitioning to individual contracting. Their complexity in workforce management and the need for on-the-job training make this change more challenging. Furthermore, the on-site nature of work and the physical concentration of workers facilitate government oversight and enforcement, further tying the transition to individual contracting to the prevailing regulatory framework. Based on this, the second hypothesis poses that the effect of regulatory changes varies according to the type of economic activity carried out.

We also investigate whether the effects are heterogeneous across regions. In Brazil, the juxtaposition between a unified legal framework and regionally variable outcomes provides fertile ground to examine the nuanced interplay of geography, governance, and economic development (Naritomi; Soares; Assunção, 2012).[15] Corbi *et al.* (2022) and Almeida and Carneiro (2012) results reveal that the business environment can be influenced by factors such as judicial discretion or institutional capacity, which can shape the enforcement of labor regulations and consequently the broader economic landscape. As a result, the business environment can vary significantly both between and within countries, influencing the concentration and dynamics of entrepreneurial activity.

Our third hypothesis is that the characteristics of the regional labor market, such as the degree of economic and institutional development, the industrial composition, and the prevalence of informal labor, may influence the extent to which firms adopt outsourcing practices. If formalization is the main driver for registering as an individual firm, regions with higher levels of informality are expected to be the most affected. Conversely, if outsourcing is the main factor, regions with stronger industrial bases or more formal labor markets may experience greater effects from law changes, as firms take advantage of labor flexibilization to shift away from directly employing workers.

Combining these analyses allows us to explore the role of local economic conditions,

[15] See also (Acemoglu; Johnson; Robinson, 2001; Aghion; Howitt; Mayer-Foulkes, 2005; Goldberg; Wibbels; Mvukiyehe, 2008).

labor market rigidities, and economic sector characteristics in shaping outsourcing strategies. In doing so, it will provide a more nuanced understanding of how national labor reforms interact with sectoral and regional dynamics to influence labor market outcomes.

Finally, we explore how firms have responded to these regulatory changes. Specifically, we investigate whether the increased flexibility introduced by the 2017 outsourcing law has led to observable shifts in the distribution of firm sizes. The fourth research hypothesis posits that if firms increasingly rely on outsourced labor, we should observe a decline in average firm size, reflecting a move away from large internal workforces toward contracted services. At the same time, if the reform fosters entrepreneurial formalization, we would expect a notable rise in the number of micro- and small enterprises. Together, these trends would suggest a broader reconfiguration of the labor market, with individual entrepreneurs and small firms playing an increasingly central role in service provision across sectors.

2.5 Descriptive Analysis

2.5.1 Individual Firms Evolution

In December 2023 Brazil had almost 21 million active companies. Of this total, approximately 12 million (56%) were MEI, reaching almost 70% if other individual firms are considered (see Table 2.5.1).[16]

Table 2.2 – Companies type Distribution - December,2023

Companies Type	Number of Firms	(%)
Total	**20,798,291**	**100%**
Individual Microentrepreneur Firm (MEI)	11,682,765	56.2%
Other Individual Firm	2,250,666	10.8%
Limited Liability Companies	6,558,126	31.5%
Others [a]	110,830	1.4%

[a] This list includes records of Corporations (Sociedade Anônima), Cooperatives, Consortiums, , State-Owned Enterprises, Foreign Companies, Binational Companies, Business Groups.
Source: mdic$_{m}apadeempresas$

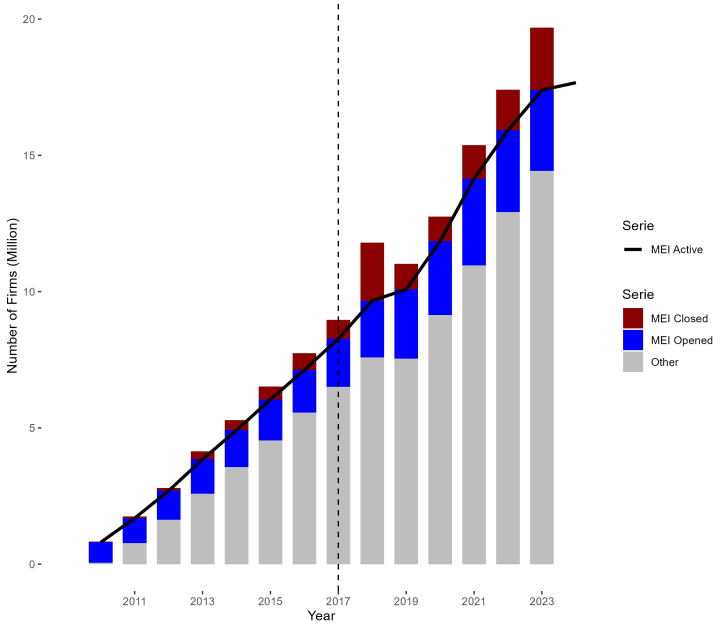
As shown in Figure 2.3, the number of individual firms has grown consistently at an average rate of 21% per year[17]. Even in 2020, in the middle of the Covid-19 pandemic, when

[16] The key distinctions between a MEI and an Individual Firm (Empresário Individual) involve revenue limits, number of employees, and the range of permissible business activities. However, since this study focuses solely on individual firms, these differences are not pertinent. Therefore, terms such as 'individual entrepreneur,' 'non-employer business,' and 'one-person firms' are used interchangeably to refer to both types of firms throughout the study.

[17] The year 2018 is excluded from this calculation due to negligible growth, which resulted from the removal of records classified as inactive. On January 29, 2018, the Committee for the Management of the National Network for Simplifying Business Registration and Legalization (CGSIM) issued Resolution No. 44, allowing

the labor market experienced a 5.7% reduction in the workforce, the number of individual firms continued to grow (BCB, 2021).

Figure 2.3 – Active MEI Firms Evolution



Source: author's elaboration using National Registry of Legal Entities data.

Note: This graph shows the evolution of active Individual Firms. The black line indicates the total number of firms, while the bars break down this total into surviving, exiting, and entering firms.

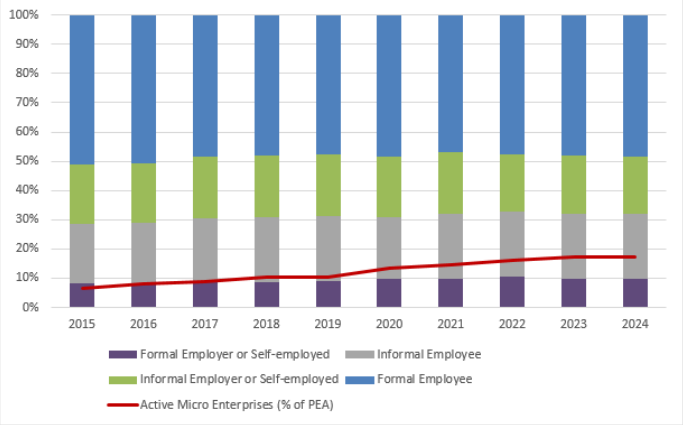
Individual firms, as self-employed microentrepreneurs, function simultaneously as both businesses and workers.[18] Figure 2.4 compares the number of individual firms and the data on the employed population estimated by PNAD (IBGE, 2024).[19] At the end of 2023, the individual entrepreneur made up 17% of Brazil's employed workforce.

the Federal Government to terminate (cancel) the registration of Individual Microentrepreneurs (MEIs) who were either delinquent or had failed to submit their annual declarations for the previous two fiscal years.

[18] Self-employed persons include employers and own-account workers. It is important to note that self-employed workers are not necessarily synonymous with entrepreneurs, as they are a diverse group with varying activities and motivations. Despite these limitations, equating self-employed workers with entrepreneurs is commonly used in research due to data availability (Barros; Pereira, 2008). Both terms will also be used as synonyms in the present study.

[19] PNAD is the acronym for Pesquisa Nacional por Amostra de Domicílios, which freely translates to Brazilian National Household Sample Survey. It is a survey conducted annually by the Brazilian Institute of Geography and Statistics (IBGE) that provides information on several aspects of the population, such as household composition, education, labor, income, and fertility. It also aims to fill in gaps in information about the Brazilian population between censuses and to study topics that are not sufficiently covered by the decennial censuses.

Figure 2.4 – Individual Entrepreneurs x Employed Population



Source: author's elaboration using PNAD/IBGE data.

Note: This graph displays the distribution of the employed population across various work categories. The red line represents the ratio of individual firms to the employed labor force (PEA), serving as a proxy for the percentage of the employed population working as formal self-employed individuals.

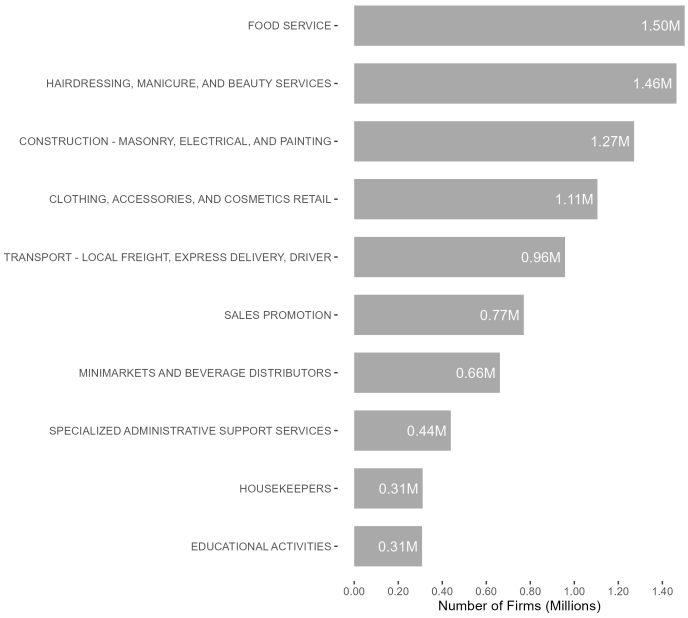
2.5.2 The Distribution of Individual Firms Across Economic Sectors

The economic activities of the firms are identified by a CNAE (National Atividades Econômicas Classification) code, a standardized classification system used in Brazil to categorize and classify business activities. Among the activities carried out by individual companies, there is a predominance of activities related to the tertiary sector (trade and services) in the Brazilian economic scenario. Ten activities areas represent half of the active firms in December 2023, as shown in Figure 2.5. A detailed list of the professional activities considered and their respective CNAE codes is presented in Appendix A.

The most common sectors for individual microentrepreneurs are commerce and services, including activities such as retail, food services, and beauty services, that is, sectors with low growth potential. Private companies often compete directly with self-employment in the same sectors and may have advantages such as better management, more financial resources, and higher efficiency of economies of scale. However, fiscal and financial incentives directed towards MEIs can harm the competitiveness of small businesses and have a negative impact on the growth dynamics of firms. In Brazil, considering the total number of companies, these low-entry-cost activities represent 81.5% of the operating companies (IBGE, 2024).

The data align with the argument that self-employed individuals are predominantly concentrated in non-tradable service sectors, while formal salaried workers are more likely to be employed in higher-productivity tradable industries. Maloney (2004) explains that productivity in the self-employed sector, which predominantly operates within the service

Figure 2.5 – Firms Distribution Across Economic Sectors



Source: author's elaboration using National Registry of Legal Entities data for December 2023.

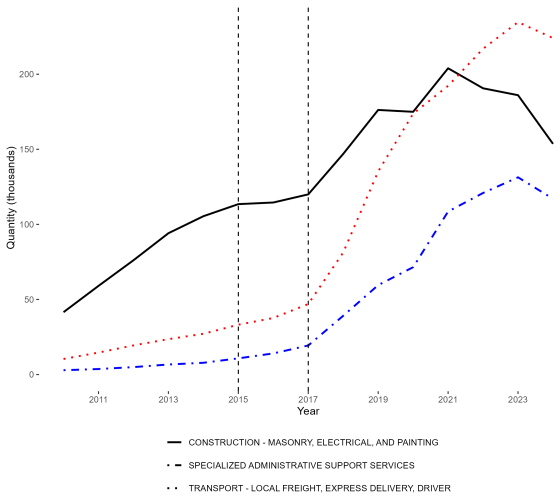
industry, tends to grow more slowly. However, equalization of wages across sectors enables self-employed workers to indirectly benefit from productivity gains in the industrial sector through reduced labor supply and increased service prices. Consequently, non-tradeable services—such as haircuts, gardening, and domestic work, employ a greater share of the workforce and remain more affordable in developing countries, where industrial development and productivity levels are relatively low[20].

2.5.2.1 Growth Trend by Economic Sector

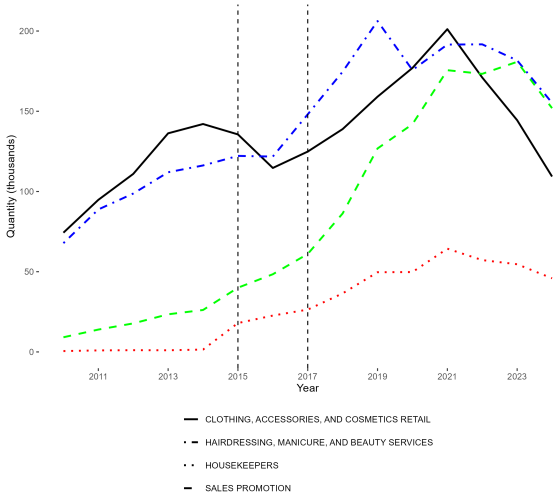
Examining growth trends in company formations in the 10 most relevant economic activities, we can identify three distinct groups: 1) those where an inflection in growth appears, specifically starting in 2017 (Figure 2.6); 2) those where the growth curve shows an inflection before 2017 (Figure 2.6); and 3) those exhibiting a more organic growth pattern, without notable inflections in the curve up to 2017 (Figure 2.6).

[20] The data also echo those of Li and Zhao (2011a) in the Chinese context, where self-employment is concentrated in sectors characterized by low entry barriers and high competition, resulting in lower returns for self-employed individuals. In addition, the study highlights a substitution effect between self-employment and private enterprises, with both tending to cluster in the same low-productivity sectors, further emphasizing the competitive pressures in these markets.

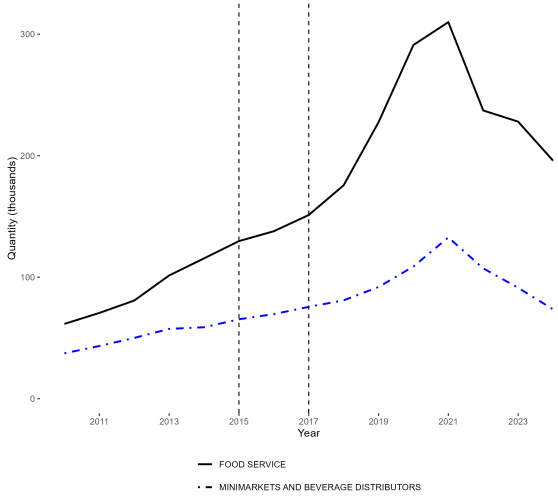
Figure 2.6 – Comparative Growth Inflection Analysis Across Groups



Group 1: Growth Inflection in 2017



Group 2: Growth Inflection before 2017



Group 3: No Growth Inflection by 2017

The graphs show trends in MEI firm creation across different economic activities, as defined by firms' CNAE codes. Source: Author's elaboration based on data from the National Registry of Legal Entities.

It should be noted that the growth inflections in Groups 1 and 2, which comprise sectors more closely related to labor contracting, align closely with the changes in labor laws described in Section 3.3. In contrast, sectors such as minimarkets and food retailers (Group 3) lack inflections in their growth curve until 2017, indicating that they are less affected by fluctuations in labor market regulations, although they remain influenced by economic cycles. This distinction highlights the different motivations and challenges faced by various economic sectors. Although some economic activities are significantly influenced by evolving labor regulations, others show a more stable trajectory, indicating a reduced response to such changes.

As mentioned above, Law 147/2014, enacted in January 2015, simplified the require-

ments for companies hiring MEIs (Individual Microentrepreneurs), including easing registration processes and abolishing the 20% employer's contribution typically required when hiring employees. However, the changes explicitly excluded certain categories, such as MEIs providing services in the construction industry (plumbing, electrical work, painting, masonry, and carpentry). This exclusion probably explains the delayed increase in individual firm registrations within the construction sector, which only began to increase significantly after the enactment of the 2017 Outsourcing Law. Furthermore, prior to the 2017 labor reform in Brazil, delivery services were generally classified as a core activity in businesses where they constituted a primary operation—such as logistics companies or retail businesses reliant on direct-to-consumer deliveries—thereby restricting their legal outsourcing.[21]

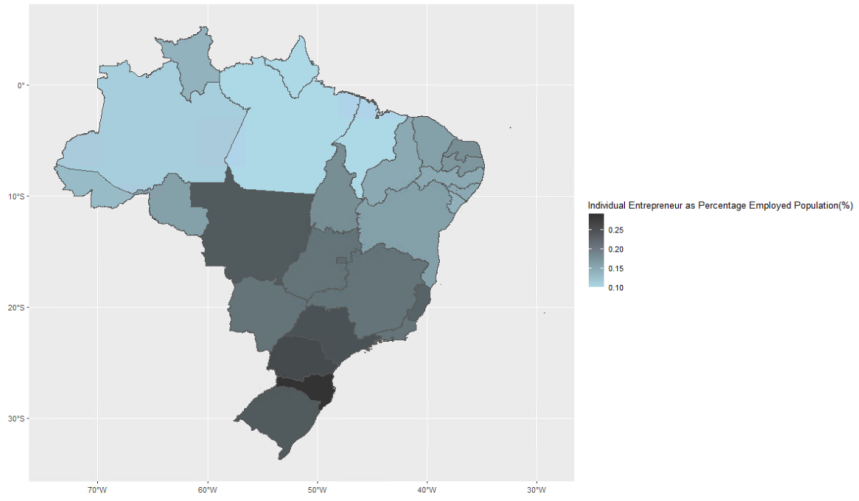
2.5.3 Individual Firms Regional Distribution

According to the database of the National Registry of Legal Entities (CNPJ), as of December 31,2023 53% active micro-entrepreneurs were concentrated in the southeast region of Brazil. This percentage increases to 71% when considering the South region. Among these, the state of Sao Paulo stood out significantly, accounting for almost one third (28%) of the country's active individual firms, a proportion closely aligned with its share of the national population.

As shown in Figure 2.7, comparing the percentage of self-employed workers registered as individual entrepreneurs with the economic active population estimated by the PNAD/IBGE, we find that approximately 17% of the Brazilian Employed Population was registered as MEI as of December 2023. However, this percentage varies widely across different states, ranging from 29% in Santa Catarina to 10% in states like Para, Amapa and Maranhao.

[21] However, they could be outsourced when classified as a support activity. The 2017 reform removed this distinction, permitting the outsourcing of both core and support activities, including delivery services integral to a company's operations.

Figure 2.7 – Percentage of Employed Population Registered as Individual Firms



The map displays the share of MEI registrants relative to the employed population in each Brazilian state.
Source: Author's elaboration based on the National Registry of Legal Entities and PNAD/IBGE.

It is interesting to note that there is considerable variation in these percentages even among municipalities within the same state. The Brazilian Service of Support for Micro and Small Enterprises (Sebrae) found that MEIs (Individual Microentrepreneurs) are predominantly located in urban areas and larger cities, reinforcing a strong connection between this form of entrepreneurship and the economic dynamism of these regions. Similarly, Morais *et al.* (2022a) compare 853 municipalities in the state of Minas Gerais and find that individual micro-entrepreneurs are more prevalent in regions with higher economic activity, larger urban centers, and among populations with greater income levels and formal education.

2.5.4 A new dataset on firms and workers: leveraging administrative data to track labor market trends

As previously mentioned, a contribution of this study is the integration of two administrative datasets: the Annual Social Information Report (RAIS) and the Business Registration Records, which encompass all active firms registered in the country, linked to owner identification information.[22] The data compiled, summarized in Table 2.3, capture both formal employment trends and entrepreneurial activity across the full spectrum of Brazilian firms, including MEIs and other individually operated businesses.[23]

[22] The database includes only individuals identified as legally responsible for the company, not the entire group of partners or shareholders.

[23] The number of companies reported in this data set differs slightly from the figures published by (MDIC, 2024) (see Table 2.5.1). This discrepancy may be due to differences in database updates, as only firms active

Table 2.3 – Firm and Worker Totals by Year (in millions)

Year	Firms	Employees	Workers
2015	17.38	57.90	68.73
2016	18.60	55.03	67.15
2017	19.93	53.78	66.06
2018	17.52	53.81	64.73
2019	18.79	53.88	65.83
2020	21.00	53.43	67.11
2021	20.49	55.43	68.59
2022	21.35	58.82	72.11
2023	21.98	59.92	73.61

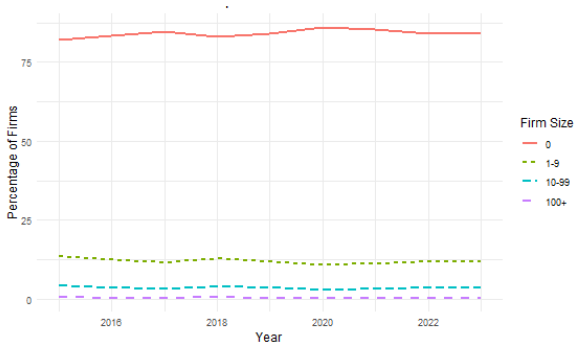
Note: The category of workers is defined as the sum of formal employees (recorded in RAIS) and business owners registered in the Federal Revenue Service database. Only unique CPF identifiers are considered. Since some individuals may simultaneously appear as formal employees in RAIS and as registered business owners, the total number of workers may differ from the simple sum of the two categories.

The distribution of firms and workers by firm size in Brazil between 2015 and 2023 reveals a persistent dual structure in the formal labor market.[24] Large firms, representing less than 1% of all establishments, consistently accounted for more than half of total formal employment, highlighting their dominant role in job creation. In contrast, individual firms, with no registered employees (size 0), experienced substantial growth, increasing from 14.3 million in 2015 to 18.5 million in 2023, an increase of almost 30%. In terms of worker participation, they rised from 19.2% to 23.7% of all workers. This expansion likely reflects the proliferation of sole proprietorships and the rise of the MEI regime, signaling a trend toward individual formalization without employer-employee ties. Small firms (1 to 9 employees) and medium firms (10 to 99 employees) maintained relatively stable employment shares, around 10 - 11% and 22 - 24%, respectively, throughout the period.

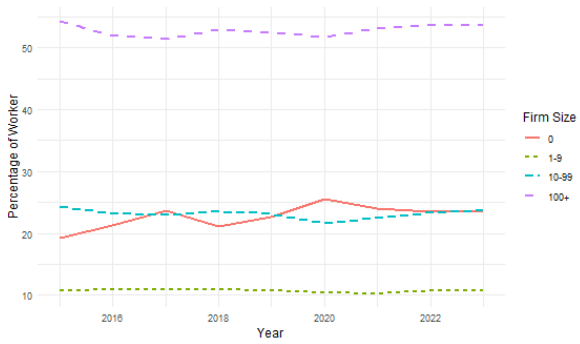
in each calendar year are considered. In this analysis, we include only companies that were active as of December 31 of each year.

[24] Firm size was calculated based on the number of workers effectively registered in RAIS by a firm for each year. In addition, the employee figures include all individuals formally employed at any time of the year.

Figure 2.8 – Firms and labor market composition trends



Firm distribution per firm size (with Individual Firms)



Evolution of worker distribution per firm size

Firm size is defined by the number of employees. The number of workers includes both formal employees (as recorded in RAIS) and business owners registered in the Federal Revenue Service database.

Source: Author's elaboration based on RAIS and CNPJ data.

It should be noted that the 18.5 million companies without employees in 2023 exceed the 13.8 million formally registered as individual companies, according to MDIC (2024). This finding is consistent with data from IBGE (2022), which show that a significant share (over 50% in 2020) of non-individual firms operate without wage employees.[25] This suggests that legal constraints or classification rules may prompt some individuals to register as conventional firms, even if they do not employ any worker.

The post-pandemic years (2021–2023) show signs of employment recovery in medium and large firms, suggesting a partial reorganization of productive structures. At the same time, the number of individual firms, particularly those without registered employees, continued to grow, indicating a sustained trend toward solo formalization through simplified regimes.

By combining employment and firm records, the analysis enables detailed tracking of transitions between formal employment and entrepreneurship, offering insights into labor market restructuring and the expanding role of small and microenterprises in the Brazilian economy. The integrated data set includes approximately 70.3 million workers in 2023, representing approximately 70% of the estimated employed population of IBGE (2024) and captures 100% of firms formally registered in the country, providing a comprehensive view of Brazil's formal labor and entrepreneurial landscape.

[25] These statistics are based on administrative records from the Special Secretariat for Social Security and Labor (Cempre); individual firms are not required to submit this information.

2.6 Regression Analysis

2.6.1 Regression Models

First, I assess whether the probability of an initially formal worker becoming an entrepreneur (MEI or similar individual firms) changes significantly after the Outsourcing Law in 2017. Specifically, I estimate the linear regression model as defined in Equation2.1:

$$Y_i = \alpha + \sum_{t=2014}^{2019} \beta_t \times \mathrm{D}_{i,t} + X'\Gamma + \varepsilon_i \tag{2.1}$$

Where Y_i is a binary variable that takes the value of 1 if the worker registers as an entrepreneur after separation from a formal job, and 0 in all other cases, such as when the worker does not register as an individual firm, registers before separation, or registers at any different period of time. The summation $\sum_{t=2014}^{2019} \beta_t \times \mathrm{D}_{i,t}$ captures the annual treatment effect, where β_t represents the coefficient of effect for each year, and $\mathrm{D}_{i,t}$ is a binary indicator that denotes the year in which worker i's dismissal was recorded in the RAIS database. The year 2013 is the omitted (baseline) year in the regression. Specifically, $\mathrm{D}_{i,t} = 1$ if the dismissal occurred in year t and $\mathrm{D}_{i,t} = 0$ otherwise. The control variables (X') are education, gender, age and region. The error term is denoted $\varepsilon_{i,t}$. As the dependent variable, we consider three scenarios: the first focus on individual firm openings restricted to one year after separation; the second extend the focus to individual firm openings restricted to two years after separation; and the third maintains the two-year restriction but includes all types of firm, not just individual ones.

I estimate a similar regression model segmented by occupational groups, as defined by the Brazilian Occupation Code (CBO), and by geographic regions. In addition, I estimate a unified model that incorporates the interaction terms for occupation (region), as specified in Equation 2.2. These analyses focus exclusively on the third scenario, all types of firm creation within two years after the separation of the job.

$$Y_i = \alpha + \sum_{t=2014}^{2019} \beta_t \cdot \mathrm{D}_{i,t} + \sum_{r=2}^{5} \gamma_r \cdot \mathrm{K}_i + \sum_{t=2014}^{2019} \sum_{r=2}^{5} \delta_{tr} \cdot (\mathrm{D}_{i,t} \times \mathrm{K}_i) + \epsilon_i \tag{2.2}$$

Where Y_{it} is a binary indicator equal to 1 if individual i created a firm within two years after job separation in year t; D_t are dummy variables for calendar years 2014 to 2019, with 2013 serving as the omitted reference category, and K_i are dummy variables for occupational groups and region (North = 1 (reference), Northeast = 2, Southeast = 3, South = 4, Central-West = 5). The $\mathrm{D}_{i,t} \times \mathrm{K}_i$ are interaction terms that capture region/occupation-specific deviations in the time trend. ϵ_{it} is the error term. This interactive specification allows us to assess how the effects of the reform varied across occupational categories and geographic areas within a unified estimation framework.

To assess the statistical significance of the changes in the distribution of firms and workers across firm size categories over time, we estimate a linear temporal trend, controlling for firm size, as defined in Equation 2.3 .

$$Y_{st} = \alpha + \beta \cdot \text{Year}_t + \sum_{s \neq \text{ref}} \gamma_s \cdot \text{Size}_s + \sum_{s \neq \text{ref}} \delta_s \cdot (\text{Year}_t \times \text{Size}_s) + \epsilon_{st} \tag{2.3}$$

Where: Y_{it} is the percentage of firms (or workers) in the firm size category s in year t. α is the intercept, representing the expected value for the reference group (firms without employees) in 2015; β is the linear time trend for the reference group and $Year_t$ is a continuous variable for the years 2016 to 2023 with 2015 as the reference. γ_s captures the average difference between the size category s and the reference group, and $Size_s$ are firm size dummies based on the number of employees (1-9, 10-19, 100+), the omitted category being firms without employees (size 0). γ_s $\text{Year}_t \times \text{Size}_s$ are the interaction terms that capture how time trends differ between size categories. ϵ_{it} is the error term.

2.6.2 Data

Our analysis benefits from the Annual Social Information Report (RAIS), a comprehensive administrative database maintained by the Ministry of Labor and Employment. RAIS is designed to collect and store information on formal employment trends, workforce characteristics, and labor market dynamics in Brazil. It gathers data from employers about their employees, including details about their wages, job positions, working hours, and other employment-related information. Submitting RAIS is a mandatory requirement for almost all Brazilian companies, with exceptions for companies without employees, inactive companies, individual micro-entrepreneurs without employees, and domestic employers.[26]

The RAIS data are enriched with Business Registration Records, which include all active firms registered in the country. These firms are identified by their CNPJ (Cadastro Nacional da Pessoa Jurídica), a unique business registration number linked to the owner's tax identification number (Cadastro de Pessoa Física - CPF)[27]. This integrated dataset, maintained by the Federal Revenue Service, offers a comprehensive view of the formal business landscape. It also allows for the identification of active Individual Microentrepreneurs (MEIs), who are similarly linked to their respective CPF.

[26] While providing the employee information remains a critical obligation for companies, the RAIS is currently being replaced by the eSocial reporting system which is a digital platform that unifies the reporting of employee information to various government agencies aiming to streamline and simplify the administrative processes for companies, reducing redundancy and improving compliance.

[27] A CPF number is the Tax ID issued once you have been registered into the Cadastro de Pessoas Físicas (Natural Persons Register). It is an 11-digit number issued by the Brazilian Individual Taxpayer Registry. It is often used as an identifier and is required for many things such as opening a bank account, starting a company, getting utility services, buying online, and being able to enter in contracts drafted in Brazil, among others.

The study is based on workers registered in the RAIS database from 2013 to 2019 who have a recorded termination within this period. Given that the study aims to evaluate labor market dynamics, individuals who remained with the same employer throughout the entire analysis period are not included.[28] Additionally, since the study's objective is to assess labor market trends, approximately 900,000 workers who left work due to retirement or death are not considered. Public sector employees are also excluded due to their low termination rates and because many public sector job categories have legal restrictions on starting businesses.

As a result, the study is based on a dataset of 9.13 million records, including 8.9 million employees and 1.6 million hiring firms.[29]

Table 2.4 – Descriptive Statistics

	RAIS 2013 a 2019
Employees (millions)[a]	**8.91**
Hiring Firms (millions)	**1.6**
Average Age[b]	32.9
Men	58%
Black	43%
Average Wage[b]	R$1,986.31
Opening Individual Firms (million)	**0.6**

[a] Considers only workers with at least one dismissal recorded during the period.
[b] Age and average wage at the dismissal date.

Of this sample, the dismissed workers have opened 0.63 million individual firms, 0.55 million of them (87%) registered as individual firms.

2.7 Results

2.7.1 The impact of Labor Reform on outsourcing

We posit that the establishment of a solo entrepreneur firm shortly after dismissal may serve as a proxy for labor outsourcing, particularly if the frequency of such occurrences increases significantly after 2017. This trend would suggest that workers increasingly perceive contracting opportunities as more available and/or more advantageous than traditional employment, indicating that the labor market is shifting from formal employment relationships to individual contractors, thus signaling a wider move toward outsourced labor.[30] By

[28] For workers with more than one employment record at the same company, the most recent employment record in RAIS was considered, except for the hiring date, where the earliest record was used.

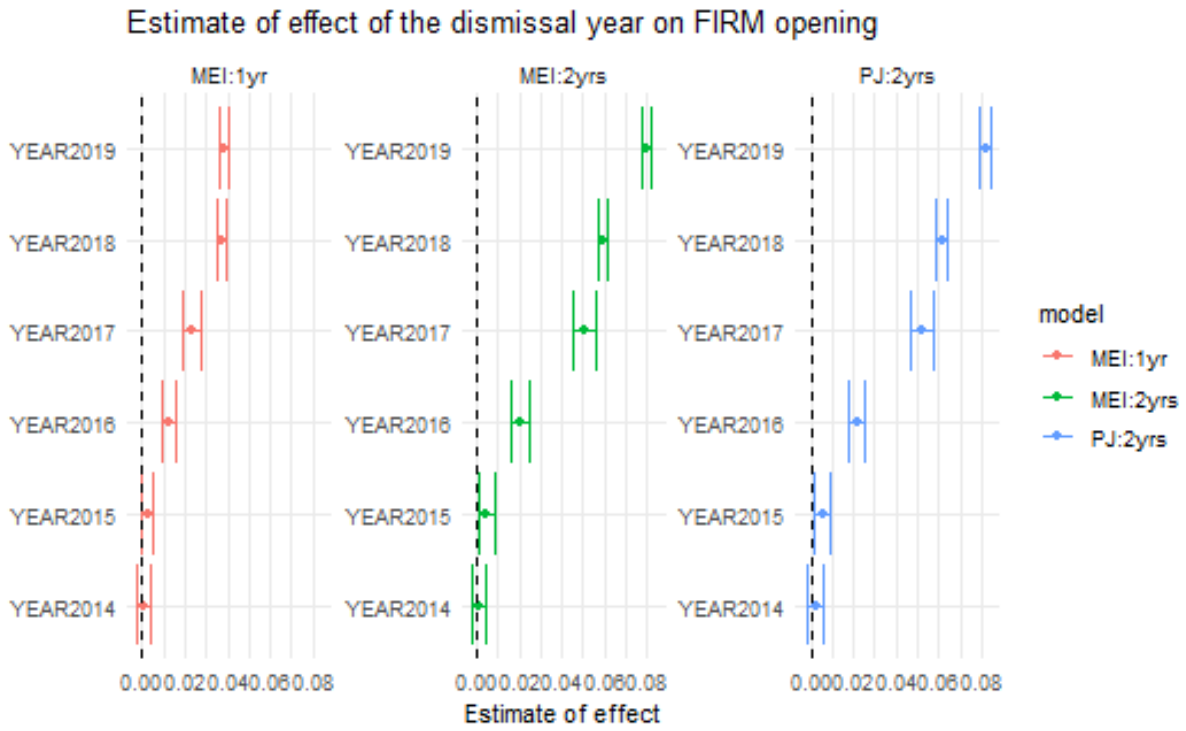
[29] Employees with ties to more than one company were retained in the dataset, accounting for the difference between the number of records and workers.

[30] Studies like Felix and Wong (2023) indicate that this shift from employee to contractor does not necessarily occur within the same worker-firm relationship. However, it would be valuable to explore whether the new individual firms are providing services to the same companies that previously employed these workers

focusing on workers previously employed in formal positions, we can filter for individuals who possess the necessary physical capabilities and qualifications to enter the formal labor market.

Applying the data to the proposed model, we find that becoming a solo entrepreneur is a consistent trend, and in any year considered, this probability is significantly higher than in 2013 (baseline). However, the magnitude of the impact increases substantially after 2017, as shown in Figure 2.9. The detailed regression results are presented in Appendix B.

Figure 2.9 – Regression Result



Note: Dots show OLS estimates of the regression coefficients $\beta_{2014} to \beta_{2019}$ from Equation (1) with year 2013 as reference. The dependent variable is a binary indicator equal to 1 if the worker registers a firm under one of three scenarios: (i) left graph – as an individual entrepreneur within one year of separation; (ii) middle graph – as an individual entrepreneur within two years of separation; and (iii) right graph – any type of firm within two years. Bars represent 95% confidence intervals.

As discussed, we consider three scenarios for the dependent variable: MEI openings within one year after separation; and MEI openings within two years after separation. Although the results are significant for the one-year interval, they become more pronounced for the two-year interval. This is expected because dismissed workers are entitled to up to six months of unemployment insurance and may also receive severance pay. Consequently, many do not reenter formal employment until after this period has passed. Considering

within the RAIS framework.

that most of the individual firms are registered as MEI, there is no significant change in the results when including different types of individual firms (third scenario considered). The results remain consistent even after controlling for region and worker characteristics (education, race, age), as shown in Appendix C.

These findings substantiate our initial hypothesis. Although the establishment of individual businesses was an ongoing trend prior to legislative changes, the enactment of the 2017 Outsourcing Law significantly accelerated this process. By facilitating the replacement of traditional employee relationships with individual contractors, the law has encouraged a shift toward more flexible labor arrangements, allowing businesses to minimize expenses related to social security, benefits, and other labor protections mandated for formal workers.

2.7.2 Heterogeneous effects across Occupation

In Section 2.5.2.1, I presented trends in firm creation across occupational groups, as classified by CNAE codes. Building on that analysis, I now investigate the occupational profiles of workers who are more likely to transition to individual entrepreneurship after the termination of formal employment. Occupational categories for employees are defined by the Brazilian Classification of Occupations (CBO) and are recorded in the RAIS database. Although no direct mapping exists between CNAE codes (which classify firm activities) and CBO codes (which classify employee occupations), a practical alignment can be constructed for analytical purposes.[31] The mapping used in this study is presented in Appendix D.

By examining overall firm creation trends segmented by workers' previous occupations, this analysis aims to offer a more nuanced understanding of outsourcing trends, providing valuable insights into how workers from different occupational backgrounds may be more or less inclined to engage with outsourcing firms.

Sector-specific regressions are a valuable analytical tool, as they highlight the internal dynamics within each occupational group and provide clear, intuitive insights. As shown in Table 2.5, the results of the sector-specific regression confirm a consistent trend of increased individual firm creation in all occupations, with a marked increase in magnitude from 2017 onward. They also reveal significant heterogeneity in the effects of the 2017 Labor Law Reform across occupational categories, underscoring distinct labor market dynamics.

Consistent with the individual firm opening trend shown in Figure 2.6, the sellers and beauty services groups show a pronounced and consistent growth in firm openings after dismissals throughout the observed period. For the seller, this trend likely reflects the growing prevalence of independent or commission-based opportunities, fueled in part by

[31] The Sales Promotion and Clothing, Accessories, and Cosmetics Retail sectors are grouped under "Sellers." Since housekeepers are typically employed by individuals who are not required to report under RAIS, it is not possible to replicate the analysis for this group.

Table 2.5 – Regression Results by Occupation Category

	Dependent variable: Firm within 2 years					
	Food Service	Construction	Transport	Beauty	Clerck/Adm.Services	Sellers
YEAR2014	−0.002	0.002	−0.004	0.083*	0.005**	0.006**
	(0.003)	(0.005)	(0.004)	(0.047)	(0.002)	(0.003)
YEAR2015	0.006	0.002	0.001	0.143*	0.011***	0.013***
	(0.004)	(0.005)	(0.005)	(0.080)	(0.003)	(0.004)
YEAR2016	0.007	0.010*	0.025***	0.167**	0.035***	0.037***
	(0.004)	(0.005)	(0.007)	(0.079)	(0.005)	(0.006)
YEAR2017	0.045***	0.040***	0.033***	0.562***	0.069***	0.055***
	(0.008)	(0.015)	(0.008)	(0.132)	(0.009)	(0.008)
YEAR2018	0.049***	0.062***	0.061***	0.321***	0.064***	0.069***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.001)	(0.002)
YEAR2019	0.067***	0.077***	0.079***	0.285***	0.094***	0.086***
	(0.004)	(0.006)	(0.005)	(0.030)	(0.003)	(0.003)
Constant	0.006**	0.009***	0.014***	0.000	0.010***	0.008***
	(0.003)	(0.003)	(0.003)		(0.001)	(0.002)
Observations	526,544	137,175	309,590	8,687	1,271,958	1,417,488

Note: Coefficient estimates are from sector-specific regression models (Equation 2.1). The dependent variable is a binary indicator equal to 1 if worker registers a firm within two years after job separation, with the year 2013 as the time reference.
$^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

the expansion of digital commerce and e-Commerce platforms.

In contrast, the Food Services and Construction sectors exhibit statistically significant increases in firm creation primarily after 2017, with these trends intensifying in subsequent years. The marked inflection point specifically in 2017 for these sectors suggests that labor regulatory changes played a key role in driving firm creation after dismissal, particularly by liberalizing outsourcing practices. This may be related to the fact that these industries typically employ workers in occupations closely tied to core firm activities, which were historically constrained by labor legislation limiting outsourcing.

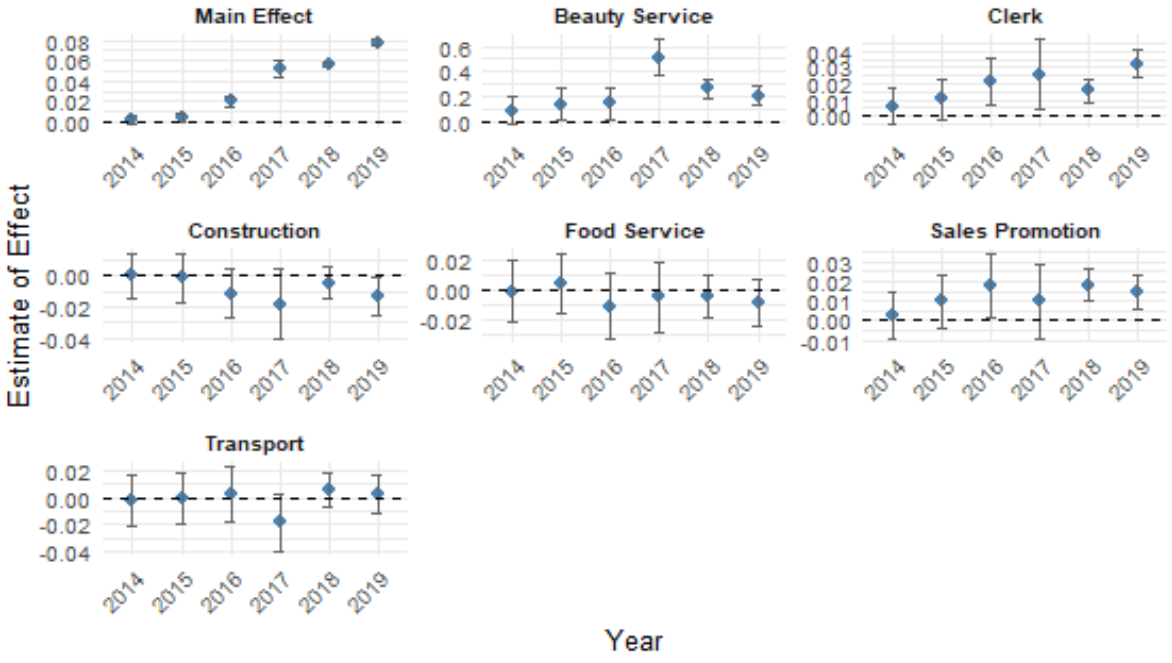
Interestingly, while the general trend of individual firm openings (see Figure 2.6) does not show a clear inflection point in 2017, the firm creation after the dismissal of food services workers actually shows a notable change around that year. This divergence suggests that, while the increased prevalence of outsourcing post-reform likely contributed to the trend, the broader increase in firm creation within the Food Services sector may be more closely linked to formalization processes than solely to changes in outsourcing regulations.

Finally, closely aligned with the trend for individual firm openings, the findings for former workers in the clerical and administrative services industry reveal steady growth after 2017, with significant effects appearing even earlier. The transport industry also exhibits an upward trend, with statistically significant increases after 2016. Similarly to the food services industry, the steady growth observed after 2017 for the transport and administrative services industries (see Figure 2.6) may be partially attributed to a broader formalization process.

This analysis can be complemented by a unified model with sector interactions, which enables formal statistical comparisons across groups, controls for shared time trends, and provides a clearer view of sector-specific deviations. Using “all other occupations" as the

reference category, the model shown in Figure 2.10 captures how different occupational groups compare to the general trend of the labor market in firm registration (regression results are presented in Appendix E.1. The main year effects indicate a consistent and statistically significant increase in the likelihood of registering a firm within two years: for example, the coefficients for 2017 (0.052), 2018 (0.056), and 2019 (0.078) confirm a strong and widespread upward trend in individual formalization. This indicates that, regardless of the occupation, formalization through entrepreneurship has become increasingly common over time.

Figure 2.10 – Coefficient Estimates by Year and Occupational Group



Note: Dots represent OLS estimates from the iterative model (Equation 2.2). The dependent variable is a binary indicator equal to 1 if the worker registers a firm within two years following job separation. The reference categories are the year 2013 and the occupational group 'Other,' serving as a proxy for general labor market conditions. Vertical bars indicate 95% confidence intervals.

The interaction terms refine this picture by showing important heterogeneity over time and how specific occupational groups deviate from this general tendency. For example, Beauty Service workers experienced much stronger gains, with interaction effects of 0.510 in 2017 and 0.207 in 2019, suggesting that they were among the groups most responsive to changes in the policy or institutional environment. Clerk occupations also show modest but positive interaction effects over time. In contrast, construction workers show negative interaction effects in 2017 (–0.018) and 2019 (–0.013). However, it is important to note that these values must be interpreted in the context of strong positive effects from the baseline, and negative interaction coefficients do not signal declines in formalization but reflect lower

growth relative to an already expanding baseline. In other words, construction workers were still more likely to formalize in these years than in the baseline period (2013), but their increase was slightly below the average for all other occupations combined.

Sales promotion workers are noticed for exhibiting early signs of increased formalization, even before the major regulatory change of 2017. In 2015, the interaction term for this group is already positive and statistically significant (0.010), indicating a faster transition to entrepreneurship relative to the broader labor market. This early movement may reflect sector-specific factors, such as the prevalence of commission-based sales, informal commercial arrangements, or flexible contracting practices that preceded and anticipated later legal reforms. The trend persists in subsequent years, with coefficients of 0.018 in 2016 and 0.014 in 2019, reinforcing the notion that Sales Promotion occupations were among the early adopters of the MEI regime or similar formalization strategies. In contrast, sectors like Construction and Food Service show a slower relative uptake, despite sharing in the general upward trend. Taken together, the results indicate that formalization is a broad-based trend across the labor market, but with variation in intensity.

In summary, these findings highlight two key insights: while outsourcing remains a dominant trend, it is shaped and moderated by regulatory frameworks and their enforcement. The observed nuanced patterns emphasize the industry-specific drivers and trajectories of firm creation, revealing that uniform policies often lead to varied results across sectors, as their influence is mediated by sectoral characteristics and the nature of work performed. This underscores the need to adopt customized approaches to effectively address unique challenges and opportunities within each industry.

2.7.3 Heterogeneous effects across regions

In line with the previous analysis of trends in the creation of firms in occupational groups, now I examine the likelihood that employees will establish a company within two years after separation of the job in the five regions of Brazil between 2014 and 2019, using 2013 as the reference year. As shown in Table 2.6, the probability of firm creation consistently increased across all regions over time.

Firm creation in the North has shown significant growth since 2014, with a notable acceleration from 2018 onward. The Northeast follows a similar trend, but exhibits a more pronounced growth inflection starting in 2017. The South and Southeast, Brazil's most economically developed regions, follow comparable patterns. Both regions start with modest gains in 2014 and 2015 expanding to substantial growth by 2017. By 2019, the South displays the highest probability of firm creation, closely followed by the Southeast, reflecting a pronounced upward trend in firm openings relative to other regions. The Central-West shows a similar trend, although slightly lower in magnitude.

It is interesting to note that until 2015, the North region had the highest probability of

Table 2.6 – Regression Results by Region

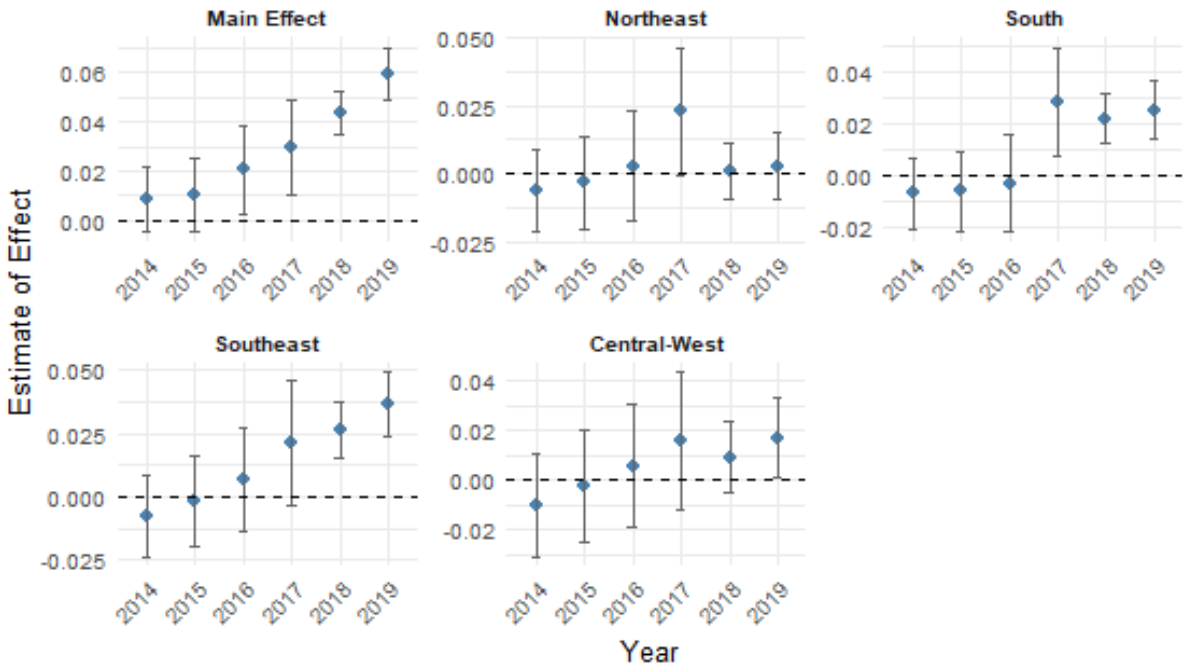
	Dependent variable: Firm opened within 2 years				
	North	Northeast	Southeast	South	Central-West
YEAR2014	0.009***	0.002	0.002*	0.001	-0.002
	(0.003)	(0.002)	(0.001)	(0.002)	(0.004)
YEAR2015	0.010***	0.007***	0.004***	0.008***	0.007
	(0.004)	(0.002)	(0.001)	(0.002)	(0.005)
YEAR2016	0.020***	0.023***	0.018***	0.027***	0.026***
	(0.005)	(0.003)	(0.002)	(0.003)	(0.006)
YEAR2017	0.029***	0.052***	0.058***	0.051***	0.045***
	(0.007)	(0.006)	(0.004)	(0.007)	(0.008)
YEAR2018	0.044***	0.044***	0.066***	0.070***	0.053***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.003)
YEAR2019	0.059***	0.062***	0.085***	0.096***	0.076***
	(0.003)	(0.002)	(0.001)	(0.002)	(0.004)
Constant	0.008***	0.009***	0.009***	0.007***	0.014***
	(0.002)	(0.001)	(0.001)	(0.001)	(0.003)
Number of Observations	408,490	1,348,579	4,816,544	1,782,270	777,781

Note: Coefficient estimates are from region-specific regression models (Equation 2.1), with the year 2013 as the time reference.
$^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

individual entrepreneur registration among all regions, surpassing the South and Southeast regions. One possible explanation for this trend is the relatively limited enforcement capacity of the North, which may have fostered outsourcing growth prior to 2017. Weaker regulatory oversight likely made individual contracting more feasible in the region, encouraging more registrations as individual entrepreneurs.

Similarly to occupational analysis, the results of the interactive regression model complement the region-specific regressions and confirm a clear and consistent upward trend in the probability of firm creation within two years throughout the entire sample period (see Table E.2 for detailed regression results). As presented in Figure 2.11, the analysis also confirms substantial variation in both the baseline likelihood of formalization and the rate at which different regions adopted this trend over time.

Figure 2.11 – Coefficient Estimates by Year and Region



Note: Dots show OLS estimates of the regression coefficients relative to the reference categories: year = 2013 and occupation group = "North Region". The vertical indicate 95% confidence intervals.

The interaction terms between region and year reveal that certain regions—particularly the South (S) and Southeast (SE)—lagged behind the North (N), the reference category, in terms of formalization prior to 2017. However, following the changes in labor law, these regions exhibited more substantial increases in the probability of firm creation, suggesting a stronger response to institutional change.

These results suggest that although broader institutional or regulatory changes (such as the 2017 labor reform and outsourcing law) had nationwide effects, their impact was not uniform across the country. Instead, the adoption of formal entrepreneurial status was shaped by region-specific dynamics, possibly related to differences in labor market structure, enforcement capacity, and access to information or support services.

The evidence underscores that the regional context plays a key role in mediating the effects of national labor policy and that understanding these variations is essential to design more targeted and effective formalization strategies.

2.7.4 Impact on RAIS Composition

The findings of the previous sections demonstrate a clear and sustained increase in the probability of individual firm creation within two years, indicating that workers are progressively shifting toward more flexible forms of labor participation. This trend prompts

a critical question: how is this shift shaping the composition of formal employees and, more broadly, what are its implications for the evolving structure of Brazil's formal labor market?

A first step in addressing this question is to examine the average evolution of key labor market indicators. In general, the data do not point to major disruptions in the formal labor market but rather to incremental adjustments. As shown in Table 2.7, the evolution of key indicators of the labor market between 2015 and 2023 suggests a stable scenario, with modest structural changes.

On the one hand, the number of formal workers decreased slightly after 2015 but recovered by 2021, suggesting that labor reform had limited effectiveness in increasing overall job creation. The workforce has aged gradually, and educational attainment has improved modestly, probably reflecting broader demographic trends. On the other hand, the average number of employees per firm and average wages (in terms of minimum wages) have remained largely stable, offering limited evidence to support the hypothesis of a significant rise in outsourcing or subcontracting. Despite labor reforms, there has been no significant increase in the use of flexible contractual forms, as intermittent and part-time contracts remain below 1% of formal employment.

Table 2.7 – RAIS Descriptive Statistics by Year

Year	Links (M)	Employees (M)	Firms (M)	Age	Education	Wage (MW)	Intermit./Part-time	Tenure	Managers	Employee/Firm
2015	72,11	59,72	3,13	35,73	6,63	2,78	–	4,12	0,070	19
2016	67,07	56,78	3,09	36,37	6,72	2,71	–	4,48	0,072	18
2017	65,59	55,49	3,07	36,70	6,79	2,72	0,003	4,65	0,073	18
2018	66,15	55,65	3,05	36,83	6,84	2,73	0,005	4,65	0,074	18
2019	66,56	55,55	3,02	37,02	6,87	2,63	0,012	4,95	0,074	18
2020	65,85	55,00	2,97	37,24	6,89	2,46	0,013	5,08	0,072	18
2021	70,47	56,99	3,06	37,06	6,93	2,44	0,014	4,61	0,072	18
2022	78,44	61,30	3,78	37,09	6,94	2,78	0,015	4,33	0,071	16
2023	81,46	62,41	3,62	38,73	6,93		0,017	4,19	0,069	17

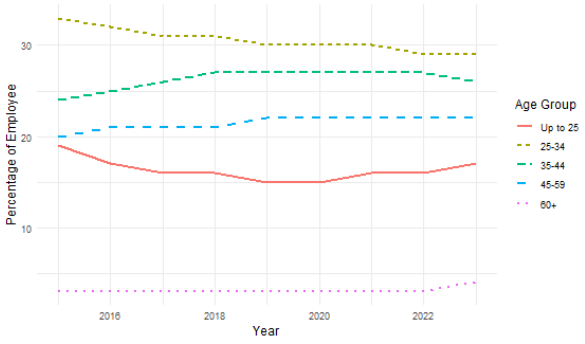
Notes: The data include all registered employees at any time during the year, not only those active on December 31. This explains why the number of employment records is slightly higher than the official figures reported by the Ministry of Labor and Employment.
Firm counts are based on root-level identifiers (CNPJ-8) rather than establishment-level identifiers (CNPJ-14). Note that A single CNPJ-8 can be associated with multiple CNPJ-14s, meaning one firm with multiple physical locations (establishments).
The data on managers include individuals classified under CBO codes starting with '1' (managers) as well as supervisors, identified by three-digit CBO codes: 111, 114, 121, 122, 123, 131, 141, 142, 410, 420, 510, 520, 620, 630, 710, 720, 730, 740, 750, 760, 770, 780, 810, 820, 830, 840, 860, and 910.
Source: Authors elaboration using RAIS data.

However, relying solely on mean values may obscure underlying distributional changes in the RAIS composition. When disaggregating key indicators into categorical ranges, more substantial shifts begin to emerge, revealing trends in the structure of the formal labor market that are not apparent from aggregated statistics alone.

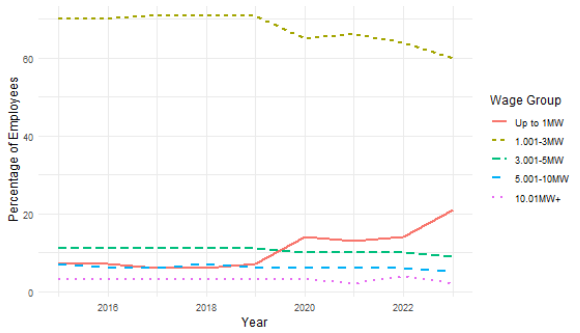
As shown in Figure 2.12, the participation of workers aged 25 to 34 years has declined over time, offset by an increase in the age group 35 to 44 years. Although this change may partially reflect broader demographic changes, it is noteworthy that the share of workers aged 45-59 and 60+ remained relatively stable throughout the period. The variation in the age group of under-25 appears to be consistent with the greater vulnerability of younger workers during periods of economic downturn. A similar pattern is observed in the distribution of educational attainment (Figure 2.12): There has been a noticeable increase in the share of workers with secondary education and a corresponding decline in those with only primary

education, which may also reflect demographic trends. However, the share of workers with tertiary education, despite increasing until 2018, has almost returned to its level of 2015 at the end of the period.

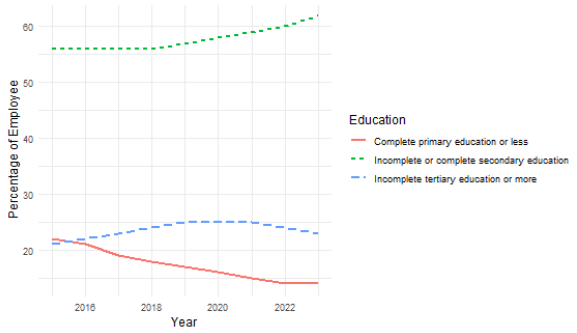
Figure 2.12 – RAIS composition trends



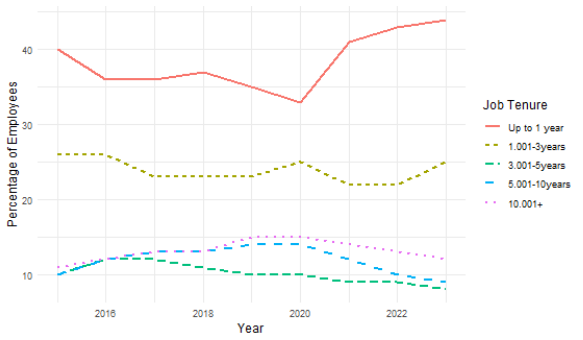
Evolution of age distribution in RAIS



Evolution of wage distribution in RAIS



Evolution of education distribution in RAIS



Evolution of job tenure distribution in RAIS

Source: Authors elaboration using RAIS data.

The distribution of worker tenure has a consistently high share of short-term employment relationships. As shown in Figure 2.12, the proportion of workers with less than a year of service has ranged from 33% in 2020 to a peak 44% in 2023, which may be related to the dismissal and post-recovery of the COVID-19 pandemic. The share of workers with medium tenure (1–10 years) shows more modest fluctuations, with a slight decline in the 3 to 5 year and 5 to 10 year categories after 2016. Interestingly, the proportion of long-term workers (more than 10 years) gradually increases until 2020, stabilizing around 12–15% thereafter. This pattern suggests a high labor turnover that may reflect both structural labor market rigidities and dynamic firm-level practices, such as outsourcing, that limit long-term employment relationships.

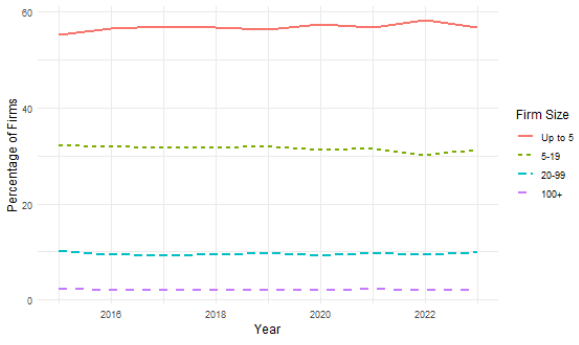
Regarding wage (Figure 2.12), the distribution over the period 2015-2023 indicates a notable trend toward increased wage polarization. The share of workers earning between 1.001 and 3 minimum wages remained relatively stable around 70% from 2015 to 2019. However, starting in 2020, this group began to decline, reaching 60% in 2023. In contrast,

the proportion of workers earning up to one minimum wage increased significantly - from 6 to 7% before 2020 to 21% in 2023. This shift likely reflects the impact of the COVID-19 crisis and subsequent labor market disruptions. Meanwhile, the higher wage brackets (above 3 minimum wages) remained relatively stable or experienced a slight decline, with the top bracket (above 10 minimum wages) consistently representing only 2 to 4% of the workers. These patterns suggest a growing concentration of workers in lower wage categories, raising concerns about the quality of employment and the potential erosion of earnings in the formal labor market.

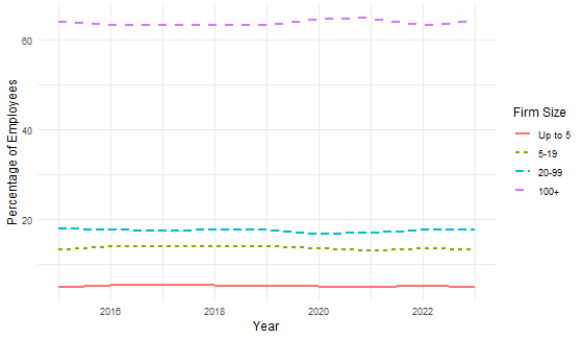
Despite the documented increase in the creation of individual firms and the growing trend toward self-employment highlighted in previous sections, the distribution of formal firms by size remained strikingly stable between 2015 and 2023, as shown in Figure 2.13. Firms with up to five employees consistently accounted for more than half of all formal firms, rising slightly from 55.3% in 2015 to 56.7% in 2023. Small firms (5 to 19 employees) maintained a share of approximately 31 to 32%, while medium firms (20 to 99 employees) hovered around 9 to 10%. Large firms (100 or more employees) represented a very small fraction of the total, remaining close to 2% throughout the period.

Despite substantial labor reforms aimed at increasing labor market flexibility and potentially encouraging firm growth through outsourcing mechanisms, the RAIS data do not indicate significant changes in the overall distribution of formal firm sizes. This persistent structure suggests that the observed expansion in firm creation, largely driven by solo entrepreneurs, has not translated into a broader reconfiguration of the formal firm size distribution.

Figure 2.13 – RAIS composition trends



Evolution of firm distribution per firm size



Evolution of Employee distribution per firm size

Source: Authors elaboration using RAIS data.

Although most formal firms in Brazil are micro-enterprises with up to five employees, they represent a disproportionately small share of total formal employment (see Figure 2.13). In contrast, large firms, although they represent only about 2% of the total number

of firms, typically employ a significantly larger portion of the workforce (more than 60%). This asymmetry reflects the concentration of employment in medium and large enterprises, which remain central to job creation and labor absorption in the formal sector.

2.7.5 Firm Dynamics and Labor Market Composition: analysis of the data on the workers and firms

RAIS data are limited to firms with at least one registered employee, as MEI and individual firms are not required to report.[32] Building on the integrated RAIS–CNPJ dataset introduced in Section 2.5.4, this section complements the RAIS-based analysis by assessing the statistical significance of changes in the distribution of firms and workers in the full spectrum of size categories of firms over time. To evaluate these trends, we estimate a linear-time trend model with controls for the firm size, as specified in Equation 2.3.

As shown in Table 2.8, for the worker distribution, the regression results provide strong evidence of divergent trends in the distribution of workers across firm size categories over time. The coefficient for the year variable (Year = 0.50, p 0.001) is positive and statistically significant, suggesting a steady annual increase in the share of workers in the reference group, highlighting the growing relevance of individually operated firms in the formal labor market.

Table 2.8 – Regression Results: Worker Distribution by Firm Size

Variable	**Estimate**	**Std. Error**	**t value**	**Pr**$(>\|t\|)$	**Signif.**
(Intercept)	20.744	0.590	35.167	0.000	***
Year	0.500	0.124	4.035	0.000	***
Size 1-9	-9.860	0.834	-11.819	0.000	***
Size 10-99	2.718	0.834	3.258	0.003	**
Size 100+	31.722	0.834	38.026	0.000	***
Year x Size 1-9	-0.543	0.175	-3.101	0.004	**
Year x Size 10-99	-0.577	0.175	-3.291	0.003	**
Year x Size 100+	-0.425	0.175	-2.425	0.022	*

Notes: The dependent variable is the percentage of workers (including both firm owners and employees) in each firm size category by year. The model follows the specification in Equation 2.3, estimating a linear time trend for the reference group using a continuous year variable from 2016 to 2023, with 2015 as the baseline. Firm size is defined by the number of employees (1–9, 10–99, 100+), with firms without employees (size 0) as the omitted category.
Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

The interaction terms between the year and the firm size categories reveal a consistent deceleration in worker share growth among all firm sizes with employees. Specifically, the

[32] Depending on their legal status, firms are required to submit a “negative RAIS” declaration indicating they have no employees

share of workers in micro-firms (1-9 employees) declines by 0.54 percentage points annually (p 0.01), while small (10–99 employees) and large firms (100+ employees) experience yearly decreases of 0.58 and 0.43 percentage points, respectively. These results indicate a structural transformation in the formal sector, with employment growth increasingly concentrated in non-employing firms.

Complementing this analysis, as presented in Table 2.9, the regression results for the firm distribution also indicate significant and systematic differences in the temporal dynamics of the firm size distribution in Brazil's formal sector.

Table 2.9 – Regression Results: Share of Firms by Size Over Time

Variable	**Estimate**	**Std. Error**	**t value**	**Pr**$(>\|t\|)$	**Signif.**
(Intercept)	83.220	0.393	211.658	0.000	***
Year	0.245	0.083	2.967	0.006	**
Size 1-9	-70.520	0.556	-126.825	0.000	***
Size 10-99	-79.476	0.556	-142.931	0.000	***
Size 100+	-82.864	0.556	-149.026	0.000	***
Year x Size1-9	-0.428	0.117	-3.667	0.001	**
Year x Size10-99	-0.303	0.117	-2.597	0.015	*
Year x Size100+	-0.253	0.117	-2.169	0.039	*

Notes: The dependent variable is the percentage of firms in each size category by year. The model follows the specification in Equation 2.3, with a linear time trend applied to the reference group using a continuous year variable from 2016 to 2023, and 2015 as the baseline. Firm size is defined by the number of employees (1–9, 10–99, 100+), with firms without employees (size 0) serving as the omitted category.
Significance levels: *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

The positive and statistically significant coefficient for the year variable (0.245, p < 0.01) suggests a gradual increase in the share of firms without employees (the reference category) over time. In contrast, all other firm size categories (1-9, 10-9, and 100+ employees) show significantly lower baseline shares, with negative and highly significant coefficients. In addition, the interaction terms between year and firm size are also negative and statistically significant, indicating that while the proportion of firms without employees increases over time, the relative shares of micro, small and large firms have grown at a slower pace, by approximately 0.25 to 0.43 percentage points less per year.

We also estimated a model treating the year as a categorical variable to allow for nonparametric year-to-year variation, but the fixed effects approach did not yield statistically significant coefficients for individual years, suggesting that deviations from the base year were not systematically different. Moreover, the linear model outperformed the fixed effects model based on AIC and BIC, indicating a better fit to the model. These findings suggest that, while individual year effects may appear modest, the lack of significance in the categorical model does not rule out a gradual and cumulative trend in the share of non-employing firms

and corresponding declines across other firm size categories, precisely what the linear model captures more effectively.

In summary, the data underscore a dual structure within the formal labor market: on the one hand, a large number of firms without employees; on the other hand, a small group of large firms responsible for the majority of formal employment. The coexistence of highly concentrated employment in large firms along with a growing mass of small-scale and solo formal businesses may be associated with barriers to firm growth, regulatory rigidities, and strategic segmentation of the labor market. In addition, the continued expansion of individually operated firms may reflect both economic necessity and institutional incentives for self-employment, with important implications for labor market dynamics, employment stability, and worker access to social security benefits.

These findings align with Peters and Zilibotti (2021), who argue that in developing countries, mid-sized firms are more restricted in their growth than small informal firms. As a result, their limited capacity to expand and create quality jobs restricts the economic alternatives available to marginal entrepreneurs, ultimately reducing the likelihood of exit from low-productivity small firms. In a similar vein, WorldBank (2018) question the cost-effectiveness of some SME-targeted programs, noting that larger firms typically account for the most stable job creation and, within this context, reducing barriers to firm growth and promoting competitive markets may prove more effective than easing firm entry. Reinforcing this view, Vandenbussche, Aghion, and Meghir (2006) emphasize that in the absence of transformative firms and capital investment, the demand for skilled labor remains constrained, thus limiting the potential of education and training to enhance labor income and foster economic development.

2.8 Conclusion

The analysis showed that while individual business establishment had been growing before legislative changes, the 2017 outsourcing law played a key role in accelerating this trend. By facilitating the transition from traditional employment to individual contracting, the law has allowed businesses to increase flexibility in labor relations and minimize costs related to social security, benefits, and other labor protections.

Applying the regression model to different occupation categories of employees, we observe that the overall trend of increased individual firm creation is consistent across all industries, with the magnitude nearly doubling from 2017 onward. Sellers and beauty services groups show pronounced growth in firm creation after dismissals, likely driven by the rise of independent, commission-based opportunities and the expansion of digital commerce. In contrast, the food services and construction sectors show significant increases in firm creation primarily after 2017, suggesting that labor regulatory changes, particularly

the liberalization of outsourcing practices, played a pivotal role in driving firm creation in these industries. While outsourcing likely influenced these trends, the broader formalization process appears to have contributed to the increase in firm creation, especially in the Food Services sector. These findings underscore the importance of considering industry-specific factors when analyzing firm creation dynamics, highlighting that uniform policies often yield varied results across sectors. While outsourcing is a dominant trend across sectors, its expansion can be strongly influenced by specific legal frameworks and their enforcement.

Regional differences are also notable in this context. Although all regions experienced growth in individual firm creation, the Southeast and South saw the most substantial increases after 2017. In contrast, the North, Northeast and Central-West exhibited slower growth, although significant gains in 2017. Since regulatory changes were enacted at the federal level, this regional heterogeneity underscores the influence of local economic and institutional factors in shaping the impact of these reforms.

Although the results indicate that a notable shift occurred through the formalization of self-employment, particularly among former wage workers through the creation of individual firms, and despite expectations that the expansion of outsourcing following institutional reforms would lead to greater labor precarization and a decline in formal employment, the data on RAIS composition trends indicate that formal employment levels remained stable, the use of intermittent and part-time contracts remained marginal, and the average firm size and wages showed little variation. One possible explanation is that outsourcing did not replace formal jobs with informal ones, but rather transformed the way workers are incorporated into the labor market. Rather than signaling a return to informality or a rise in precarious work, this trend may reflect growing worker preferences or firm-level incentives for greater flexibility in labor relations.

Finally, this study also highlights an important trend in Brazil's formal business landscape, marked by the rapid expansion of individually operated companies and the consolidation of a dual labor market structure characterized by a small group of large companies concentrating the majority of formal employment and a growing number of firms operating without employees.

Investigating this dynamic is essential for assessing the impact of outsourcing legislation on labor market inequality and workers' well-being. Further research is needed to determine whether these new forms of work offer adequate social protection and economic security. In addition, understanding to what extent labor flexibilization has redistributed risks from firms to workers is crucial to evaluating the equity and long-term sustainability of these reforms. Such an analysis is also key to inform policies that ensure both flexibility and fairness in the labor market.

3 Towards Temporary Work: Employment Transitions and Challenges in Brazil's Construction Industry

3.1 Introduction

Outsourcing, the rise of temporary work, and the expansion of the gig economy are transforming labor markets in both developed and developing countries. These new employment arrangements blur the boundaries between formal and casual work, raising concerns about income instability and the absence of protections such as pension plans and health insurance (WorldBank, 2018; OECD, 2023). Traditionally, economic development has been associated with increasing formalization, making the persistent growth of temporary work a significant analytical and policy challenge for governments and academic institutions. As conventional employment models evolve, there is growing interest in understanding the main drivers of these changes and their impacts on workers' financial outcomes.

These evolving work patterns reflect a long-standing dilemma that predates modern technological innovations: most challenges faced by short-term or temporary workers, even in advanced economies, closely mirror those experienced by workers in the informal sector. Emerging economies, in particular, have long struggled with similar issues, as persistent informality remains a major concern (WorldBank, 2018). Examining the realities of developing countries provides insight into this expanding form of work worldwide, while also shedding light on workers' responses and the effectiveness of policy approaches (Hammer; Ness, 2021). Central to this debate is understanding whether the shift from traditional employment represents an involuntary response to adverse conditions, an "unemployment push" that forces workers into precarious self-employment, or a voluntary transition driven by a "prosperity pull" toward benefits such as the possibility of working for multiple contractors, more flexibility, higher income, and reduced taxes.

Individual worker trajectories play a critical role in shaping perceptions of new work arrangements, highlighting the complex and varied dynamics that shape informal and precarious labor (Hammer; Ness, 2021). Depending on workers' prior employment conditions, platforms can offer a pathway to more secure and equitable work. *In developed countries, "uberization" is often seen as a threat to formal employment, as workers trade rights and protections for perceived autonomy. In contrast, in developing countries, platform work can offer an improvement over informal employment - where basic labor protections are often lacking - by providing secure payments, dispute resolution, and greater income stability.* (OECD, 2023)

3.1.1 Research contribution

This study advances the literature by examining the effects of formalization as a solo entrepreneur on workers' living conditions, drawing on financial indicators such as access to credit, credit card balances, and default rates. By comparing the financial trajectories of solo entrepreneurs (treated group) with those of formal employees and unregistered individuals (counterfactual groups) before and after formalization, the analysis sheds light on the economic mechanisms underpinning labor outsourcing and entrepreneurship, as well as the financial consequences of these transitions for workers. The central premise is that improvements in these indicators proxy gains in consumption, income, and overall welfare. Moreover, if the transition primarily enhances workers' outcomes, it can be interpreted as a voluntary and welfare-improving shift.

In addition, the study investigates the heterogeneous financial effects of this transition, emphasizing differences across worker segments—both formal and informal—and across distinct profiles. By analyzing variation in outcomes according to employment histories and worker characteristics, the research provides a nuanced account of how labor outsourcing and entrepreneurship influence workers' financial stability. These insights contribute to a broader understanding of ongoing labor market transformations.

Brazil provides a compelling case study, having long faced high levels of informality. The country has progressively expanded legal frameworks to promote the formalization of micro- and individual entrepreneurs, granting them access to essential social protections, such as pensions and paid health leave, through streamlined registration processes. Focusing on a single industry allows for the control of sector-specific factors that could otherwise obscure the effects of formalization on financial outcomes. The construction industry is particularly suitable for this analysis due to its economic relevance (3,07% of the country's total GDP[1] and 6.4% of the formal employees[2]), specific skill requirements, traceable administrative records, and unique industry characteristics that influence employment stability and outsourcing dynamics.

This research makes an additional contribution by integrating three key administrative datasets: the Annual Social Information Report (RAIS), the Business Registration Records, and the Credit Information System (SCR). The combined use of employment, firm registration, and credit data allows for precise tracking of transitions between formal employment and entrepreneurship, while simultaneously offering detailed insights into entrepreneurs' financial behavior and access to credit. This integrated approach sheds light on how these

[1] In 2024, the construction sector in Brazil recorded a Gross Domestic Product (GDP) of BRL 359.5 billion, representing approximately 3.07% of the country's total GDP, which reached BRL 11.7 trillion (Instituto de Pesquisa Econômica Aplicada (IPEA), 2024).

[2] In 2024, Brazil's construction sector employed approximately 2.961 million formal workers, representing around 6.4% of the country's total of 46.27 million formal employees (Ministério do Trabalho e Emprego (MTE), 2025).

labor market transitions shape workers' financial outcomes, particularly with respect to credit access, indebtedness, and economic resilience.

The paper is structured as follows. In Section 3.2, we provide a brief introduction to the literature. In Section 3.3 we discuss the context and motivation for our research and in Section 3.4 we draw the hypotheses considered. In Section 3.5, we describe the methodology applied, the data sources, and the variables used in our analysis. Section 3.6 presents the main results found and Section 3.7 concludes.

3.2 Literature review

3.2.1 From Informality to Temporary Work: employment challenges convergence across sectors.

Independent contractors are closely linked to three key concepts—entrepreneurship, informality, and outsourcing—each shaping their role in distinct ways.

The individual contractor status serves as a legal framework that enables self-employed individuals to establish and operate micro businesses, positioning it as a vital tool for fostering entrepreneurship in Brazil. Designed to facilitate the formalization of independent work, this status grants individuals the ability to manage their businesses autonomously, expand within their industries, and access benefits such as credit, public tenders, and basic social security protections.

Although individual contractors are legally classified as entrepreneurs, they often operate in sectors historically linked to informal employment, such as small-scale commerce and personal services. Predominantly low-income earners, a significant share of these workers operate in a regulatory gray area, often failing to fully comply with tax obligations or social contributions, and therefore lacking basic social protections. As a result, the boundary between formal entrepreneurship and informality becomes blurred.

Individual contractors may also serve as an outsourcing mechanism, enabling firms to engage workers for specific tasks—such as sales, telemarketing, or clerical support—while classifying them as independent entities. This arrangement significantly reduces labor costs by allowing companies to bypass legal and social obligations, including paid leave, sick leave, and other employment-related contributions. Dismissal costs are also a critical factor. As described by Mata, Mattos, and Vilarouca (2025), Brazil mandates two compensation schemes for displaced workers: Severance Payment (SP) and Unemployment Insurance (UI). SP consists of Severance Savings Accounts (SSA), where firms are required to deposit 8% of employees' earnings, accessible to workers upon dismissal, plus a 40% indemnity for dismissals without cause. The UI is a government-mandated compensation scheme for involuntary job termination that provides 3 to 5 monthly payments based on job tenure. None

of these costs apply when hiring an individual contractor. This makes individual contractors an attractive option for firms, not only formalizing some previously informal work but also reinforcing the outsourcing model by providing a flexible, cost-effective alternative to direct employment.

3.2.1.1 Labor Informality

Labor informality encompasses a wide range of activities, from microenterprises that operate without formal recognition or regulation to informal workers who lack formal labor contracts, legal protections, and social benefits, including unemployment insurance, health coverage, and pensions.[3] This phenomenon constitutes a substantial portion of the global workforce and, while expanding in developed countries[4], remains particularly prevalent in developing countries. According to WorldBank (2018), 60% of the workers in emerging economies operate in the informal sector, lacking stable wage employment, social safety nets, or insurance.

Initially seen as a transitional phase in economic development, informal labor was once thought to be confined to marginal populations and expected to decline with the growth of economies. However, theorists are increasingly recognizing that informality is not only widespread but also persistent, challenging the assumption that economic growth will naturally lead to an expansion of formal employment. For instance, in regions like South Asia, informality has persisted—or even increased—despite significant economic growth. The high growth rates in countries such as India, Pakistan, and Bangladesh illustrate that informal labor remains resilient, revealing systemic barriers to formalization (Chen; Doane, 2008).

Informal employment varies widely across regions, influenced by economic, regulatory, and sociocultural factors (Maurizio, 2014; Ohnsorge; Yu, 2021; Esaku, 2021; Elbahnasawy; Ellis; Adom, 2016). The informal sector often arises in response to high taxes and regulatory burdens, exacerbated by weak institutions and poor governance enforcement (United Nations, 2019). Social and economic inequality further perpetuates precarious conditions, especially for marginalized groups such as migrants (Dell'Anno, 2021). In countries like China, South Korea, and the United States, migrants—whether domestic or international—are often concentrated in the most precarious jobs, such as construction and domestic work.

[3] Ulyssea (2020) distinguish between the following margins of informality: (a) extensive margin, based on whether firms register and pay entry fees to achieve a formal status; and (b) intensive margin, based on whether firms that are formal in the first sense hire workers without a formal contract. These terms are widely used in the literature.

[4] The Standard Employment Relationship (SER), characterized by secure full-time jobs with benefits and a subordinate relationship with a single employer, has become less dominant in developed countries. This shift is driven by the rise of alternative work arrangements, such as "gig" work. In a "gig" economy, the dominant forms of employment are short-term contract work, freelancing, and self-employment, often mediated by online platforms (Lewchuk, 2017).

These challenges are further intensified by racial and ethnic disparities: in the United States, low-paid informal jobs are disproportionately filled by people of color, while in South Korea, ethnic Koreans from China face similar barriers (Tilly, 2021). Economic shocks, including trade liberalization, amplify these issues, disproportionately impacting informal workers and often trapping them in cycles of instability and vulnerability (Dix-Carneiro *et al.*, 2021; Ponczek; Ulyssea, 2022).

At the same time, Dell'Anno (2021) underscores the role of the informal economy in fostering human capital, improving income distribution and sustaining economic activity despite the heavy regulatory burdens, especially in developing countries. Furthermore, Dix-Carneiro *et al.* (2021) argues that while the informal sector helps mitigate the immediate impact of negative labor demand shocks on unemployment, it can also exacerbate the adverse welfare effects of economic downturns.

These dynamics underscore the complex interplay between informal and formal economies, positioning informal work as vital economic activity, especially during periods of economic instability or crisis. Current debates on informality in labor emphasize the need for inclusive policies that recognize and support informal workers as part of a cohesive labor market strategy. Increasingly, the informal economy is not seen as a problem that must be eradicated, but as a sector that must be understood, supported, and integrated (OECD, 2023). This approach is especially relevant in the context of globalization and rapid technological change, which continuously reshape labor dynamics and highlight the importance of adaptive and equitable policy responses.

3.2.1.2 Outsourcing

Outsourcing is a process in which a company transfers certain tasks or services, previously performed by its own employees, to another company or to an individual contractor. This process can involve either stopping the internal production of goods/services and buying them from another company or hiring external firms to perform tasks within the contracting company. This second form of outsourcing can refer to both core activities and support activities, such as cleaning, security, and catering (DIEESE, 2007).

According to (Stansbury; Summers, 2020), the increase in shareholder power and shareholder activism has led to pressure on companies to cut labor costs, resulting in wage reductions within firms and the "fissuring" of the workplace, as companies increasingly outsource and subcontract labor, engage in franchising, and rely more on independent contracting and the gig economy, while internal labor markets have declined. Outsourcing helps companies reduce labor-related expenses and manage various aspects of human resources more efficiently, including the selection, hiring, and dismissal of personnel, managing vacations, absences, illnesses, leaves of personnel, bonuses, and overtime, thereby reducing the burden of labor management. In addition, by outsourcing, companies can minimize

union issues, negotiations, and strikes, as well as reduce the likelihood of judicial issues with personnel (DIEESE, 2007).

In line with these trends, and central to the present study, individual firms (sole proprietorships) and independent contracting have emerged as key forms of self-employment representing a unique form of outsourcing, where the boundary between employment and commercial partnership is exceptionally blurred. While formally categorized as independent businesses, many individual contractors maintain a dependent relationship with a single client, closely resembling traditional employment while avoiding its legal protections. In such arrangements, workers operate their own businesses and offer services without the traditional employer-employee relationship. Individuals or firms that perform outsourced work for major companies are subject to strict standards and strong incentives to ensure that they meet core objectives. This is operationalized through detailed subcontracting and supply chain requirements, franchise agreements, and most recently the highly calibrated incentive systems created by platform algorithms (Weil, 2019). These arrangements allow companies to benefit from work that aligns with corporate objectives while avoiding the responsibilities associated with direct employment.

The share of individual enterprises is particularly high in developing countries (Peters; Zilibotti, 2021). In these contexts, many workers operate as independent contractors or microentrepreneurs, often performing tasks that, in other settings, would typically be assigned to formal employees. This dynamic challenges conventional labor classifications and raises important questions about worker protections, economic stability, and the evolving nature of employment relationships (DIEESE, 2007).

3.2.1.3 Self-employment: challenges and incentives

In the early 20th century, entrepreneurs were viewed as key drivers of innovation and economic growth. However, post–World War II development economics shifted focus to large corporations as the primary engines of innovation, focusing on efficiency through scale and scope (Barros; Pereira, 2008). This trend dominated much of the 20th century, but in the late 1990s, many developed countries experienced a notable rise in self-employment, reversing a long-standing decline and challenging the traditional view of a negative relationship between economic development and self-employment (Pietrobelli; Rabellotti; Aquilina, 2004).[5] Furthermore, factors such as slow economic growth, economic crises, and structural adjustment efforts have increased interest in self-employment as a means of generating employment, income, and capital in both developed and developing countries (WorldBank, 2018; Peters; Zilibotti, 2021).

[5] An analysis of 23 OECD countries from 1974 to 1998 confirms the trend towards a larger number of smaller enterprises, as well as considerable disparity among countries in the proportion of entrepreneurs (Wennekers; Uhlaner; Thurik, 2002; Barros; Pereira, 2008).

In fact, the relationship between economic development and self-employment is complex and influenced by various factors, including population growth, education, economic cycles, industrial growth, sociocultural aspects, rising unemployment, and income support policies. In fact, the literature on self-employment determinants is vast, with empirical and theoretical studies yielding often contradictory results. Some researchers, particularly those focused on developed economies, find that higher economic growth correlates with increased entrepreneurial activity, as entrepreneurship drives knowledge spillovers and commercialization.[6] Conversely, studies in developing countries, such as Li and Zhao (2011b) in China, observe that more developed regions tend to have lower self-employment rates. Their findings suggest that in these countries self-employment often arises from economic necessity rather than from a desire for autonomy or entrepreneurship.

This tension between the “prosperity pull" and “unemployment push" perspectives is central to development discussions, as self-employment remains the main source of work for at least one in five members of the urban labor force in developing countries (WorldBank, 2018). Typically, these two hypotheses have been tested within individual countries, primarily using data from the household survey (Pietrobelli; Rabellotti; Aquilina, 2004). The Global Entrepreneurship Monitor Report (Hill *et al.*, 2023) expands the scope by interviewing entrepreneurs worldwide about their motivations since 2019, including motivations such as making a difference in the world, building wealth, continuing a family tradition or earning a living due to scarce job opportunities. As shown in Figure 3.1, the proportion of entrepreneurs identifying the ability to earn a living due to scarce job opportunities as motivation varies by income level, with this factor being especially high in low- and middle-income countries (levels B and C).

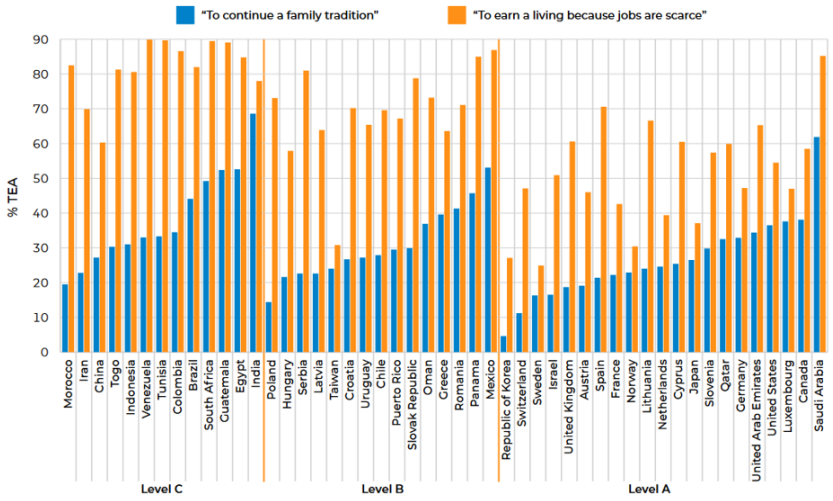


Figure 3.1 – Motivation for Entrepreneurship.

*S*ource: Hill *et al.* (2023)

6 See Audretsch (2006), Stel, Carree, and Thurik (2005).

Although informal self-employment often serves as a vital survival mechanism for individuals - largely due to limited access to formal job opportunities (Hammer; Ness, 2021) - scholars such as Maloney (2004) challenge the idea that self-employment is merely a fallback option for marginalized workers. Drawing on evidence from studies and surveys conducted in countries like Brazil, Mexico, and Argentina, the author argues that self-employment is often a deliberate and strategic decision, driven by a desire for greater independence, flexibility, or higher income. Especially in developing countries, where enforcement of labor laws and regulations tends to be less consistent than in advanced economies, workers often have the flexibility to choose which benefits programs or formal institutions to engage with, rather than being bound to a standardized package of protections. According to the author, this flexibility may allow them to tailor their participation to their specific needs, rather than adhering to the full suite of formal sector benefits, which may not align with their preferences.

The choice of the sector in which to start a business is also crucial for both the individual business and the broader economy. Sectors with lower barriers to entry and lower costs, such as personal services or low-level business services, may offer easier entry, but also tend to have high competition and low margins resulting in a high rate of business failures. As presented in Figure 3.2, new business ventures are often concentrated in consumer services, particularly in lower-income countries. Participation in business-oriented services varies significantly, from as low as 2% in Indonesia to more than 43% in Israel(Hill *et al.*, 2023).

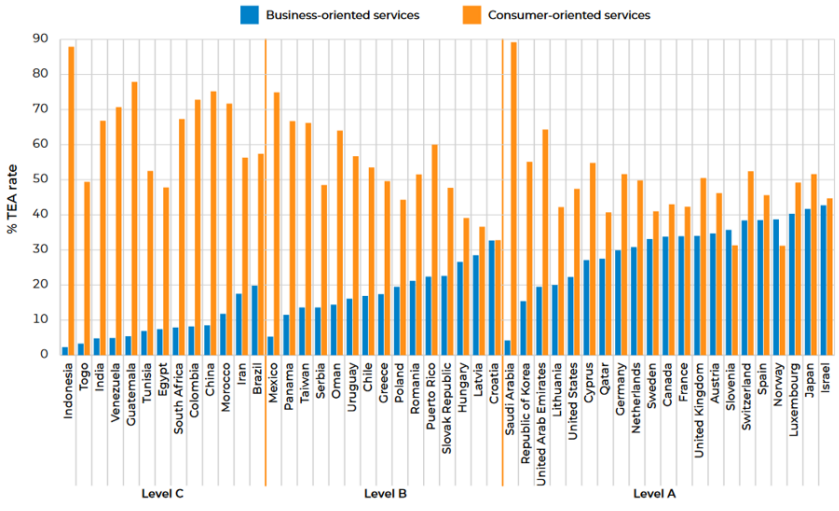


Figure 3.2 – Sector Choice.

*S*ource: Hill *et al.* (2023)

Self-employment, typically concentrated in low-technology and low-capital-intensity firms, is primarily attractive when formal sector productivity is comparably low—a condition often sustained by structural barriers that limit investment and firm efficiency, particularly in

developing countries (Maloney, 2004). In line with this argument, the author argues that the poverty faced by informal self-employed workers is more a result of their low human capital than the inherent nature of informal work itself. As he emphasizes, *"Arguing that workers are voluntarily informal self-employed does not, of course, imply that they are not living in poverty, only that they would not obviously be better off in the formal jobs for which they are qualified."* In addition, especially in developing countries, long commutes caused by poor public transportation, unstable home environments, and caregiving responsibilities—stemming from limited access to public schools and elderly care—often push low-income workers toward informal work, where flexibility compensates for lower and less stable earnings.

The worker life cycle may also play an important role in the decision to pursue self-employment. Although younger workers are typically more willing to take the risks associated with starting a business, self-employment is often more prevalent later in life, as workers transition from formal employment after gaining experience, access to financial resources and professional networks (Maloney, 2004). This pattern is especially pronounced in developing countries, where structural barriers, such as limited access to credit and weaker institutional support, further restrict entrepreneurial opportunities for young workers. Empirical evidence supports this view: Mata, Mattos, and Vilarouca (2025) find that job displacement significantly increases the likelihood of business formation. Notably, less vulnerable workers—particularly those who are middle-aged and have prior managerial experience—are more likely to transition into entrepreneurship.

However, later entry into self-employment is also consistent with older workers struggling to find a new job in the formal sector after being laid off. This second scenario aligns with Autor and Dorn (2009), who document that in US labor markets, structural changes are hollowing middle-wage jobs, with employment growth concentrated at the high- and low-skill extremes. Younger workers see greater employment increase in low-skill roles while also entering high-skill, non-routine jobs. In contrast, older workers tend to shift predominantly into low-skill, non-routine occupations. In developing economies, where formal employment opportunities are more limited, older workers may increasingly be pushed into the informal sector, often as a last resort for employment.

3.2.1.4 Social protection in a changing working environment

In many developing countries, where the public capacity for social programs is limited, the initial approach to strengthening social protection and reducing inequality focused on labor market regulations. These measures included the introduction of minimum wage laws, requirements for employer-provided healthcare, and legal protections against dismissal. Even in advanced economies, the standard formal wage employment contract continues to serve as the primary foundation for access to social insurance programs and the enforcement of labor regulations. However, the literature suggests that higher taxation and strict labor regulations

hinder formalization, as they increase the costs of formal employment (Ohnsorge; Yu, 2021; Ponczek; Ulyssea, 2022). Furthermore, relying on payroll taxes from formal workers to finance pensions and other forms of insurance is ineffective when informal employment constitutes a significant portion of the workforce.

Traditional social security systems often impose costs through direct contributions or lower wages for formal workers, which can influence labor markets. Workers may opt for informal jobs with higher take-home pay, avoiding social security contributions, which can ultimately undermine productivity and compliance with labor regulations. Furthermore, inefficiencies and low-quality formal protections and public services, especially in developing countries, can make mandatory contributions seem burdensome, further promoting informality. As a result, when workers choose voluntarily informality or self-employment to avoid the costs of formal protection, these policies can inadvertently reduce the formal labor supply (Levy, 2010; Maloney, 2004).

A well-designed policy framework could reduce regulatory and tax burdens while improving the efficiency of public revenue collection and regulatory systems (Ohnsorge; Yu, 2021). Such reforms would reduce the reliance on rigid labor regulations and foster greater job mobility. As noted in WorldBank (2018), *"If automation raises the cost of distorting labor markets and development improves the efficiency of the public sector, governments should shift from regulation-based redistribution to direct social welfare support, such as social assistance programs and subsidized universal social and health insurance. "*

3.3 Context

3.3.1 Entrepreneurship as a way to formal job: The Brazilian Experience

Microentrepreneurship[7] is an important segment of any economy, and significant advances have been made in Brazilian regulation to stimulate its development. Specifically, two landmark laws, the Complementary Law No. 123/2006 and the Complementary Law No. 128/2008, have created better competition conditions for small businesses and special conditions for informal workers to legalize themselves as microentrepreneurs.

Complementary Law 123/06, commonly known as the SIMPLES Law, was enacted in Brazil on December 14, 2006, to simplify the tax regime for micro and small enterprises,

[7] Self-employed persons include both employers and own-account workers, but they are not necessarily synonymous with entrepreneurs, as they represent a diverse group with different activities and motivations. Hill *et al.* (2023) highlights challenges in measuring entrepreneurship, as firm registrations and self-employment status do not always capture the full picture. For instance, new firms may not always register, and some self-employed individuals, like taxi drivers or musicians, may not view themselves as running a business, but simply earning a living. Despite these distinctions and limitations, research often equates self-employed workers with entrepreneurs due to data limitations (Barros; Pereira, 2008). The terms will also be used as synonyms in the present study.

aiming to promote the formalization of small businesses. This law consolidates multiple federal, state, and municipal taxes into a single payment system, reducing both the complexity of compliance and the administrative costs associated with tax obligations. By streamlining these processes, the SIMPLES law seeks to encourage economic inclusion and entrepreneurship, enabling small firms to compete more effectively in the broader market.

The Law 128/2008, effective since July 1, 2009, amended the General Law for Micro and Small Companies to establish the Individual Micro Entrepreneur (MEI) as a legal entity. MEI is defined by the law as a person who works for themselves and are legalized as a small business owner.[8] They can only have one employee working for the minimum wage or the category‘s floor and they must operate in one of the approximately 490 activities permitted for the segment. The MEI framework aims to facilitate the formalization of self-employed individuals and small business owners, with the ultimate objective of enhancing contributions to the social security system and providing access to social security benefits (Alvarez, 2023).

The MEI law is recognized as a distributive policy aimed at promoting the socioeconomic inclusion of individual microentrepreneurs through tax exemptions and access to social security benefits. One of its key features is the issuance of a National Register of Legal Entities (CNPJ), which allows entrepreneurs to open business bank accounts, apply for card payment terminals, access credit at more favorable interest rates, issue invoices and negotiate better pricing and terms in commercial transactions (Nunes, 2020). MEIs are also exempt from obtaining the public permits and licenses typically required to operate formal businesses[9] and, under the simplified tax regime, are exempt from federal taxes and contribute a fixed monthly amount equivalent to 5% of the minimum wage[10], which grants access to a range of social benefits, including maternity and sick leave, as well as retirement entitlements (Campanha *et al.*, 2017). To maintain eligibility, MEIs must submit a monthly report of gross revenue, issue invoices when applicable, and make payments through the “Documento de Arrecadação do Simples Nacional" (DAS-MEI), even during months without income (Honorato, 2022b).

In addition to the creation of the MEI law, subsequent legislative changes were made. Law 147/2014, which came into effect in January 2015, was one of them and extended the tax benefits of SIMPLES/MEI to a wider range of sectors, including animal caregivers, housekeepers, security professionals, and transportation professionals. Furthermore, the law eased regulatory requirements for companies that hire MEI firms by eliminating the

[8] As defined by Complementary Law No. 155, dated October 27, 2016, they can earn a maximum of R$81,000 and cannot have partisanship in any other enterprise

[9] CGSIM Resolution No. 59, dated August 12, 2020, introduced this simplification for MEIs as part of Law No. 13,874/2019.

[10] The Law nº 139, dated November 10, 2011 reduced MEI’s tax burden by lowering the social welfare aliquot from 11% to 5%.

20% employer's social security contribution and registration requirements.[11] However, the law explicitly excluded certain categories of MEI such as those providing services in the construction industry (plumbers, electricians, painters, masons, and carpenters), as well as vehicle maintenance or repair, which were not eligible for the same hiring benefits.[12]

Morais *et al.* (2022b) highlight that the creation of the MEI program and the regulation of individual microentrepreneurs have brought significant benefits to small businesses and informal workers in Brazil, and conclude that the policy has successfully achieved its objectives of promoting formalization, social inclusion and social protection for entrepreneurs. This is supported by studies such as Nascimento *et al.* (2019) and Tondolo (2018), which report that entrepreneurs have gained access to new markets, improved relationships with suppliers, increased income, and greater social security and citizenship.[13]

On the other hand, (Alvarez, 2023) highlights that while the program has successfully decreased informality, it may have also created unintended consequences such as increasing the outsourcing phenomenon, often for tax-related advantages. Other concerns raised include the disconnect between social security revenues and expenditures, as well as the potential incentives in place encouraging businesses to remain small in scale.

Finally, the MEI law mandates the provision of free services by registered accounting offices to MEIs during their first year of operation.[14] Through interviews with representatives of accounting offices Campanha *et al.* (2017) identifies the existence of two distinct groups among MEIs. The first group consists of entrepreneurs who seek social legitimacy and aspire to gain formal rights. These individuals engage proactively in the formalization process, registering with the required institutions and complying with legal standards. Despite the challenges associated with formalization, a calculated assessment of the benefits outlined in the MEI law encourages them toward complete compliance. In contrast, a second group comprises individuals who do not fit the traditional profile of entrepreneurs but instead view the law as an opportunity to circumvent labor regulations and obtain access to social security and banking benefits. The existence of these two groups may be reflected in the high rate of tax default among MEIs, as shown in Table 3.1.

---

[11] In comparison, according to Law 10.666 of May 8, 2003, which regulated the individual taxpayer providing services to a company or equivalent legal entities, the contribution of 11% of the individual taxpayer's remuneration, up to the contribution salary ceiling should be deducted from the MEI´s by hiring company which was responsible for the tax payment, along with its monthly contribution, by the 20th of the month following the service provision (Honorato, 2022b).

[12] The rationale for this exclusion is not explicitly addressed in the law.

[13] Since the enactment of the MEI´s legislation, research and scientific studies have been devoted to the study of enterprises that have benefited from this legal landmark with both positive and critical perspectives. See also Morais *et al.* (2022b), Almeida *et al.* (2023), Duarte (2011), Colbari (2015).

[14] This support for entrepreneurs is offered as a reciprocal benefit for tax incentives granted to accounting offices within the MEI service network (Campanha *et al.*, 2017)

Table 3.1 – MEI Default Rate

Year	Active MEI	Payed DAS	Default Rate (%)
2018	7,739,452	4,209,907	45,6
2019	9,430,438	5,047,241	46,5
2020	11,316,853	6,139,976	45,7
2021	13,284,696	7,654,135	42,4
2022	14,820,414	8,042,589	45,7
2023	14,825,471	7,023,540	52,6

Source: Author's elaboration based on (Receita Federal do Brasil, 2024) data.

It is important to note that more than half of Individual Micro-Entrepreneurs (MEIs) are not consistently meeting their tax obligations, leaving them partially formalized as debtors (Campanha *et al.*, 2017). MEIs who actively use their CNPJs, such as for invoicing or purchasing supplies, and those who seek social protection benefits are generally more likely to stay current on tax payments. However, the high rate of defaults could suggest that a considerable portion of these businesses may be unsustainable, intermittently operating, or even created primarily for initial formalization benefits without a sustained commitment to compliance.

3.3.1.1 Related Regulatory Changes

The persistence of informality is often attributed to burdensome regulations, taxes, and social protection schemes that discourage business growth (Dabla-Norris; Inchauste, 2008; Ulyssea, 2020; Djankov; Ramalho, 2009). In addition to initiatives aimed at reducing informality by easing formalization, on March 31, 2017, Law No. 13,429/2017, known as the Outsourcing Law, was enacted, revising provisions of Law No. 6,019 from January 3, 1974, which regulated temporary work. The new law allows companies to hire outsourced employees for core activities, that is, the main functions of the company. Before then, there was no specific legislation on outsourcing, but a 1993 Labor Court decision had limited outsourcing to support activities such as cleaning, security, and maintenance services. Soon after, in July, 2017 the law N. 13.467, known as the Labor Reform Law, was enacted, introducing a series of adjustments to labor laws that further expanded flexibility in employment contracts, collective bargaining, and working hours.[15]

Together, these laws represent a significant reconfiguration of labor relations in Brazil. Although not explicitly aimed at promoting entrepreneurship, they enhance legal certainty and reduce ambiguity in the contracting of independent workers by large firms, tending to increase the availability and profitability of such arrangements for workers. By allowing companies to formally engage individuals as independent entities for core tasks or specific

[15] Refer to Chapter 1 for further details, including a comparative analysis of workers' rights and protections across three contracting models: direct employment, outsourced labor, and independent contracting.

projects, this legislation creates incentives for both formal and informal workers to transition into formal self-employment, thereby expanding more flexible labor market arrangements.

3.3.1.2 Lessons from international experience

The Brazilian MEI (Microempreendedor Individual) policy explicitly seeks to reduce informality by lowering the cost of formalization while simultaneously expanding access to social protection. Although Brazil's model is relatively unique in its comprehensiveness and integration of multiple benefits, similar initiatives have been adopted in various countries, although with varying scope, structure, and effectiveness. Simplified self-employment regimes typically prioritize regulatory and tax flexibility over social protection and inclusion.

Presumptive (or simplified) tax regimes are designed to encourage tax compliance and business formalization by reducing tax rates and compliance burdens, particularly for micro and small enterprises. While most regimes target micro-businesses, eligibility thresholds and design features vary significantly across countries. Some countries have also introduced tailored regimes for economically vulnerable own-account workers, typically with more restrictive eligibility criteria and prohibitions on hiring employees to ensure the benefits are directed toward the intended population (Mas-Montserrat; Colin; Brys, 2024).

One of the most comparable international experiences is found in France, where the auto-entrepreneur regime—renamed micro-entrepreneur—was introduced in 2009. Similar to Brazil's MEI, the program was designed to simplify the formalization process and lower entry barriers for small-scale self-employment. It features a simplified tax structure and licensing process, subject to a gross revenue ceiling, and provides access to the national social protection system, including health and pension benefits (Carboni, 2016). Between 2014 and 2022, the number of economically active micro-entrepreneurs in France grew by 148%, increasing from 1% to 32% of all enterprises. By 2021, over 2.5 million individuals were registered under the regime, representing nearly 60% of all new business registrations (Morello, 2025). These figures highlight the rapid expansion and growing significance of this form of entrepreneurship within the French labor market. Similarly, in the United Kingdom, as of March 2025, 4,4 million workers are classified as self-employed, and while they contribute to the national pension system, they are excluded from many employment-based benefits, such as sick pay or unemployment insurance (Statista Research Department, 2025).

In the United States, around 27 million individuals operated as sole proprietors in 2024, representing more than 80% of businesses (Forbes Advisor, 2024). However, health insurance and retirement benefits are managed privately, with no automatic social protection unless individuals opt into separate programs.

In Latin America, Mexico's Régimen de Incorporación Fiscal (RIF), launched in 2014, was expected to bring informal businesses into the tax net (Silva; Ramírez, 2019). Similarly,

in Colombia, the Régimen Simple de Tributación (RST), introduced in 2019, aimed to simplify the tax system by consolidating multiple tax obligations and reducing compliance costs. Unlike Brazil's MEI, enrollment in the RIF and RST programs does not guarantee automatic access to social protection benefits, limiting its appeal and the potential impact on informality.

These international comparisons underscore the relative success of Brazil's MEI in combining tax simplification with access to social protection through a low-cost and accessible framework. However, as discussed, some scholars caution that the policy may contribute to labor market fragmentation and raise concerns about its long-term sustainability.

It is important to note that even among Brazilian states, despite being subject to the same MEI regulation, adoption rates vary significantly (see Chapter 1). This suggests that the success of the program depends not only on the design of effective formalization incentives, but also on the presence of an economic and institutional environment that actively supports and encourages formal labor market participation.

3.3.2 Rationale for focusing on Construction Industry

To deepen understanding of worker transitions between employment statuses, particularly shifts from formal employment to solo entrepreneurship, and to accurately control for external economic factors that may influence financial outcomes, this study focuses on Brazil's construction industry. Concentrating on a single industry allows for the control of sector-specific variables such as market demand, seasonality, and unique regulatory conditions that could otherwise confound the effects of formalization on financial outcomes.

The construction industry is a key sector in the Brazilian economy, contributing significantly to both employment and GDP. First, the sector typically demands specialized skills[16], resulting in less fluid entry and exit compared to commerce and transportation, industries also showing substantial growth in registrations of solo entrepreneurs[17]. Second, construction work is well defined and easily traceable within the RAIS and firm registration databases, enhancing data reliability. The predominantly on-site nature of construction work, which is easily evidenced in labor disputes, further reinforces the incentives for formal employment. Furthermore, the legal framework surrounding subsidiary liability has traditionally made outsourcing more complex in the construction industry, particularly

[16] The construction workforce is composed of both skilled and unskilled categories. Skilled trades, such as electricians, plumbers, and carpenters, require specialized expertise that is typically acquired through apprenticeships or on-the-job training, while unskilled laborers handle general tasks such as carrying materials and site cleanup. This hierarchy reflects the varying levels of training and responsibility. Technological advances often reduce the demand for unskilled labor, although this trend varies significantly across countries, regions, and sub-sectors of construction.

[17] See Chapter 1 for more detail.

before the introduction of the new regulation.[18] Although not the main focus of this study, the sector's exclusion from the simplifications introduced by Supplementary Law 147/2014 could also account for unique patterns in new business registrations relative to other sectors.

3.3.2.1 Labor Trends in the Construction Sector

In 2015, the construction sector accounted for approximately 4.6 million formal jobs. However, due to an economic recession, this figure decreased to 2.9 million by 2019. Although the sector began a recovery process in the following years, formal employment levels had not returned to pre-crisis levels, reaching 4.0 million[19] workers in 2023. Focusing specifically on the core construction activities recorded in RAIS[20], formal employment dropped from 2.7 million in 2015 to 1.6 million in 2019. By 2023, the number had risen to 2.2 million, still below the levels observed prior to the economic downturn.

Meanwhile, the number of workers formalized as Individual Entrepreneurs in the construction industry has shown steady annual growth, reaching 1.59 million active firms by December 2023 (63% of the industry companies). As a result, this group now represents almost a third of the formal workforce in the construction industry (41% of the construction occupation workers).[21] Figure 3.3 illustrates these trends, highlighting the significant shift towards solo entrepreneurship within the industry, which has helped offset declines in traditional employment until 2020.

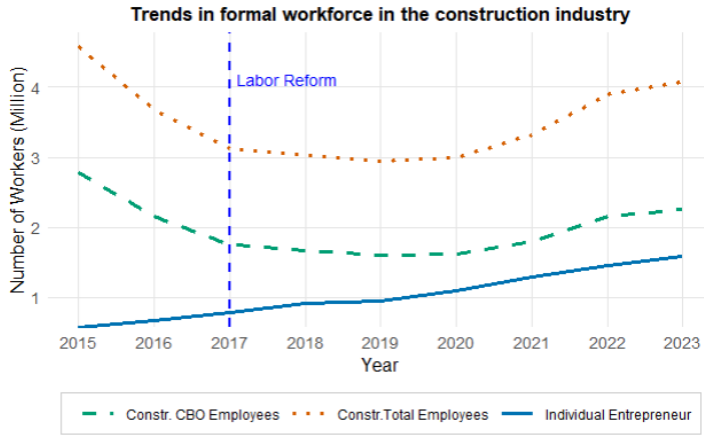
[18] Labor rights enforcement in the construction sector varies significantly not only between countries but also within regions of the same country and across different construction subsectors. For example, in the United States, high-end construction projects typically offer better pay and have fewer labor violations, while lower-end jobs, like single-home renovations, are often staffed by workers in the informal economy. This means that informal and unregulated labor can coexist with more formalized and regulated employment relationships (Tilly, 2021).

[19] This data refers to all job recorded during the year. Official data consider only those active in December 31, each year.

[20] The aim of the study is to assess trends among workers in the core construction activities, excluding those involved in general roles within construction companies and related firms. Therefore, we chose to filter workers based on their occupations (CBO) recorded in the RAIS database, rather than by the CNAE codes of the employing companies. The following occupation categories are considered: Civil construction, construction and infrastructure works technicians, Civil construction supervisors, Civil construction and public works workers, construction finishing workers, and construction assistant identified, respectively, by COB codes 312,7102,715,716 and 717.

[21] The key distinctions between a MEI and an Individual Firm (Empresário Individual) involve revenue limits, number of employees, and the range of permissible business activities. However, these differences are not relevant to the scope of the present study. Therefore, terms such as 'individual entrepreneur,' 'non-employer business,' and 'one-person firms' are used interchangeably to refer to both types of firms throughout the study.

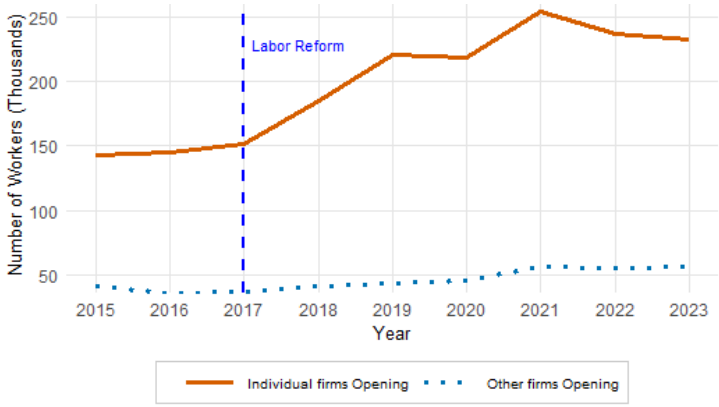
Figure 3.3 – Trends in formal workforce in the construction industry



Note: The dotted line represents all formal employees in the construction sector; the dashed line shows formal employees engaged in occupations directly related to construction; and the solid line represents individual entrepreneurs with firms classified under the construction industry.
Source: Author's elaboration based on the National Registry of Legal Entities and RAIS data.

The relative stability in the number of individual companies between 2017 and 2018 is attributed to the database update and the exclusion of records deemed inactive which may obscure the true impact of the Labor Reform.[22] Examining the openings of firms provides a different perspective: a noticeable inflection in the trend of firms opening as individual entrepreneurs (MEI or ME) occurred in 2017, coinciding with the enactment of the outsourcing and labor reform law, as shown in Figure 3.4.[23]

Figure 3.4 – Evolution of firms opening in the Construction Industry



Source: author's elaboration using National Registry of Legal Entities data.

[22] In 2018, Resolution CGSIM No. 44, of January 29, 2018, was approved, allowing the Federal Government to cancel the registration of Individual Micro-entrepreneurs (MEIs) who have not submitted their annual declaration for the last two fiscal years or who are in default regarding all monthly payments during this period.

[23] The 2019 and 2020 discontinuity may be attributed to the impact of the COVID pandemic. A deeper analysis of this event is not within the scope of the present study.

In summary, the data reveal a notable shift toward formalization through entrepreneurship within Brazil's construction sector, as evidenced by the steady increase in Individual Entrepreneur registrations, particularly MEIs. This trend suggests a growing preference among workers to formalize as micro-entrepreneurs rather than pursue traditional employment, which can be a response to an increased demand for this type of contracting. This study aims to deepen our understanding of the drivers and motivations behind this trend and to assess the impact of these new formalization pathways on workers' financial outcomes.

3.4 Hypothesis

The data presented indicate a significant increase in formalization as microentrepreneurs in the construction industry. The core hypothesis asserts that motivations for formalizing as a solo entrepreneur vary significantly, shaped by distinct worker profiles and employment trajectories. For previously informal workers, formalization is anticipated to enhance working conditions, expand access to credit, and offer additional financial benefits. However, for workers with previous formal employment, the motivation for regularization may come from two distinct drivers. In the first scenario, the transition to solo entrepreneurship signals a response to declining labor conditions, with outsourcing leading to diminished job stability and potential earnings reduction. In contrast, in the second scenario, the shift to solo entrepreneurship may reflect a genuine move into entrepreneurial work, allowing workers greater flexibility, increased access to credit, and lower tax and labor costs while still retaining essential social security protections, as is the case for formal microentrepreneurs (MEIs). In this entrepreneurial pathway, regularization is expected to yield better financial outcomes.

By examining the impact of solo-entrepreneurship registration on workers' financial outcomes, this study sheds light on the motivations behind labor outsourcing and the benefits of formalization. The underlying assumption is that improvements in financial indicators signal gains in consumption and overall living standards. This analysis contributes to a more nuanced understanding of the profiles and motivations of individuals who pursue entrepreneurship under different conditions.

3.5 Methodology: Empirical Strategy and Data

3.5.1 Empirical Approach

Specifically, this study aims to compare the financial outcomes of treated workers (i.e., those registered as solo entrepreneurs) with those of a counterfactual group (non-registered), both before and after registration.

This approach will be applied in two contexts. The first examines workers already registered as formal employees in RAIS, comparing those who transitioned to solo entrepreneurship with those who remained formal employees. In the second scenario, the analysis focuses on workers without prior RAIS or firm registration[24], comparing those who registered as solo entrepreneurs between 2016 and 2019 with those who registered between 2021 and 2023, the latter serving as the control group. For the purpose of these analyses, the 'treatment' is defined as the start date of a one-person firm.

A key issue to consider is the possible nonrandom or endogenous selection into the "treatment group." For instance, the choice to become a solo entrepreneur (or the dismissal from a formal job) may be influenced by the worker's education, skills, and productivity, all of which can also affect the financial outcomes under investigation. Generally, many of the unobserved characteristics that might complicate causal inference vary among workers but can be considered constant over time. A common method of controlling for time-invariant unobserved heterogeneity is to use panel data and estimate differences-in-differences models (DiD) controlling for time and individual fixed effects (Alves, 2024).

The Difference-in-Difference (DID) event study or a Dynamic DID model is a useful tool in evaluating treatment effects of the pre- and post- treatment periods where treatment is staggered (treatment groups are treated at different time periods). These models, as a generalized extension of 'difference-in-differences' or two-way fixed effect models, allow for dynamic lags and leads to the event of interest to be estimated, while also controlling for fixed factors such as individual attributes and time (Clarke; Tapia-Schythe, 2021). According to the authors, the specification of the panel event study can be written as:[25]

$$Y_{i,t} = \alpha + \sum_{j=2}^{J} \beta_j \times (\text{Lag j})_{i,t} + \sum_{k=0}^{K} \beta_k \times (\text{Lead k})_{i,t} + X'_{i,t}\Gamma + \varphi_i + \mu_t + \theta_{i,t} + \varepsilon_{i,t} \qquad (3.1)$$

Where $Y_{i,t}$ is the outcome of interest for individual i in year t, $X_{i,t}$ is a vector of time-varying control variables, φ_i, μ_t and $\theta_{i,t}$ are individual, time and age group fixed effects, respectivelly, and $\varepsilon_{i,t}$ is the unobserved error term. Lags and leads are binary variables that indicate that the given worker was a given number of periods away from the event of interest (registration as a solo entrepreneur). J and K lags and leads are included, respectively.[26] A single lag or lead variable is omitted to capture the baseline difference between areas where

[24] Our RAIS database starts in 2015. The formal registration of employees prior to this is not considered in the analysis

[25] See https://lost-stats.github.io/Model_Estimation/Research_Design/event_study.html for implementation guidelines.

[26] Lags and leads can be configured to accumulate beyond J and K periods; however, these occurrences are not considered in the present study.

the event occurs and does not occur. In specification 1, as standard, this baseline omitted case is the first lag, where j equals 1.[27]

Unbiased estimation of post-event treatment effects relies on the "parallel trends assumption," which asserts that without registration, the treatment and control groups would experience similar time-related changes, once individual characteristics are controlled for. The purpose of the analysis is to show that the coefficients in the pretreated periods are statistically insignificant, showing that the trends in the control and treated groups are statistically the same before treatment. This test supports, though does not prove, the parallel trends assumption. Workers that are never treated (never register as solo entrepreneurs) act as pure controls. These units have zero values in all lag and lead terms and serve as the counterfactual for impact estimation. The differences between these pure control units and those experiencing the event of interest are anchored at zero in the omitted base period (the first lag in equation 1). Thus, lags and leads measure the deviation between treated and control workers relative to the baseline difference in the omitted base period.

By comparing changes, we control for time-varying factors that are shared by both the control and treatment group (Alves, 2024). This is particularly important given that the period under analysis was marked by political and economic instability, including a presidential impeachment, labor regulation reforms, economic recession, and shifts in fiscal policies, all of which likely impacted employment patterns, income levels, and the overall financial outcomes of the workers studied.

In this study, individual fixed effects are included and standard errors are clustered at the state level to improve the robustness and accuracy of estimated treatment effects. By controlling for individual fixed effects, we account for unobserved, time-invariant characteristics at both the individual and municipal levels, given that most individuals do not change municipalities over time. Together, these strategies enhance the model's internal validity by addressing both omitted variable bias and correlation in the error structure.

In longitudinal data, individual behaviors often evolve in predictable ways over the life cycle, a pattern that can influence outcomes such as entrepreneurship, credit usage, and other financial indicators examined in this study. To account for these systematic age-related patterns, the model includes fixed effects for age groups. This approach controls for unobserved heterogeneity that may be common within age bands—such as shared life-cycle dynamics or exposure to age-specific shocks—thereby improving the precision of the

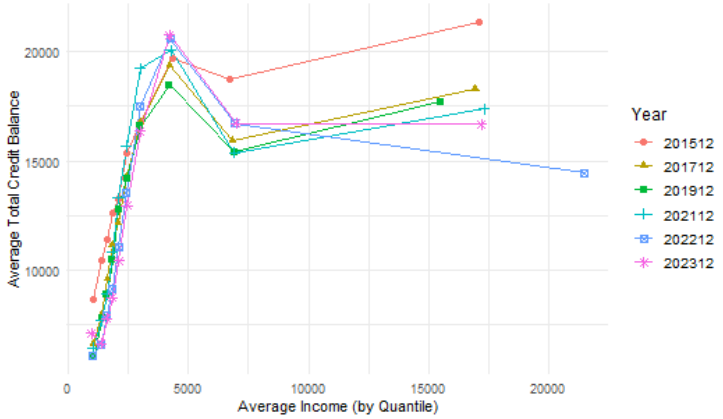
[27] According to the authors, the panel event study extends the standard two-way fixed effect model (also called difference-in-differences), where a single "Post Event" indicator is used for all periods after the event occurs in treated states. This can be represented as: $y_{st} = \alpha + \beta \text{PostEvent}_{st} + \mu_s + \lambda_t + X'_{st}\Gamma + \varepsilon_{st}$. The estimation of the event detailed specification provides two key insights beyond the single-coefficient model: (i) The full set of event lags allows for checking parallel trends in the pre-treatment period. Although this does not prove the units would have followed similar trends post-reform, nonparallel trends pre-event make post-event parallelism unlikely; (ii) the policy leads reveal the temporal dynamics of treatment effects, showing whether the effects grow, shrink, or are transitory or permanent over time.

estimated treatment effects and ensuring more robust inference.

3.5.1.1 Dependent Variables

This study utilizes a rich dataset that integrates two extensive data sources: RAIS, which offers detailed employee information reported by employers, including monthly income and administrative records on credit balances. Based on these empirical data, Figure 3.5 reveals that although average credit card balances show steady growth among lower income groups, this trajectory changes markedly at higher income levels. This finding suggests a complex, non-linear relationship between income and credit usage, highlighting that credit behavior is not solely determined by income but is influenced by various economic and behavioral factors.

Figure 3.5 – Relationship Between Income and Credit Balance (by Quantile)



Source: author's elaboration using RAIS data on wage and Central Bank of Brazil data on total credit balances. Only individuals with both reported income and positive credit balance have been considered

A robust body of literature has explored the relationship between credit score, credit limit, credit usage, and consumption. Studying the relationship between income and credit scores, Beer, Ionescu, and Li (2018) find that household income has only a moderate correlation with credit scores. Their analysis reveals that cross-sectional variations in self-reported income account for only a small portion of the variance in credit scores, and this explanatory power declines even further when a limited set of credit history variables is included. Credit scores are linked to credit access and usage, and these findings align with our empirical results. As presented in Table 3.2, although the coefficients for wages in explaining credit balances are positive and statistically significant, their magnitudes are relatively modest - a 1% increase in average earnings is associated with only a 0.096% increase in total credit balance. This suggests that income accounts for only a limited portion of the variation in the use of different types of credit.

However, it should be noted that, when controlling for individual, time, and age fixed

Table 3.2 – Regression Results

	Dependent variable:			
	log(Credit Balance)	log(Credit Card)	log(Revolving Credit)	log(Credit Limit)
	(1)	(2)	(3)	(4)
log(REMUN_MED)	0.096***	0.064***	0.027***	0.081***
	(0.009)	(0.004)	(0.003)	(0.006)
R-squared	0.6219	0.6471	0.4008	0.5959

Note: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

effects, the models exhibit relatively high explanatory power, as measured by the R-squared. This result is largely attributable to the inclusion of individual fixed effects, which capture unobserved, time-invariant characteristics—such as education, occupation, risk preferences, and financial behavior—that are strongly correlated with income. These persistent individual traits appear to be key determinants of income variation, underscoring the importance of accounting for heterogeneity at the individual level in models of financial outcomes.

Extensive research also highlights the strong responsiveness of consumer borrowing to credit supply, underscoring the role of liquidity constraints in shaping financial behavior. Gross and Souleles (2002) find that increases in credit limits lead to immediate and significant rises in debt particularly for consumers close to their limit, suggesting the presence of liquidity constraints. Aydin (2015) further corroborates this by showing that even consumers not faced with strict liquidity constraints respond aggressively to increases in credit limits. In the same line, Garber *et al.* (2024) finds that credit expansion significantly increased borrowing among public sector employees.

Credit usage patterns may also reflect income levels. Olafsson and Pagel (2018) find that individuals with lower incomes may rely more heavily on available credit, leading to higher utilization ratios (that is, a smaller portion of available credit being used). In contrast, individuals with higher income tend to have lower credit utilization ratios, indicating that they use a smaller portion of their available credit. In the same line, Schuh (2018) finds that roughly half of the population has a high discount rate and a low risk aversion, which explains their substantial use of credit card debt. This group, characterized by a high marginal propensity to consume and living paycheck-to-paycheck, tends to increase their debt when given more credit. In contrast, the other half uses credit cards primarily for payments without revolving debt, maintaining a savings buffer to avoid borrowing.

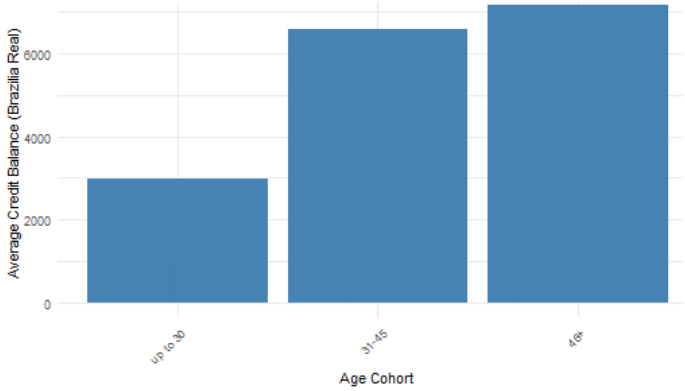
Credit cards stand out as one of the most prominent credit products. Schuh (2018) emphasizes that credit card use encompasses three essential dimensions of individual financial decision making. First, credit cards serve as a source of precautionary liquidity, providing individuals with a financial buffer to manage unexpected expenses or income shocks. Second, by enabling revolving debt over both short and long periods, they facilitate consumption smoothing, allowing individuals to maintain stable consumption patterns despite fluctuations in income. Third, as a payment method, credit card spending is directly

linked to consumer expenditures. Garber *et al.* (2024) also use credit card balances as a proxy for consumer spending, leveraging this measure to capture variations in consumption behavior across individuals.

Schuh (2018) demonstrates that both credit card limits and debt increase substantially throughout the life cycle, with credit limits expanding by approximately 400% between ages 20 and 30 and continuing to grow, although at a slower rate, beyond age 30. In contrast, credit utilization, the ratio of credit card debt to credit limits, shows a steady decline with age. These patterns highlight a clear life-cycle effect in credit behavior: younger individuals tend to rely more heavily on available credit, while older individuals gradually reduce their reliance.

This life-cycle dynamic is also evident in our empirical data. As illustrated in Figure 3.6, average credit balances vary considerably across age cohorts, reflecting how credit usage evolves over the course of an individual's financial life.

Figure 3.6 – Average active credit portfolio by age cohort



Source: author's elaboration using RAIS and BCB data.

In addition to total credit, credit card and revolving credit balances, this study also explores default rate and credit pre-approved limit. A detailed description of the dependent variables used in this study is presented in Appendix F.

Although caution is essential to prevent overindebtedness, this study is based on the hypothesis that increases in credit balances and limits generally represent a positive outcome for workers, particularly those with lower incomes, who constitute the majority of the population analyzed and are often constrained by limited access to credit. For these individuals, greater access to credit can serve as a vital tool for consumption smoothing, enabling them to manage unexpected expenses, invest in essential goods, or capitalize on economic opportunities they would otherwise miss.

3.5.1.2 Control Variables

Since φ_i captures individual-specific factors that can be considered time-invariant (such as education, skill, and productivity), the variables to be included in the $X_{i,t}$ vector should be time-varying controls - those that may change for each individual over time. For the workers previously registered in RAIS we can obtain the following variable to be used as controls: age, average wage, employment status, and firm status. From these variables, only age and the firm status is available for informal workers.

3.5.1.3 Potential biases and complementary analysis

Traditional TWFE models assume constant treatment effects across all units and time periods. However, this assumption can introduce bias when either the characteristics of treated units or the treatment effects themselves change over time. Authors such as Sun and Abraham (2021), Callaway and Sant'Anna (2021) and Goodman-Bacon (2021) highlight potential biases that can arise when using the standard two-way fixed effect (TWFE) regression estimator in the presence of heterogeneous treatment effects across groups or time periods, which is relevant to the staggered setup proposed in this study. In the same line, Clarke and Tapia-Schythe (2021) and Sun and Abraham (2021) argue for the consideration of alternative estimators that complement the designs of panel event studies and should be included as part of a comprehensive estimation and testing procedure.

The analysis of the proposed model will be strengthened by incorporating the "cohort" method, which is particularly suited to cases where treatment occurs at different times. The Sun and Abraham (2021) approach addresses this issue by allowing treatment effects to vary over time. This structure better captures the dynamic nature of treatment effects and yields more accurate estimates, particularly in contexts where both worker profiles and external conditions evolve throughout the study period.

3.5.1.4 Heterogeneous Effects

To initially differentiate between individuals actively seeking entrepreneurship and those potentially experiencing degraded working conditions, I explore whether the effects of treatment vary across worker profiles by conducting a heterogeneity analysis based on baseline characteristics. Using individual-level data, we assess whether the estimated impacts apply broadly to workers or are concentrated within specific subgroups. These analyses also offer insight into the potential mechanisms that drive the transition to entrepreneurship.

To evaluate the role of particular factors, we divide the sample based on key dimensions and estimate treatment effects within each subgroup. Specifically, I examine heterogeneity along three main axes: (i) age groups, to capture life-cycle differences; (ii) occupation-related characteristics, which are correlated with worker skills and education and may reflect

specific constraints or opportunities; and (iii) treatment cohorts, to assess how the timing of formalization influences the observed outcomes.

This categorization serves as a first approximation, offering an intuitive lens through which to view the factors that influence entrepreneurship. However, this division alone does not fully capture the complexity of the factors driving entrepreneurship. To provide a more robust analysis, it would be necessary to account for a wider range of observables and unobservables variables such as skills, network and firm-specific characteristics.

3.5.2 Data Source and Descriptive Statistics

This analysis benefits from a rich set of variables that come from three different data sources. First, the Annual Social Information Report (RAIS), a comprehensive administrative database maintained by the Ministry of Labor and Employment and designed to collect and store information related to formal employment trends, workforce characteristics, and labor market dynamics in the country. RAIS collects data from employers about their employees, including details about their wages, job positions, working hours, and other employment-related information. [28]

These data are complemented by the registration data of active non-employer firms linked to their respective Tax Identification Number (CPF)[29], which is maintained by the Federal Revenue Service.

Finally, the study also draws on administrative data from the SCR (Credit Information System) maintained by the Central Bank of Brazil. This dataset provides identified monthly records on credit balances across various financial products, along with detailed information on credit conditions, levels of indebtedness, and occurrences of default. These data offer a comprehensive view of individuals' financial behavior and credit exposure over time.

3.5.2.1 Data on the construction industry

The database of workers registered as an employee in RAIS between 2015 and 2023 whose occupation is classified as construction activities according to the Brazilian Occupation Classification (CBO) includes 7.4 million individuals, and 2.2 million workers remain

[28] RAIS is a fundamental obligation for almost all Brazilian companies. Only companies without employees, inactive companies, individual micro-entrepreneurs without employees, and domestic employers do not need to submit the RAIS.

[29] A CPF number is the Tax ID issued once you have been registered into the Cadastro de Pessoas Físicas (Natural Persons Register). It is an 11-digit number issued by the Brazilian Individual Taxpayer Registry. It is often used as an identifier and is required for many things such as opening a bank account, starting a company, getting utility services, purchasing online, and being able to enter in contracts drafted in Brazil, among others.

active in December,2023.[30]

During the same period, 1.79 million one-person firms were recorded in the Construction Industry, as defined by the National Classification of Economic Activities (CNAE), 1.2 million of these firms were run by owners with no previous registration in the RAIS database as construction workers. A total of 1.4 million of the firms opened in this period remained active at the end of 2023. Individual firms account for approximately 80% of the firms registered in the period.

A summary of the formal worker database developed for this study, including employees who remained in RAIS, as well as those with RAIS registration who opened a firm in the construction sector as of December 2022, is presented in Table 3.3:

Table 3.3 – RAIS Workers and Firms Records in the Civil Construction Sector

Group	Registers	Active Dec/2023
RAIS Construction Employee	7,371,512	2,246,972
Indiviual Firms - Total	1,788,605	1,363,695
Indiviual Firm with RAIS	523,573	
Indiviual Firm without RAIS	1,202,140	

Source: author's elaboration using RAIS and National Registry of Legal Entities data.

The construction labor market in Brazil is characterized by its high dynamism. For example, of the over 830,000 workers who were formally employed in 2015, only about 390,000 retained their positions with the same employer through 2019 (410,000 workers if we consider those who changed employers but continued as formal employee in construction-related activities and without establishing their own businesses during this period). In addition, the sector witnesses frequent transitions between entrepreneurship and formal employment, often simultaneously. These data align with the observations of Levy (2010), who document the significant mobility of individual workers between the formal and informal sectors, with this mobility being especially pronounced among lower-wage workers in Mexico.

As previously highlighted, the tendency of workers to remain employed within the same sector, even when changing employers, was a critical factor in the decision to focus the study on this industry. Of the 1.07 million workers who registered as an individual entrepreneur and who are or were registered with RAIS in the construction sector, 0.68 million (62%) remained in the sector. The sector that received most of the construction workers was commerce (11%), followed by industry and transport, as shown in Table 3.4:

[30] As the objective of the study is evaluate firm opening and RAIS dynamics, jobs terminated due to retirement or death, about 10,000 registers, are not considered. Furthermore, only full-time jobs are considered.

Table 3.4 – Former RAIS entrepreneurs: number of firms by CNAE Section

CNAE Sector	Firms	%
Construction	669,374	62.2
Commerce	123,219	11.4
Industry	69,932	6.5
Transportation, storage and postal services	53,561	5.0
Accommodation and food services	46,663	4.3
Other	113,944	10.6

Source: author's elaboration using RAIS and National Registry of Legal Entities data.

3.5.2.2 Scenario 1 - Worker with formal job registration

In the first scenario, the dataset includes all individuals who were active in RAIS at any point between 2015 and 2023. The control group comprises workers who did not open a business during this period, regardless of whether they changed employers[31]. The treated group consists of workers who exited RAIS and registered an individual business in the construction sector between 2015 and 2023, as identified by the corresponding CNAE section code.

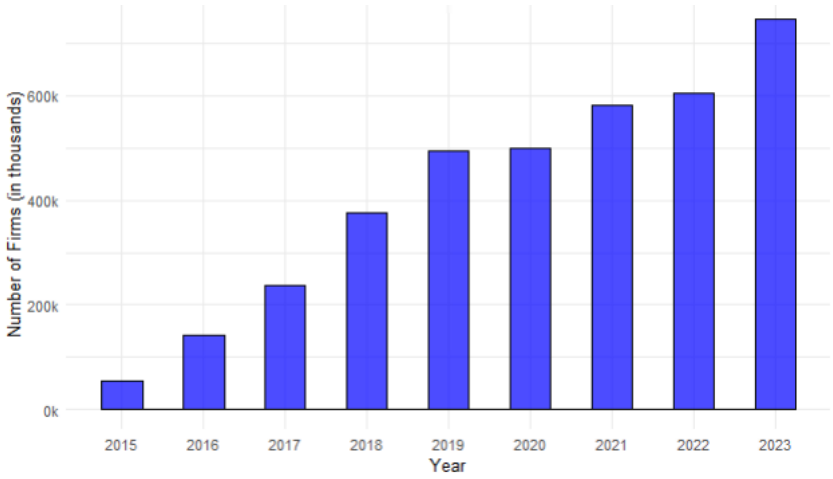
After removing duplicates, the final sample consists of approximately 7.4 million workers. Of these, 6.8 million remained active in RAIS throughout the period without registering a business, while 523,573 transitioned to individual entrepreneurship. As previously noted, temporary or part-time workers (defined as working fewer than 40 hours per week), as well as retirees and individuals whose employment ended due to death or disability, were excluded from the dataset.

For the present analysis, we focus exclusively on individuals who registered a business within two years of leaving formal employment in RAIS. The objective is to isolate the effects of transitioning directly from formal wage employment to entrepreneurship, rather than from informal activity, a pathway that will be examined separately in Scenario 2. We assume that longer gaps between leaving RAIS and business registration are more likely to indicate delayed formalization of an already existing informal business. In addition, workers who alternate between periods of formal employment in RAIS and periods as individual microentrepreneurs are excluded, to avoid capturing repeated transitions that may confound the analysis.

After applying these restrictions—and considering the sector's dynamism discussed earlier—the final analytical sample comprises approximately 103,000 workers. Figure 3.7 presents the number of firms opened by RAIS employees per year.

[31] This group includes individuals who, at some point during the period, were neither formally employed nor registered as business owners in RAIS—potentially due to unemployment or informal work.

Figure 3.7 – Histogram of Firm Opening per Year



Source: author's elaboration using RAIS and National Registry of Legal Entities data.

To enhance the comparability between treated and control units, we construct the comparison group using exact matching based on key baseline characteristics, including age, education, gender, race, earnings, formal employment history, geographic location, occupation, and average total credit balance. Table 3.5 presents the means test that compares the two groups.

Table 3.5 – Comparison of Means Between Treated and Control Groups

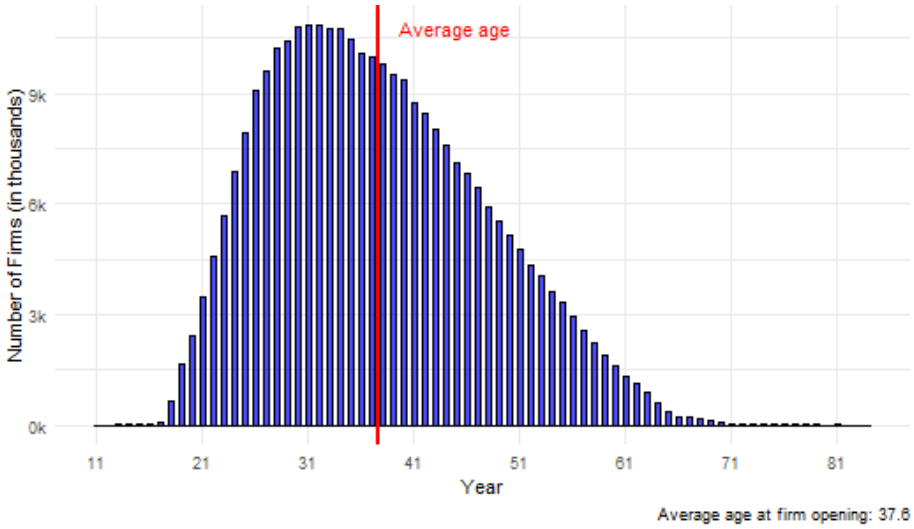
Variable	Mean (Treated)	Mean (Control)	p-VALUE
Gender (Man = 1)	0.99	0.99	0.783
Age (2016-1Q)	33.91	33.82	0.062
Education	6.18	6.18	0.689
Race (Black = 1)	0.46	0.46	0.800
Occupation	707.58	707.29	0.238
No credit balance (=1)	0.09	0.09	0.001
Total credit balance (2016-1Q)	4184.10	4235.14	0.482
Default Balance (2016-1Q)	197.21	171.57	0.000
Credit card (2016-1Q)	268.44	237.25	0.000
Revolving credit (2016-1Q)	201.99	185.73	0.001
Credit pre-approved limit (2016-1Q)	864.09	821.83	0.002

Source: author's elaboration using RAIS and National Registry of Legal Entities data.

Although the treatment and control groups are broadly similar in terms of demographics and formal occupational profiles, there are notable differences in financial characteristics - particularly in the use of credit cards, revolving credit, and default behavior. It is important to note that these financial variables were not included in the matching procedure.

As discussed previously, a variety of factors can influence both the decision to pursue entrepreneurship and the level of bargaining power held by workers, with age being one of the most relevant. Figure 3.8 illustrates the age distribution of workers at the time of firm creation.

Figure 3.8 – Histogram Worker‘s Age at Firm Opening



Source: author's elaboration using RAIS and National Registry of Legal Entities data.

An additional analysis on how worker profiles influence the probability of becoming an entrepreneur is presented in Appendix G. The results indicate that the effects of education and age are non-linear. Specifically, increasing education (age) initially raises the probability that a worker becomes an entrepreneur, but beyond a certain point, this probability begins to decline. Although statistically significant, the coefficients for the financial variables and the wage are zero, indicating a minimal impact on the probability of opening a firm.

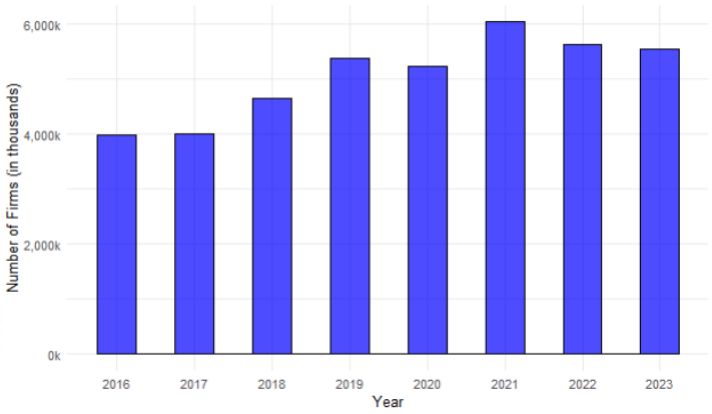
3.5.2.3 Scenario 2 - Workers with no formal job registration

For informal workers, the primary motivation to register as a sole entrepreneur is typically driven by the opportunity for formalization, as this is often the only viable path to legitimizing their business activities.

For this scenario, the data set includes workers who opened an individual construction firm without having a prior registration as a formal worker in the construction industry. For those who have opened multiple individual firms, we consider only the first one in the dataset, avoiding duplication. In this way, we have the date of the first individual firm as the date of treatment.

As shown in Table 3.3, 1.77 million firms have been opened in the period by worker with no previous formal jobs, 1.46 million of them (83%) registered as individual enterprises. Figure 3.9 shows the distribution of firms opened by year.

Figure 3.9 – Histogram of Firm Opening per Year



Source: author's elaboration using National Registry of Legal Entities data.

Although less pronounced than the increase among businesses started by former formal employees, a rise in new business registrations is also noticeable following the enactment of the 2017 Outsourcing Law. The age distribution of workers at the time of firm opening closely resembles that of individuals with prior formal employment, with a slightly higher average age of 38.7 years.

For this scenario simulation, we apply a staggered methodology, similar to the approach used for workers who were previously registered as formal employees, to compare financial results. Specifically, we analyze financial metrics for individuals who registered as individual entrepreneurs between 2016 and 2019, contrasting them with those registered in 2022 and 2023, who serve as a control group and are considered "never treated" due to the time lapse in the analysis. The sample includes 760,224 individuals, of which 329,709 were treated (those formalized as individual entrepreneurs between 2016 and 2019) and 430,515 individuals in the control group (never treated until 2022).[32]

A key assumption is that newly formalized entrepreneurs have characteristics similar to those in the next cohort, supporting a meaningful comparison of financial impacts. Table 3.6 presents the means test that compares the two groups. From the analysis, we reject the hypothesis that the formal and former employees registered as individual entrepreneurs are equal for all variables considered.

[32] Our dataset includes worker and firm data from 2015 to 2023. To accurately capture trends two years before and after formalization, we exclude individuals registered between 2020 and 2021, as a suitable counterfactual group is not available for this period within the dataset's timeframe. Additionally, given that financial data become more reliable starting in 2015, we lack reliable data for the pre-treatment period for those registering before 2017, preventing an analysis of pre-trends for this group and further narrowing the period under consideration."

Table 3.6 – Comparison of Means Between Treated and Control Groups

Variable	Mean (Treated)	Mean (Control)	p-VALUE
Gender (Man=1)	0.89	0.88	0.00
Age (2016-1Q)	37.81	33.20	0.00
No credit balance (=1)	0.10	0.09	0.00
Total credit balance (2016-1Q)	6084.66	5445.81	0.00
Default(2016-1Q)	253.05	209.21	0.00
Credit card (2016-1Q)	553.66	448.34	0.00
Revolving credit (2016-1Q)	324.23	272.80	0.00
Credit pre-approved limit (2016-1Q)	1863.98	1528.65	0.00

Source: author's elaboration using RAIS and National Registry of Legal Entities data.

One possible explanation for the observed differences is that the variables are measured at baseline (first quarter of 2016). Workers who formalize between 2020 and 2023 (the control group) tend to be, on average, nearly four years younger than those who formalize earlier (treated). This age difference may partially account for the disparities observed in financial variables, as younger individuals typically have lower credit exposure and limited financial histories. However, since the model includes fixed effects for age groups, these baseline differences are controlled for in the estimation, reducing the risk of bias arising from age-related financial disparities.

3.6 Results

3.6.1 Impacts of Becoming a Individual Entrepreneurs for Formal Workers

The most direct channel through which regularization as a solo entrepreneur could benefit workers is by increasing their income and consumption. However, both variables are notoriously difficult to accurately measure using administrative records or survey data. As discussed previously, while higher income may lead to greater credit balances due to increased spending capacity, income alone is not a reliable predictor of credit limits or balances. These outcomes are also shaped by a range of factors, including credit history, financial behavior, and the broader structure of credit markets.

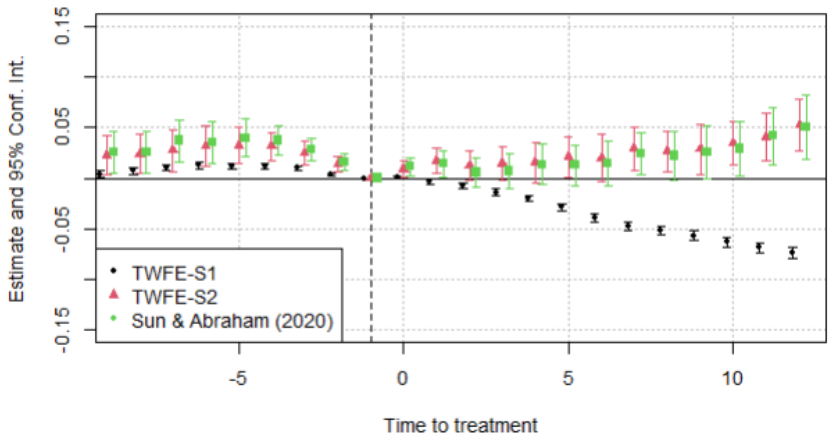
However, even if not strictly indicative of income growth, expanded access to credit is generally considered beneficial, particularly for lower-income individuals, who tend to have a high marginal propensity to consume (MPC). For these individuals, access to credit can ease liquidity constraints, enabling them to smooth consumption and make productive investments, including in their own businesses.

A significant share of individuals in the sample have no credit balance during certain periods of the analysis (10% in the first quarter of 2017). Because the dependent variable is measured in logarithmic form, zero values are excluded from the regression, as the logarithm of zero is undefined. Although a common approach in the literature is to add a constant

(typically one) to all values to retain zero observations, this transformation can introduce bias and distort the interpretation of the coefficients, particularly when the distribution of the outcome variable is asymmetrical or when a large proportion of observations are clustered at zero. To address this issue without compromising interpretability, we adopt a two-step TWFE strategy. In the first step, we estimate the treatment effect on the probability of having a positive credit balance, capturing the extensive margin of credit access. In the second step, we restrict the sample to individuals with positive credit balances and estimate the treatment effect on the log of credit balances, thus focusing on the intensive margin of credit utilization among those with access.

Both the TWFE and Sun and Abraham (2021) specifications indicate that, conditional on having access to credit, the treatment effect is positive: three years after transitioning, entrepreneurs hold total credit balances approximately 5% higher than those who remained formally employed. However, the first step of the TWFE model reveals a negative and substantial effect on credit access. Specifically, treated workers are 7 percentage points less likely to have a positive credit balance three years after the transition, suggesting that while credit volumes increase for those with access, the likelihood of maintaining access to formal credit decreases.

Figure 3.10 – Event study: Staggered treatment - Total credit balance



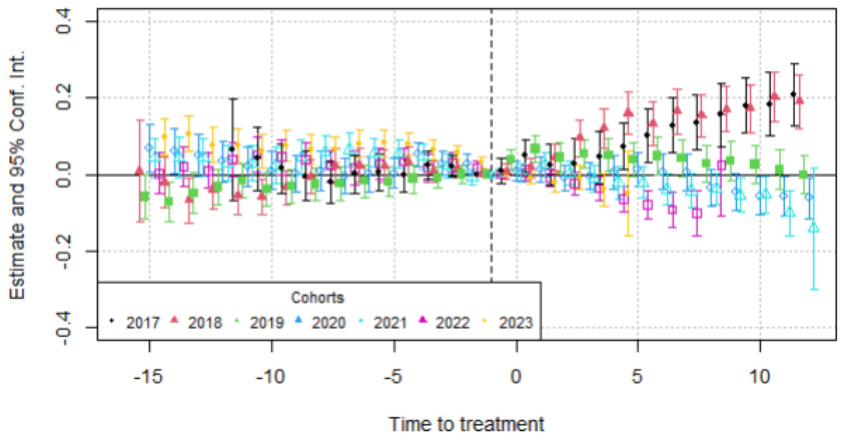
Note: Estimates are based on TWFE and Sun and Abraham (2021) models comparing treated (RAIS workers who became entrepreneurs) and control (those who remained in RAIS) groups before and after firm registration. TWFE-S1 evaluates the likelihood of having a positive credit balance (extensive margin), while the TWFE-S2 examines the log of total credit balance conditional on access (intensive margin). Vertical bars indicate 95% confidence intervals.

In both models, some difference is evident in the pre-treatment trends. This may be partially explained by the transitional period many workers experience between exiting RAIS and formalizing as individual microentrepreneurs. During this interval, individuals often receive severance payments or other forms of compensation, which can lead to temporary fluctuations in financial indicators. These short-term changes may differentiate them from

the control group - composed of individuals who remain continuously employed in the formal labor market -thereby contributing to the observed pre-trend variability.

The similarity between the TWFE and Sunab models in Figure 3.10, both controlled for time-fixed effects, suggests that the average treatment effect is consistently captured in the overall specification, as both account for common temporal variations. However, when estimating the model separately for each treatment cohort, notable differences in effects emerge, as shown in Figure 3.11. Although the effect of treatment is positive and substantial for the early-treated groups, it becomes neutral and even negative for those treated in 2022 and 2023. The declining effects of treatment for the 2022 and 2023 cohorts may reflect a combination of contextual and structural factors.

Figure 3.11 – Event study: Staggered treatment - Credit Balance by Cohorts



Note: Estimates are based on TWFE models comparing treated individuals (RAIS workers who became entrepreneurs) with control individuals (those who remained in RAIS), estimated separately by treatment cohort. Vertical bars represent 95% confidence intervals.

Disaggregating total credit balances by credit product reveals that treatment has a positive effect in all modalities, suggesting that the transition to entrepreneurship is associated with better financial outcomes.

The balance associated with non-revolving credit card usage, typically associated with consumer spending, shows an immediate increase beyond the confidence interval in the period following the transition (Figure 3.12). However, this effect gradually decreases and, while remaining positive, becomes statistically insignificant relative to the control group. This pattern may reflect an initial surge in consumption or business-related purchases that stabilizes over time. The data also reveal an increase in the credit limit available to individuals after the transition (Figure 3.13). Although credit limits are not a direct proxy for income, they are often used by financial institutions as a signal of a borrower's creditworthiness. As such, this increase may indicate an improved assessment of individuals' financial stability and repayment capacity by lenders.

Figure 3.12 – Staggered treatment - Credit Card Balance

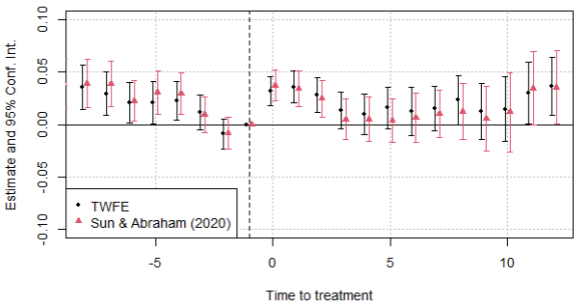


Figure 3.13 – Staggered treatment - Credit Limit

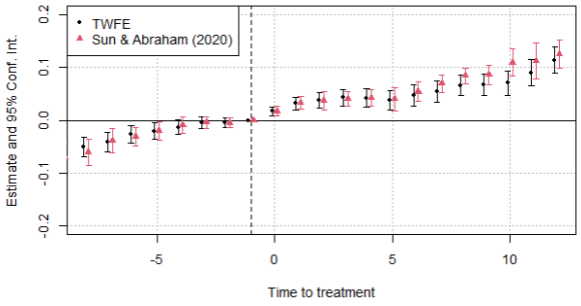


Figure 3.14 – Staggered treatment - Revolving Credit

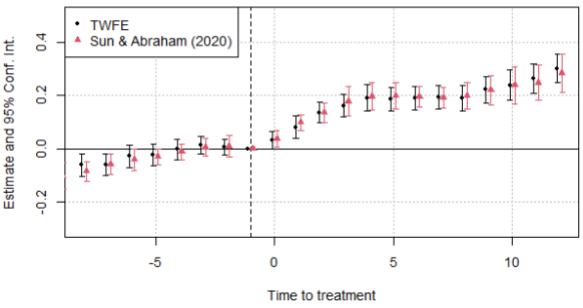
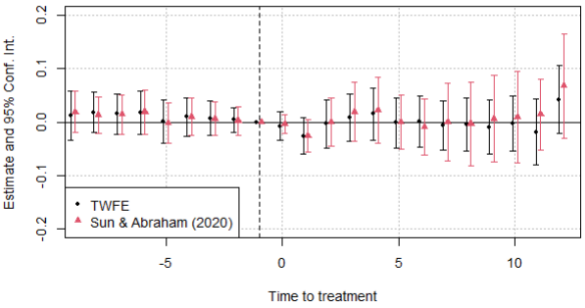


Figure 3.15 – Staggered treatment - Default



Note: Estimates are based on TWFE and Sun and Abraham (2021) specifications, comparing treated (RAIS workers who became entrepreneurs) and control (those who remained in RAIS) groups before and after firm registration. Results are presented for different credit products and for credit pre-approved limit, conditional on having a positive credit/limit balance (intensive margin). Vertical bars indicate 95% confidence intervals.

In particular, the magnitude of this effect is considerably larger for revolving credit instruments[33], such as credit card debt and overdraft facilities, forms of credit that typically carry higher interest rates and are often used as a short-term liquidity buffer. As shown in Figure 3.14, the estimated treatment effect on average balances increases steadily over time, reaching approximately a 25% gain relative to the control group by the end of the observation period. This suggests that entrepreneurs may be relying more heavily on accessible, although expensive, forms of credit to manage cash flow in the early stages of their business activity. The use of expensive credit alternatives can also be a sign that the worker is experiencing difficulties managing their resources and income instability.

Increased access to credit may indicate a positive trend, suggesting that new entrepreneurs are improving their ability to obtain financial resources, whether for consumption smoothing, personal investment, or business-related expenditures. However, it is also plausible that greater credit use reflects challenges in managing income volatility following the transition from salaried employment to self-employment. To distinguish between these

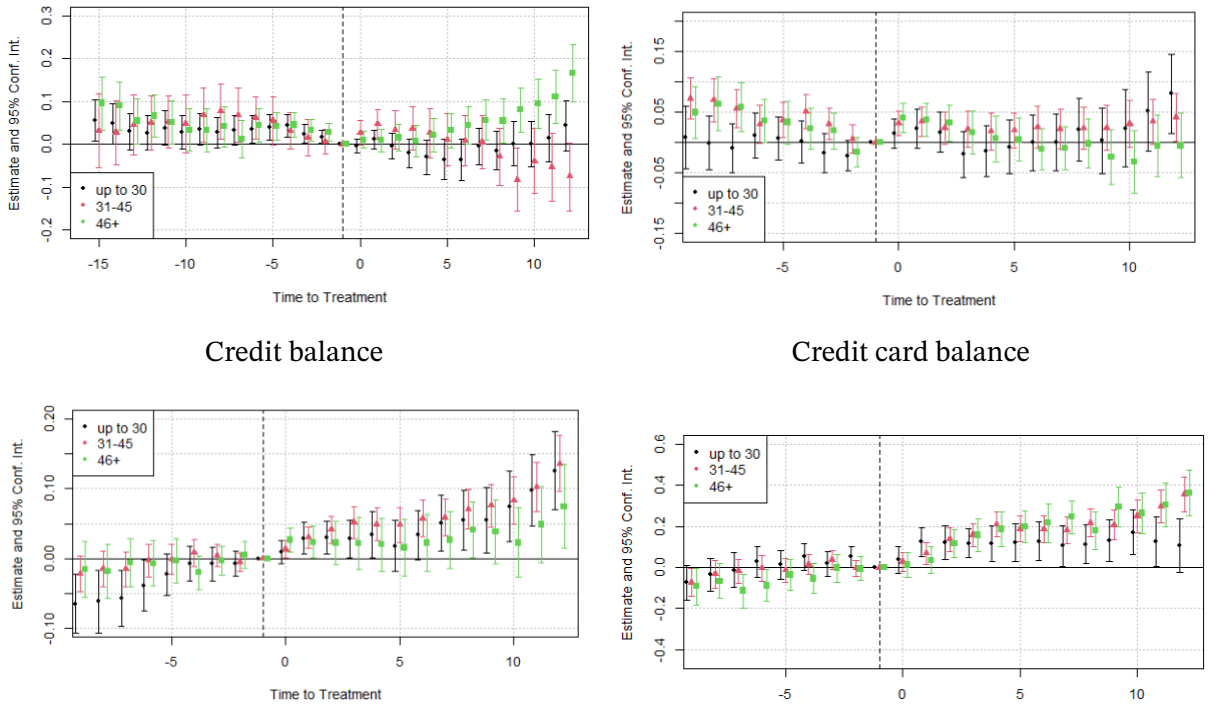
[33] Revolving credit refers to a debit balance remaining after the due date of the invoice. The amount of revolving credit is the difference between the total amount of the invoice and the amount paid by the borrower, including interest calculated up to the end of the month (BCB, 2021).

possibilities, a useful approach is to analyze default rates, which provide information on the ability of borrowers to meet repayment obligations. Importantly, as shown in Figure 3.15, the data show no significant change in default rates before or after treatment compared to the control group. This finding implies that the observed expansion in credit access is not associated with increased financial stress, supporting the interpretation that credit growth among entrepreneurs is occurring in a sustainable and financially stable manner.

3.6.1.1 Heterogeneity Analyses

Disaggregating the analysis by age (Figure 3.16) and occupation (Figure 3.17) reveals heterogeneous effects. Among age groups, only older individuals exhibit a statistically significant treatment impact, with an increase in total credit of nearly 20% after three years. For the other groups, pre- and post-treatment differences are not statistically significant.

Figure 3.16 – Staggered treatment effects by age cohort for different credit outcomes



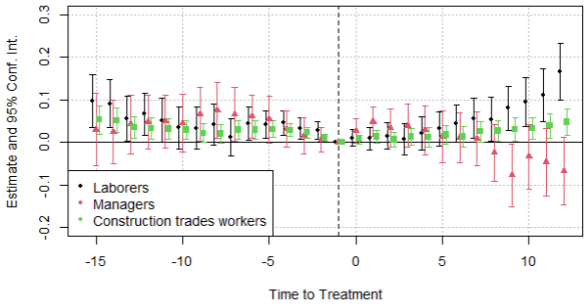
Note: Estimates are based on TWFE specifications comparing treated (RAIS workers who became entrepreneurs) and control (those who remained in RAIS) groups before and after firm registration, segmented by age cohort. The dependent variable is the log of pre-approved credit limits and credit balance across different credit products, conditional on having a positive credit balance (intensive margin). Vertical bars represent 95% confidence intervals.

More experienced workers do not appear to incur significant economic losses after transitioning to entrepreneurship. Mata, Mattos, and Vilarouca (2025) and Maloney (2004) find that middle-aged individuals are more likely to start a business compared to their

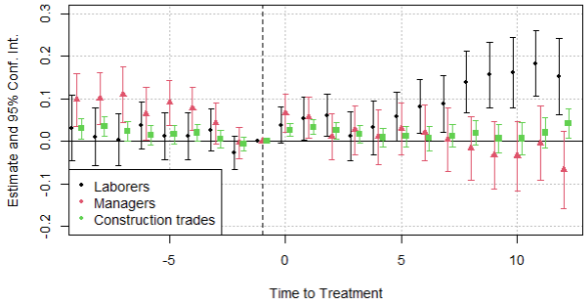
younger counterparts and argue that a plausible explanation is that these workers draw on the managerial capital accumulated throughout their careers to support the establishment and operation of their own ventures. The pattern observed in our results is consistent with this view and a selection mechanism in which entrepreneurial entry is positively associated with prior management experience and underlying entrepreneurial ability.

With respect to occupational heterogeneity, construction laborers exhibit the largest positive treatment effects, suggesting a more substantial financial gain from formalization. In contrast, supervisors show a negative, but statistically insignificant, response to treatment in all credit outcomes, with the exception of revolving credit, where a positive effect is observed.

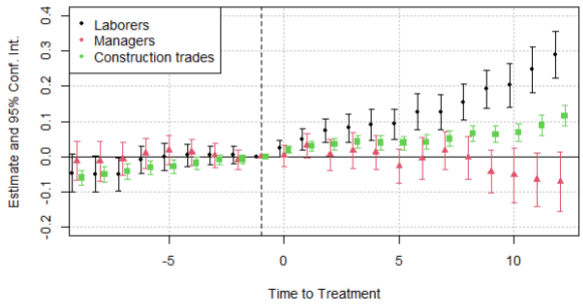
Figure 3.17 – Staggered treatment effects by occupation for different credit outcomes



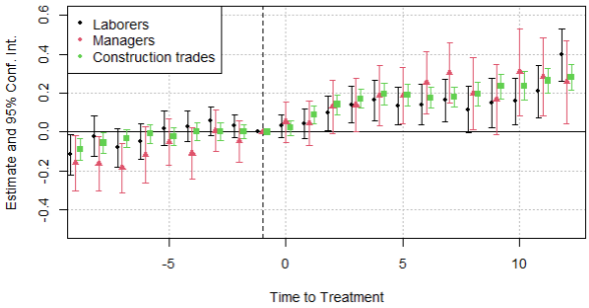
Credit total balance



Credit card balance



Credit limit



Revolving credit

Note: Estimates are based on TWFE specifications comparing treated (RAIS workers who became entrepreneurs) and control (those who remained in RAIS) groups before and after firm registration, segmented by occupation. The dependent variable is the log of pre-approved credit limits and credit balance across different credit products, conditional on having a positive credit balance (intensive margin). Vertical bars represent 95% confidence intervals.

This aligns with the findings of Guillén and Leão (2023), who show that more educated workers experienced the steepest declines in real wages following the onset of the COVID-19 pandemic and have faced a slower recovery. The authors attribute this trend to structural changes in the labor market, particularly the accelerated adoption of flexible work arrangements, which may have led more educated workers to accept lower wages in exchange for

increased flexibility. Our findings suggest that these broader structural shifts also affect financial outcomes among those who transition to entrepreneurship, highlighting how changing labor market dynamics influence both occupational choices and post-transition economic trajectories.

Together, these results suggest that the transition from formal employment to entrepreneurship does not necessarily lead to significant financial deterioration. On the contrary, in many cases, individuals not only maintain but may actually improve their financial standing, gaining greater access to credit and exhibiting stable repayment behavior in the years following their transition.

This is in line with Maloney (2004) who argue that self-employment can, in some cases, represent a deliberate and strategic choice –potentially driven by the pursuit of greater autonomy, flexibility, or the prospect of higher income. Particularly in developing countries, where the enforcement of labor laws and regulations is often less consistent than in advanced economies, workers might have greater leeway to selectively engage with formal institutions and benefit programs rather than be tied to a standardized package of protections. This interpretation resonates with recent statements by President Luiz Inácio Lula da Silva, a former trade union leader, who acknowledged that many Brazilian workers no longer aspire to traditional jobs. Instead, he noted, a growing number of individuals prefer self-employment or entrepreneurial activities that offer greater autonomy and flexibility, reflecting a broader shift in labor market preferences and worker identities [34].

3.6.2 Impacts of Becoming MEI for Informal Workers

A significant portion of individuals formalizing as Individual Entrepreneurs without prior formal employment were likely informal workers. For these workers, formalization often represents a pathway to increased productivity, access to a broader and higher quality client base (e.g., larger firms or wealthier individuals), and the acquisition of social security benefits. This analysis aims to explore whether this transition improves financial outcomes by expanding credit access (indicated by rising Credit Balances) and boosting consumption and investment (measured by Credit Card Balances).

Consistent with previous analyses, an increase in credit balances can be interpreted as a sign of improved financial outcomes, as it reflects enhanced access to credit and, by extension, greater financial stability. Higher credit limits are typically viewed as a signal of lender confidence in an individual's repayment capacity, while the ability to maintain larger balances suggests improved liquidity and creditworthiness. This expanded financial capacity enables individuals to smooth consumption, respond to unforeseen expenses, or

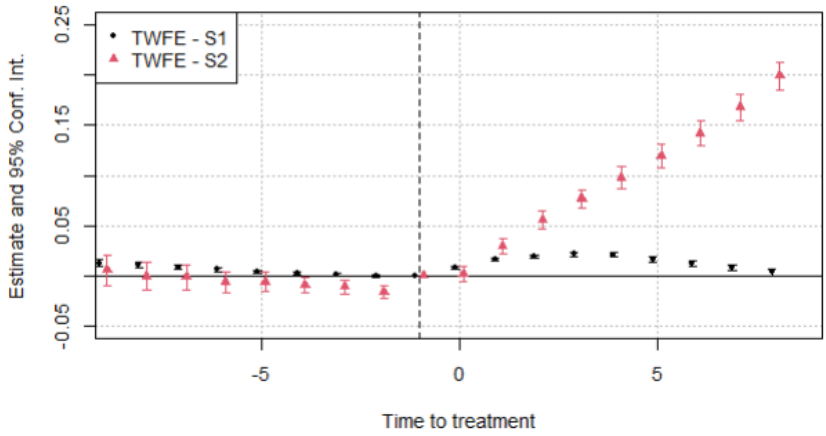
[34] https://www.gov.br/planalto/pt-br/acompanhe-o-planalto/discursos-e-pronunciamentos/2024/10/transcricao-do-pronunciamento-do-presidente-lula-durante-lancamento-do-programa-acredita-em-sao-paulo

invest in personal or business-related ventures—key indicators of economic well-being.

The two-step TWFE approach, which separates effects on the extensive and intensive margins, is also applied in this scenario. The extensive margin refers to the likelihood of accessing or participating in the credit market (e.g., having a positive credit balance), while the intensive margin captures the magnitude of credit use among those already participating (e.g., the credit balance held).

As shown in Figure 3.18 the total credit balance exhibits a substantial and sustained increase after formalization, surpassing the levels observed in the non-formalized (control) group by about 20 percent after eight trimesters. The extensive margin analysis (TWFE-S1) indicates a modest increase in the probability of access is observed immediately after formalization, but this effect appears to be transitory, with access probabilities gradually reaching no significant difference in access to credit between the treatment and control groups. Intensive margin analysis reveals a positive and significant treatment effect on credit balances among those with access, suggesting that formalization as an entrepreneur significantly enhances the volume of credit used by individuals who are already integrated into the credit market.

Figure 3.18 – Event Study: Staggered Treatment - Total Credit Balance

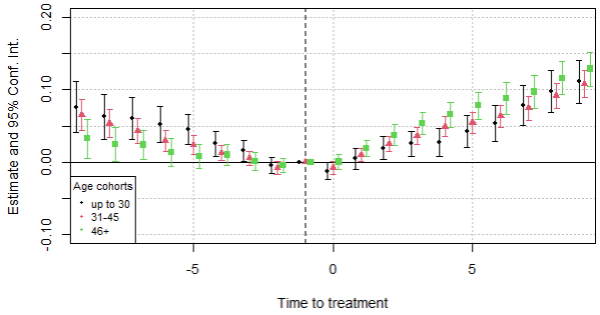


Note: Estimates are based on TWFE models comparing treated (workers formalizing as individual entrepreneurs) and control (informal workers) groups before and after firm registration. TWFE-S1 evaluates the likelihood of having a positive credit balance (extensive margin), while TWFE-S2 examines the log of total credit balance conditional on access (intensive margin). Vertical bars indicate 95% confidence intervals.

Figure 3.19 examines treatment heterogeneity by disaggregating the sample across age groups. While the estimated treatment effects are not statistically different across age strata, the disaggregation reveals some variation in pre-treatment dynamics. Although these differences do not appear large enough to threaten identification, they suggest that baseline trajectories may differ across age groups. When the analysis is conducted by treatment cohort—defined by the year of formalization—a clearer pattern emerges, as shown in Figure 3.20. Earlier cohorts, particularly those formalized in 2016, exhibit a more gradual post-

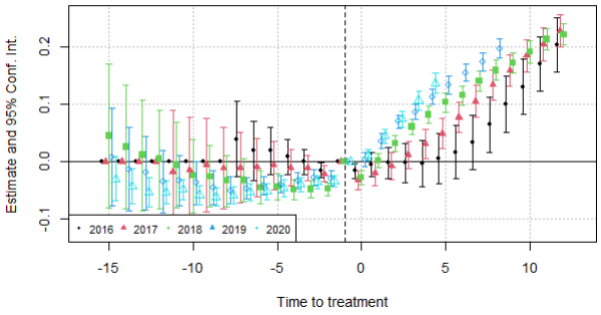
treatment trajectory, whereas more recent cohorts display faster credit accumulation. In particular, the 2018, 2019, and 2020 cohorts follow remarkably similar post-treatment paths. The effects of treatment converge to around a 20% increase in credit balances twelve quarters after formalization. This convergence suggests that the effects of formalization may have become more immediate and consistent over time, potentially reflecting broader improvements in financial infrastructure or evolving macroeconomic and labor market conditions.

Figure 3.19 – Staggered treatment - Credit balance by age



Note: Estimates are based on TWFE specifications comparing treated and control groups before and after firm registration, segmented by age cohort. The dependent variable is the log of total credit balance conditional on having a positive credit balance (intensive margin). Vertical bars represent 95% confidence intervals.

Figure 3.20 – Staggered treatment - Credit balance by cohorts

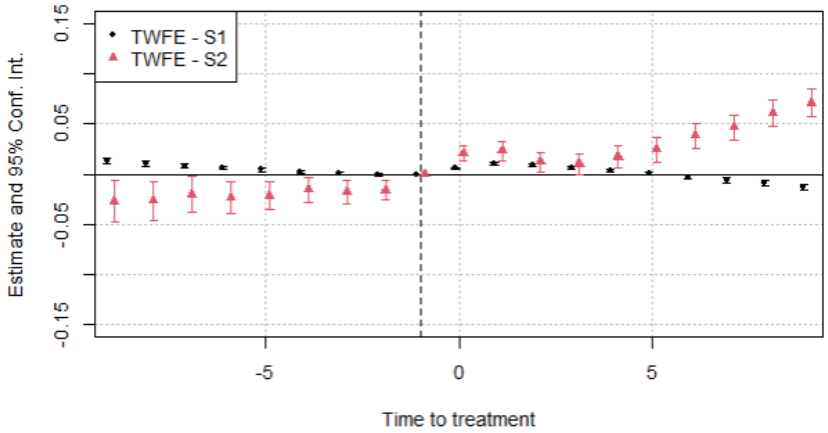


Note: Estimates are based on TWFE specifications comparing treated and control groups before and after firm registration, segmented by treatment cohort. The dependent variable is the log of total credit balance conditional on having a positive credit balance (intensive margin). Vertical bars represent 95% confidence intervals.

By disaggregating total credit balances by credit product, Figure 3.21 focuses on the usage of credit cards. The extensive margin analysis does not show significant differences in credit access between the treatment and control groups prior to formalization, indicating

comparable baseline probabilities of holding credit. However, the intensive margin reveals a positive treatment effect on credit card balances among individuals with existing access to credit. Specifically, formalization as an entrepreneur is associated with a 5% increase in credit card balances eight quarters after formalization, suggesting that treated individuals deepen their engagement with credit markets over time.

Figure 3.21 – Event Study: Staggered Treatment - Credit Card Balance

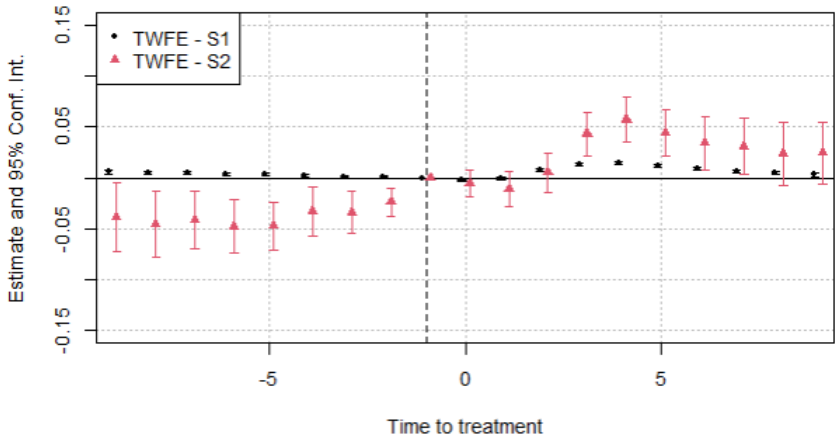


Note: Estimates are based on TWFE models comparing treated (workers formalizing as individual entrepreneurs) and control (informal workers) groups before and after firm registration. TWFE-S1 evaluates the likelihood of having a positive credit card balance (extensive margin), while TWFE-S2 examines the log of total credit card balance conditional on access (intensive margin). Vertical bars indicate 95% confidence intervals.

As discussed, this study measures credit usage, but lacks direct data on credit supply and demand among analyzed workers, as well as specific information on how credit is allocated between personal consumption and business investments. Given the limited credit options for microentrepreneurs, many rely on personal credit lines for business needs, such as working capital and investment (BCB, 2015; BCB, 2021).

This increased credit use could signal better access to resources, supporting consumption, and business expansion. However, it might also indicate difficulty managing income variability or managing increased credit access responsibly. Monitoring default rates provides insight into the income sufficiency for loan repayment. As shown in Figure 3.22, the default balances for new entrepreneurs initially align with those of the control group. The treatment effects are positive with the largest effect occurring in the second year after formalization.

Figure 3.22 – Event Study: Staggered Treatment - Default



Note: Estimates are based on TWFE models comparing treated (workers formalizing as individual entrepreneurs) and control (informal workers) groups before and after firm registration. TWFE-S1 evaluates the likelihood of positive credit default (extensive margin), while TWFE-S2 examines the log of total default balance conditional on access (intensive margin). Vertical bars indicate 95% confidence intervals.

In conclusion, formalization appears to yield positive initial outcomes for individual entrepreneurs, particularly through improved access to credit. For workers transitioning from informality to formal entrepreneurship, this shift is often driven by a combination of motivations, including the pursuit of economic stability, access to financial services, and opportunities for business growth.

3.7 Conclusion

In line with our initial hypothesis, the results of the study indicate that entrepreneurship can serve as a positive force, providing a voluntary and beneficial pathway for a significant segment of workers, while also highlighting a high level of diversification in its impacts and motivations.

For workers transitioning from formal jobs to entrepreneurship, the results suggest that the move is associated with improved financial outcomes, including increased access to credit across all modalities, without a corresponding increase in default rates, indicating financial stability. These positive effects are particularly concentrated among older individuals and construction laborers, who experience the most significant gains. In contrast, younger workers and supervisors show limited or statistically insignificant responses, underscoring the role of age and occupation in shaping the financial impacts of formalization.

For individuals transitioning from the informal labor market, preliminary patterns suggest potential improvements in financial outcomes, including increased access to credit and higher total credit balances. However, differences in pre-treatment trends limit the precision of causal inference in the heterogeneity analysis.

The analysis performed offers initial insight into the motivations and varied impacts of entrepreneurial transitions. However, fully understanding these dynamics requires a broader analysis of the factors driving entrepreneurship. Future research could expand by further exploring the diverse factors that influence labor dynamics, such as regulatory constraints, industry characteristics, and regional variations. A deeper understanding of how these factors shape labor transitions could offer valuable insight into their trends and complexities, thereby informing the development of more effective policies that support workers while preserving the market efficiencies enabled by a more flexible and adaptable labor market.

Given the rapid expansion of MEI registrations and the growing evidence that the transition to self-employment can produce positive outcomes for many workers, it is worth considering whether current labor regulations and payroll taxes have become overly burdensome, particularly in developing economies with high levels of informality. As automation and evolving work environments increase the cost of distorting labor markets, the response need not be the abandonment of labor protections but rather their adaptation to more diverse and flexible work arrangements.

Brazil's MEI regime, along with related regulatory reforms, represents a meaningful step in this direction. Nonetheless, further research is needed to assess its long-term impacts and to identify potential adjustments that could enhance its efficiency and sustainability. Additionally, social protection systems must also be adapted to ensure adequate coverage for this growing segment of independent workers, whose needs may not be met by traditional, employment-based models.

4 Conclusions

This thesis presents two complementary studies that together offer a nuanced understanding of Brazil's evolving labor market following the 2017 outsourcing legislation. The first study analyzes the structural transformation in employment patterns, while the second investigates the financial outcomes of workers transitioning into entrepreneurship. Together, these findings highlight that the expansion of individual firms is not merely a response to regulatory change, but also reflects evolving worker preferences and firm-level incentives.

4.1 Synthesis of Key Findings

The first study shows that individual firm creation was already increasing prior to the legislative changes, but the 2017 outsourcing law significantly accelerated this trend. By facilitating a shift from traditional employment to individual contracting, the law enabled greater labor market flexibility and reduced costs for businesses related to social security, benefits, and other labor protections.

However, this transformation was not uniform across sectors or regions. Sectoral analysis revealed that individual firm creation increases before the 2017 outsourcing law, especially in sectors like beauty services and retail, driven by commission-based models and digital commerce. In contrast, food services and construction saw significant increases primarily after 2017, suggesting that outsourcing liberalization was a key driver. Regionally, the Southeast and South led in firm creation growth, while the North, Northeast, and Central-West showed slower but notable increases, underscoring the complexity of labor market responses to regulatory change and the role of economic and institutional factors.

Despite concerns about labor precarization, formal employment levels remained stable. The use of intermittent and part-time contracts remained marginal, and firm size and wages showed little variation. These findings suggest that outsourcing may have restructured employment relationships, pointing to a reconfiguration of labor relations rather than a deterioration of formal employment.

The second study adds a critical dimension by examining the financial impacts of entrepreneurial transitions. It finds that workers who transitioned from formal employment to entrepreneurship experienced improved financial outcomes, including increased access to credit across all modalities and stable default rates—indicating financial resilience. These positive effects were especially concentrated among older individuals and construction laborers, while younger workers and supervisors showed limited or statistically insignificant gains. Preliminary evidence also suggests that transitions from informal to formal

entrepreneurship may lead to improved financial outcomes, although limitations in pre-treatment comparability restrict strong causal inference.

4.2 Key remarks and policy recommendations

The expansion of individual contracting reflects a broader shift in how workers are integrated into the labor market. Rather than replacing formal jobs with informal ones, the results of this study support the hypothesis that entrepreneurship can represent a positive and voluntary pathway for many workers, particularly in the context of labor market reforms. This transformation indicates that workers and firms are responding to incentives for greater flexibility, with many workers choosing to transition to self-employment. Nevertheless, the impacts are highly heterogeneous, varying by age, occupation, economic sector, and region.

The rapid expansion of MEI registrations and the stability of formal employment suggest that the labor market is evolving in response to new realities. The emergence of a dual labor market structure—characterized by a concentration of formal employment in large firms and a proliferation of individually operated businesses—raises important questions about equity and sustainability. While this structure may enhance efficiency and adaptability, it also risks deepening labor market segmentation and inequality.

As Brazil continues to navigate the challenges of labor market modernization, policymakers should focus on adapting labor protections to a more dynamic and diverse workforce. The findings point to several policy implications:

- **Modernize labor regulations:** Current frameworks may be overly rigid and burdensome, especially in economies with high informality. Reforms should aim to accommodate diverse work arrangements without compromising worker protections.
- **Adapt social protection systems:** Traditional employment-based models may not adequately cover independent workers. Expanding coverage to include self-employed individuals is essential for ensuring social security and economic resilience.
- **Balance flexibility and fairness:** While labor flexibilization can enhance efficiency, it must be accompanied by safeguards that prevent excessive risk transfer to workers. A fair labor market requires mechanisms that protect vulnerable groups while enabling innovation and growth.

By aligning flexibility with fairness, Brazil can foster a labor market that is not only more efficient and adaptable, but also more inclusive and sustainable.

4.3 Future Research

Building on the findings of this thesis, future research should explore the long-term impacts of individual firm creation on worker well-being, income stability, and career tra-

jectories. Longitudinal studies could help determine whether the initial financial gains observed among entrepreneurs are sustained over time. Additionally, more granular data is needed to better understand transitions from informal to formal entrepreneurship, where causal inference remains limited. Sector-specific studies could further clarify how industry characteristics shape the success and sustainability of entrepreneurial pathways. Finally, research into the adequacy of social protection systems for independent workers is essential to inform policy reforms that balance labor market flexibility with economic security.

References

ACEMOGLU, D.; AGHION, P.; LELARGE, C.; REENEN, J. V.; ZILIBOTTI, F. Technology, information, and the decentralization of the firm. **The Quarterly Journal of Economics**, MIT Press, v. 122, n. 4, p. 1759–1799, 2007.

ACEMOGLU, D.; JOHNSON, S.; ROBINSON, J. A. The colonial origins of comparative development: An empirical investigation. **American economic review**, American Economic Association, v. 91, n. 5, p. 1369–1401, 2001.

AGHION, P.; HOWITT, P.; MAYER-FOULKES, D. The effect of financial development on convergence: Theory and evidence. **The quarterly journal of economics**, v. 120, n. 1, p. 173–222, 2005. Publisher: MIT Press.

ALMEIDA, F.; COELHO, F.; MALAFAIA, A. C.; VIEIRA, C. O microempreendedor individual (mei) no brasil: uma perspectiva geral. **Peer Review**, v. 5, n. 4, p. 34–47, 2023.

ALMEIDA, R.; CARNEIRO, P. Enforcement of labor regulation and informality. **American Economic Journal: Applied Economics**, American Economic Association, v. 4, n. 3, p. 64–89, 2012.

ALVAREZ, B. M. S. **Essays on informality**. Thesis (Doctor in Philosophy) — Fundação Getúlio Vargas (FGV), 2023.

ALVES, F. **The impact of information and communication technologies on banks, credit, and savings: an examination of Brazil**. [*S.l.*]: Bank for International Settlements, Monetary and Economic Department, 2024.

APPELBAUM, E.; BATT, R.; LEE, J. E. Financial intermediaries in the united states: Development and impact on firms and employment relations. **Financialization, new investment funds, and labour: An international comparison**, OUP Oxford, p. 53, 2014.

ARAUJO, A. P.; FERREIRA, R. V.; FUNCHAL, B. The brazilian bankruptcy law experience. **Journal of Corporate Finance**, Elsevier, v. 18, n. 4, p. 994–1004, 2012.

AUDRETSCH, D. **Entrepreneurship and Economic Growth**. [*S.l.*]: Oxford University Press, 2006.

AUTOR, D.; DORN, D. This job is "getting old": measuring changes in job opportunities using occupational age structure. **American Economic Review**, American Economic Association, v. 99, n. 2, p. 45–51, 2009.

AUTOR, D. H.; DORN, D. The growth of low-skill service jobs and the polarization of the us labor market. **American economic review**, American Economic Association, v. 103, n. 5, p. 1553–1597, 2013.

AYDIN, D. **The Marginal Propensity to Consume out of Liquidity**. [*S.l.*], 2015. Available at: https://ideas.repec.org/p/sip/dpaper/15-010.html.

BARBOSA, A.; CASAGRANDE, D.; MAIER, P.; TREVISAN, G. Changing the pyramids: The impact of broadband internet on firm employment structures. **Available at SSRN 3866643**, 2021.

BARROS, A. A. d.; PEREIRA, C. M. M. d. A. Empreendedorismo e crescimento econômico:uma análise empírica. **Rev. adm. contemp.**, v. 12, n. 4, p. 975–993, Dec. 2008. ISSN 1415-6555. DOI 10.1590/S1415-65552008000400005.

BCB. **Panorama do Microcrédito no Brasil**. [*S.l.*], 2015. Accessed: 2025-01-15. Available at: https://www.bcb.gov.br/content/cidadaniafinanceira/documentos_cidadania/serie_cidadania/SerieCidadania_1panorama_micro.pdf.

BCB. **Relatório de Cidadania Financeira 2021, Central Bank of Brazil**. 2021. Accessed: 2024-10-07. Available at: https://www.bcb.gov.br/content/cidadaniafinanceira/documentos_cidadania/RIF/Relatorio_de_Cidadania_Financeira_2021.pdf.

BEER, R.; IONESCU, F.; LI, G. **Are Income and Credit Scores Highly Correlated?** [*S.l.*], 2018. DOI 10.17016/2380-7172.2235. Available at: https://www.federalreserve.gov/econres/notes/feds-notes/are-income-and-credit-scores-highly-correlated-20180813.htm.

BESANKO, D.; DRANOVE, D.; SHANLEY, M.; SCHAEFER, S. **Economics of strategy**. [*S.l.*]: John Wiley & Sons, 2009.

CALLAWAY, B.; SANT'ANNA, P. H. Difference-in-differences with multiple time periods. **Journal of econometrics**, Elsevier, v. 225, n. 2, p. 200–230, 2021.

CAMPANHA, L. J.; LORENZO, H. C. D.; FONSECA, S. A.; PAULILLO, L. F. d. Oriani e. Formulação e implementação, convergências e desvios: facetas da política pública do MicroEmpreendedor Individual (MEI) no plano local. **Gest. Prod.**, v. 24, n. 3, p. 582–594, Sep. 2017. ISSN 0104-530X. DOI 10.1590/0104-530x3896-16. Available at: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0104-530X2017000300582&lng=pt&tlng=pt.

CAMPOS, A. G. O. Terceirização do trabalho no brasil: novas e distintas perspectivas para o debate. **Repositorio IPEA**, Instituto de Pesquisa Econômica Aplicada (Ipea), 2018.

CARBONAI, D. Labor reform in brazil, politics, and sindicatos: notes on the general strikes of 2017. **Journal of Politics in Latin America**, SAGE Publications Sage UK: London, England, v. 11, n. 2, p. 231–245, 2019.

CARBONI, M. A new class of worker for the sharing economy. **Richmond Journal of Law and Technology**, v. 22, n. 4, p. 11, 2016. Available at: https://scholarship.richmond.edu/jolt/vol22/iss4/2/.

CHEN, M.; DOANE, D. Informality in south asia: a review. **WIEGO, Cambridge, MA**, 2008.

CLARKE, D.; TAPIA-SCHYTHE, K. Implementing the panel event study. **The Stata Journal**, SAGE Publications Sage CA: Los Angeles, CA, v. 21, n. 4, p. 853–884, 2021.

COASE, R. H. The nature of the firm. **Economica**, v. 4, n. 16, p. 386–405, 1937.

COLBARI, A. de L. Do autoemprego ao microempreendedorismo individual: desafios conceituais e empíricos. **Revista Interdisciplinar de gestão social**, v. 4, n. 1, p. 165–189, 2015.

CORBI, R.; FERRAZ, T.; NARITA, R. Internal migration and labor market adjustments in the presence of nonwage compensation. **Manuscript, Department of Economics, University of Sao Paulo**, 2021.

CORBI, R. B.; NARITA, R.; FERREIRA, R.; SOUZA, D. Labor courts, job search and employment: Evidence from a labor reform in brazil. **Job Search and Employment: Evidence from a Labor Reform in Brazil (May 27, 2022)**, 2022.

DABLA-NORRIS, E.; INCHAUSTE, G. Informality and regulations: what drives the growth of firms? **IMF Staff Papers**, Springer, v. 55, n. 1, p. 50–82, 2008.

DELL'ANNO, R. Inequality and informality in transition and emerging countries. **IZA World of Labor**, 2021.

DIEESE. **O Processo de Terceirização e seus Efeitos sobre os Trabalhadores no Brasil**. [*S.l.*], 2007.

DIEESE. **Impactos da Lei 13.429/2017 para os trabalhadores: contrato de trabalho temporário e terceirização**. [*S.l.*], 2017. Acesso em 15 set. 2025. Available at: https://www.dieese.org.br/notatecnica/2017/notaTec175TerceirizacaoTrabalhoTemporario.pdf.

DIX-CARNEIRO, R.; GOLDBERG, P.; MEGHIR, C.; ULYSSEA, G. Trade and informality in the presence of labor market frictions and regulations. **Economic Research Initiatives at Duke (ERID) Working Paper**, n. 302, 2021.

DJANKOV, S.; RAMALHO, R. Employment laws in developing countries. **Journal of Comparative Economics**, Elsevier, v. 37, n. 1, p. 3–13, 2009.

DUARTE, F. V. Gestão de si e empreendedorismo: o microempreendedor individual e as novas formas de inserção no mercado de trabalho. **Revista de Administração de Empresas**, Elsevier, v. 51, n. 4, p. 365–376, 2011.

ELBAHNASAWY, N. G.; ELLIS, M. A.; ADOM, A. D. Political instability and the informal economy. **World Development**, Elsevier, v. 85, p. 31–42, 2016.

ESAKU, S. Political instability and informality in uganda: An empirical analysis. **The European Journal of Applied Economics, Forthcoming**, 2021.

FELIX, M.; WONG, M. **Labor Market Effects of Domestic Outsourcing: Evidence from Legalization in Brazil**. [*S.l.*], 2023.

Forbes Advisor. **Top Small Business Statistics**. 2024. Accessed: May 21, 2025. Available at: https://www.forbes.com/advisor/business/small-business-statistics/.

GARBER, G.; MIAN, A. R.; PONTICELLI, J.; SUFI, A. Consumption smoothing or consumption binging? the effects of government-led consumer credit expansion in brazil. **Journal of Monetary Economics**, 2024. DOI 10.1016/j.jmoneco.2024.04.001. Available at: https://www.sciencedirect.com/science/article/pii/S0304405X24000576.

GOLDBERG, E.; WIBBELS, E.; MVUKIYEHE, E. Lessons from strange cases: Democracy, development, and the resource curse in the us states. **Comparative Political Studies**, Sage Publications Sage CA: Los Angeles, CA, v. 41, n. 4-5, p. 477–514, 2008.

GOODMAN-BACON, A. Difference-in-differences with variation in treatment timing. **Journal of Econometrics**, Elsevier, v. 225, n. 2, p. 254–277, 2021.

GROSS, D. B.; SOULELES, N. S. Do liquidity constraints and interest rates matter for consumer behavior? evidence from credit card data. **The Quarterly Journal of Economics**, Oxford University Press, v. 117, n. 1, p. 149–185, 2002. DOI 10.1162/003355302753399472.

GUILLéN, D. A.; LEãO, S. Inflation and labour markets in the wake of the pandemic: the case of brazil. *In*: **Inflation and labour markets**. Bank for International Settlements, 2023. v. 142, p. 35–66. Accessed: 2025-01-15. Available at: https://www.bis.org/publ/bppdf/bispap142_c.pdf.

HAMMER, A.; NESS, I. Informal and precarious work: Insights from the global south. **Journal of Labor and Society**, Brill, v. 24, n. 1, p. 1–15, 2021.

HILL, S.; IONESCU-SOMERS, A.; MARTÍNEZ, A. C.; GUERRERO, M.; MENIPAZ, E.; BOUTALEB, F.; ZBIEROWSKI, P.; SCHØTT, T.; SAHASRANAMAM, S.; SHAY, J. **Global Entrepreneurship Monitor 2022/2023 Global Report: Adapting to a" New Normal"**. [*S.l.*]: Global Entrepreneurship Research Association, 2023.

HOLMSTROM, B. The firm as a subeconomy. **Journal of Law, Economics, and organization**, Oxford University Press, v. 15, n. 1, p. 74–102, 1999.

HONORATO, R. R. Vantagens e desvantagens do trabalho informal no brasil: Um estudo sobre mei - microempreendedor individual análogo aos trabalhadores informais. **Pontifícia Universidade Católica de Goiás**, 2022. Academic Article.

HONORATO, R. R. Vantagens e desvantagens do trabalho informal no brasil: Um estudo sobre mei - microempreendedor individual análogo aos trabalhadores informais. **Pontifícia Universidade Católica de Goiás**, 2022. Academic Article. Available at: https://repositorio.pucgoias.edu.br/jspui/handle/123456789/4422.

IBGE. **Demografia das Empresas e Estatísticas de Empreendedorismo**. 2022. Available at: https://biblioteca.ibge.gov.br/visualizacao/livros/liv101969.pdf.

IBGE. **Pesquisa Nacional por Amostra de Domicílios Contínua - Trimestral, Instituto Brasileiro de Geografia e Estatística**. 2024. Accessed: 2024-09-24. Available at: https://www.ibge.gov.br/estatisticas/sociais/trabalho/9173-pesquisa-nacional-por-amostra-de-domicilios-continua-trimestral.html?edicao=36340&t=resultados.

IBGE. **Pesquisa Nacional por Amostra de Domicílios Contínua: Indicadores IBGE – 3º Trimestre de 2024**. [*S.l.*], 2024. Accessed: May 12, 2025. Available at: https://ftp.ibge.gov.br/Trabalho_e_Rendimento/Pesquisa_Nacional_por_Amostra_de_Domicilios_continua/Trimestral/Fasciculos_Indicadores_IBGE/2024/pnadc_202403_trimestre_caderno.pdf.

Instituto de Pesquisa Econômica Aplicada (IPEA). **IPEADATA - Economic Data Platform**. 2024. Accessed: 2024-05-12. Available at: http://www.ipeadata.gov.br/Default.aspx.

KNIGHT, F. H. **Risk, uncertainty and profit**. [*S.l.*]: Houghton Mifflin, 1921. v. 31.

LAWRENCE, M.; POLIQUIN, C. The growth of hierarchy in organizations: Managing knowledge scope. **Strategic Management Journal**, Wiley Online Library, v. 44, n. 13, p. 3155–3184, 2023.

LEMOS, S. The effects of the minimum wage in the formal and informal sectors in brazil. **Available at SSRN 526023**, 2004.

LEVY, S. **Good intentions, bad outcomes: Social policy, informality, and economic growth in Mexico**. [*S.l.*]: Rowman & Littlefield, 2010.

LEWCHUK, W. Precarious jobs: where are they, and how do they affect well-being? **The Economic and Labour Relations Review**, SAGE Publications Sage UK: London, England, v. 28, n. 3, p. 402–419, 2017.

LI, K.; ZHAO, C. Determinants of self-employment in china: Evidence from cross-regional data. **China & World Economy**, Wiley Online Library, v. 19, n. 3, p. 49–67, 2011.

LI, K.; ZHAO, C. Determinants of Self-employment in China: Evidence from Cross-regional Data. **China & World Economy**, v. 19, n. 3, p. 49–67, 2011. ISSN 1749-124X. DOI 10.1111/j.1749-124X.2011.01242.x. Available at: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1749-124X.2011.01242.x.

MALONEY, W. F. Informality revisited. **World development**, Elsevier, v. 32, n. 7, p. 1159–1178, 2004.

MAS-MONTSERRAT, M.; COLIN, C.; BRYS, B. **The Design of Presumptive Tax Regimes in Selected Countries**. [*S.l.*], 2024. (OECD Taxation Working Papers, 69). DOI 10.1787/58b6103c-en. Available at: https://doi.org/10.1787/58b6103c-en.

MATA, D. D.; MATTOS, E.; VILAROUCA, R. The effects of job loss on entrepreneurship: Evidence from brazil. **Available at SSRN 5160588**, 2025.

MAURIZIO, R. d. L. Labour formalization and declining inequality in argentina and brazil in the 2000s: A dynamic approach. **International Labour Organization**, 2014. Available at: https://www.ilo.org/global/research/publications/working-papers/WCMS_226801/lang--en/index.htm.

MDIC. **Mapa de Empresas,Ministério do Desenvolvimento, Indústria, Comércio e Serviços**. 2024. Accessed: 2024-09-24. Available at: https://www.gov.br/empresas-e-negocios/pt-br/mapa-de-empresas/painel-mapa-de-empresas.

Ministério do Trabalho e Emprego (MTE). **Relação Anual de Informações Sociais (RAIS) 2024 – Sumário Executivo (Parcial)**. 2025. Acesso em: 12 de maio de 2025. Available at: https://www.gov.br/trabalho-e-emprego/pt-br/assuntos/estatisticas-trabalho/rais/rais-2024/rais-2024-parcial/sumario-executivo_rais-2024-parcial.pdf.

MORAIS, M. C. A.; EMMENDOERFER, M. L.; VITóRIA, J. R.; MENDES, W. de A. Determinantes socioeconômicos do microempreendedor individual (MEI). **Iberoamerican Journal of Entrepreneurship and Small Business**, v. 11, n. 3, p. e2070–e2070, 2022.

MORAIS, M. C. A.; EMMENDOERFER, M. L.; VITóRIA, J. R.; MENDES, W. de A. Determinantes socioeconômicos do microempreendedor individual (MEI). **Iberoamerican Journal of Entrepreneurship and Small Business**, v. 11, n. 3, p. e2070–e2070, 2022.

MORELLO, E. Between 2014 and 2022, a 42% increase in the number of economically active enterprises. **Insee Première**, n. 2045, April 2025. Accessed: May 22, 2025. Available at: https://www.insee.fr/en/statistiques/8557046.

NARITOMI, J.; SOARES, R. R.; ASSUNÇÃO, J. J. Institutional development and colonial heritage within brazil. **The journal of economic history**, Cambridge University Press, v. 72, n. 2, p. 393–422, 2012.

NASCIMENTO, L. S.; FONSECA, P. R. C. Fonseca e; COSTA, M. L.; NUNES, J. F. M.; FERREIRA, T. C. Microempreendedor individual e as vantagens da formalização. **Cadernos de Gestão e Empreendedorismo**, Revista Cadernos de Gestao e Empreendedorismo, v. 7, n. 2, p. 15–29, Dec. 2019. ISSN 2318-9231. DOI 10.32888/cge.v7i2.27646. Available at: http://dx.doi.org/10.32888/cge.v7i2.27646.

NUNES, C. E. A. V. Microempreendedor Individual (MEI) no Brasil: Aspectos sobre o Desenvolvimento Social e Econômico. *In*: **Análise crítica do direito Ibero-americano**. [*S.l.*]: Universidade Lusófona do Porto, 2020. p. 574–582.

OECD. **Informality and Globalisation: In Search of a New Social Contract**. Paris: OECD Publishing, 2023. DOI 10.1787/c945c24f-en. Available at: https://doi.org/10.1787/c945c24f-en.

OHNSORGE, F.; YU, S. The long shadow of informality. **World Bank Group**, 2021.

OLAFSSON, A.; PAGEL, M. The liquid hand-to-mouth: Evidence from personal finance management software. **The Review of Financial Studies**, Oxford University Press, v. 31, n. 11, p. 4398–4446, 2018. DOI 10.1093/rfs/hhy055. Available at: https://doi.org/10.1093/rfs/hhy055.

PETERS, M.; ZILIBOTTI, F. **Creative Destruction, Distance to Frontier, and Economic Development**. [*S.l.*], 2021.

PIETROBELLI, C.; RABELLOTTI, R.; AQUILINA, M. An empirical study of the determinants of self-employment in developing countries. **Journal of International Development**, v. 16, n. 6, p. 803–820, 2004. ISSN 1099-1328. DOI 10.1002/jid.1117. Available at: https://onlinelibrary.wiley.com/doi/abs/10.1002/jid.1117.

PONCZEK, V.; ULYSSEA, G. Organization of labor market intermediation: Evidence from a field experiment. **The Economic Journal**, Oxford University Press on behalf of the Royal Economic Society, v. 132, n. 641, p. 361–390, 2022. DOI 10.1093/ej/ueab052. Available at: https://doi.org/10.1093/ej/ueab052.

REBELO, A. M.; MOREIRA, G. R. C.; LOPES, G. B.; COURA, E. B. **Terceirização: o que os dados revelam sobre remuneração, jornada e acidentes de trabalho**. [*S.l.*], 2018.

Receita Federal do Brasil. **Estatísticas de Arrecadação - Simples Nacional**. 2024. Accessed: 2024-11-11. Available at: https://www8.receita.fazenda.gov.br/SimplesNacional/ConteudoApoio/Arrecadacao/EstatisticasArrecadacao.aspx.

SALTIEL, F.; URZÚA, S. Does an increasing minimum wage reduce formal sector employment? evidence from brazil. **Economic Development and Cultural Change**, The University of Chicago Press Chicago, IL, v. 70, n. 4, p. 1403–1437, 2022.

SCHUH, S. Consumer credit and the transmission of monetary policy. *In*: BANK FOR INTERNATIONAL SETTLEMENTS. **BIS Research Conference on "The Transmission of Monetary Policy: New Developments and Challenges"**. 2018. Available at: https://www.bis.org/events/eopix_1810/schuh_paper.pdf.

SILVA, V. H.; RAMíREZ, F. de M. T. Rif, the mexican strategy to combat informality. **INCEPTUM: Revista de Investigación en Ciencias de la Administración**, v. 14, n. 27, p. 28–45, July–December 2019. Available at: https://dialnet.unirioja.es/servlet/articulo?codigo=10110893.

STANSBURY, A.; SUMMERS, L. H. **The declining worker power hypothesis: An explanation for the recent evolution of the American economy**. [*S.l.*], 2020.

Statista Research Department. **Number of self-employed workers in the United Kingdom from 2000 to 2025**. 2025. Accessed: May 21, 2025. Available at: https://www.statista.com/statistics/318234/united-kingdom-self-employed/.

STEL, A. v.; CARREE, M.; THURIK, R. The effect of entrepreneurial activity on national economic growth. **Small business economics**, Springer, v. 24, p. 311–321, 2005.

SUN, L.; ABRAHAM, S. Estimating dynamic treatment effects in event studies with heterogeneous treatment effects. **Journal of Econometrics**, Elsevier, v. 225, n. 2, p. 175–199, 2021.

TILLY, C. Lessons from informal domestic and construction workers in six countries. **International Labour Organization**, 2021. Available at: https://irle.ucla.edu/wp-content/uploads/2021/03/Organizing-Informal-Workers-to-Win_-Lessons-from-Informal-Domestic-and-Construction-Workers-in-Six-Countries.pdf.

TONDOLO, L. P. **Resultados da política do microempreendedor Individual (MEI) para os empreendedores de baixa renda**. 105 p. Thesis (Dissertação (Mestrado em Administração)) — Universidade Federal de Goiás, Goiânia, 2018. Available at: http://repositorio.bc.ufg.br/tede/handle/tede/8542.

ULYSSEA, G. Informality: Causes and consequences for development. **Annual Review of Economics**, Annual Reviews, v. 12, n. 1, p. 525–546, 2020.

United Nations. **Guidelines on the Use of Statistical Business Registers for Business Demography and Entrepreneurship Statistics**. UN, 2019. ISBN 978-92-1-047591-4. DOI 10.18356/c10a8ce3-en. Available at: https://www.un-ilibrary.org/content/books/9789210475914.

VANDENBUSSCHE, J.; AGHION, P.; MEGHIR, C. Growth, distance to frontier and composition of human capital. **Journal of economic growth**, Springer, v. 11, p. 97–127, 2006.

WEIL, D. Understanding the present and future of work in the fissured workplace context. **RSF: The Russell Sage Foundation Journal of the Social Sciences**, RSF: The Russell Sage Foundation Journal of the Social Sciences, v. 5, n. 5, p. 147–165, 2019.

WENNEKERS, S.; UHLANER, L.; THURIK, R. Entrepreneurship and its conditions: a macro perspective. **International Journal of Entrepreneurship Education (IJEE)**, v. 1, n. 1, p. 25–64, 2002.

WORLDBANK. **World development report 2019: The changing nature of work**. [*S.l.*]: The World Bank, 2018.

Appendices

Appendix A – Economic Activity Code

The description of economic activities by the CNAE code is presented in Table A.1.

Table A.1 – Classification of Economic Activities (Portuguese and English)

Código	Atividade (Português)	Activity (English)
4781400	Comércio de Vestuário e Acessórios	Clothing and Accessories Retail
9602501	Cabeleireiro, Manicure e Pedicure	Hairdressing, Manicure, and Pedicure
4399103	Obras de Alvenaria	Masonry Work
7319002	Promoção de Vendas	Sales Promotion
5620104	Fornecimento de Alimentos - Domicílio	Food Provision - Home Service
5611203	Fornecimento de Alimentos - Lanchonete	Food Provision - Snack Bar
8219999	Serviços Especializados de Apoio Administrativo	Specialized Administrative Support Services
4712100	Minimercados, Mercearias e Armazéns	Mini-markets, Groceries, and Warehouses
4930201	Transporte Rodoviário de Carga - Municipal	Road Freight Transport - Municipal
9602502	Atividades de Estética e Beleza	Aesthetic and Beauty Activities
5611201	Fornecimento de Alimentos - Restaurante	Food Provision - Restaurant
4723700	Comércio Varejista de Bebidas	Retail Beverage Sales
4321500	Instalação e Manutenção Elétrica	Electrical Installation and Maintenance
9700500	Empregado Doméstico	Domestic Employee
8599699	Atividades de Ensino	Educational Activities
5612100	Fornecimento de Alimentos - Ambulante	Food Provision - Street Vendor
5320202	Entrega Rápida	Express Delivery
5229099	Motoristas Autônomos, entre outros	Independent Drivers, among others
5772500	Comércio de Cosméticos e Higiene Pessoal	Cosmetics and Personal Hygiene Retail
4330404	Pintura de Edifícios	Building Painting

Source: Author´s elaboration with IBGE information available at cnae.ibge.gov.br.

Appendix B – Regression Results

The regression results for the openings for sole entrepreneurs are presented in Table B.1.

Table B.1 – Regression Results

	Dependent variable:		
	MEI:1yr	MEI:2yrs	PJ:2yrs
YEAR2014	0.001	0.001	0.002***
	(0.001)	(0.001)	(0.001)
YEAR2015	0.002***	0.004***	0.006***
	(0.001)	(0.001)	(0.001)
YEAR2016	0.012***	0.020***	0.021***
	(0.001)	(0.001)	(0.001)
YEAR2017	0.023***	0.051***	0.052***
	(0.002)	(0.002)	(0.003)
YEAR2018	0.038***	0.060***	0.061***
	(0.0003)	(0.0004)	(0.0005)
YEAR2019	0.038***	0.080***	0.082***
	(0.001)	(0.001)	(0.001)
Constant	0.005***	0.007***	0.009***
	(0.0003)	(0.0004)	(0.0004)
Number of Observations	9,134,205	9,134,205	9,134,205

Note: Results for the OLS estimates from Equation 2.1, where β_{2013} serves as the reference category. The dependent variable is a binary indicator equal to 1 if the worker registers a firm under one of the following scenarios: (i) as an individual entrepreneur within one year of separation (MEI:1yr); (ii) as an individual entrepreneur within two years (MEI:2yrs); or (iii) any type of firm within two years of separation (PJ:2yrs).
$^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

Appendix C – Regression Results with Controls

The sole entrepreneur opening regression with controls results is presented in Figure C.1.

Table C.1 – Regression Results - Controls

	Dependent variable:		
	MEI:1yr	MEI:2yrs	PJ:2yrs
2014	0.002***	0.003***	0.005***
	(0.001)	(0.001)	(0.001)
2015	0.005***	0.009***	0.010***
	(0.001)	(0.001)	(0.001)
2016	0.016***	0.026***	0.027***
	(0.001)	(0.001)	(0.001)
2017	0.027***	0.056***	0.057***
	(0.002)	(0.002)	(0.003)
2018	0.039***	0.061***	0.063***
	(0.0004)	(0.0004)	(0.0005)
2019	0.036***	0.077***	0.079***
	(0.001)	(0.001)	(0.001)
Education	-0.006***	-0.005***	-0.007***
	(0.0002)	(0.0002)	(0.0002)
Squared Education	0.001***	0.001***	0.002***
	(0.00002)	(0.00002)	(0.00002)
Age	0.003***	0.004***	0.004***
	(0.00003)	(0.00004)	(0.00004)
Squared age	-0.00004***	-0.0001***	-0.0001***
	(0.00000)	(0.00000)	(0.00000)
Black	-0.007***	-0.010***	-0.011***
	(0.0001)	(0.0002)	(0.0002)
Northeast	0.002***	0.003***	0.003***
	(0.0003)	(0.0004)	(0.0004)
Southeast	0.013***	0.020***	0.019***
	(0.0003)	(0.0004)	(0.0004)
South	0.015***	0.022***	0.022***
	(0.0003)	(0.0004)	(0.0004)
Midwest	0.009***	0.013***	0.014***
	(0.0003)	(0.0004)	(0.0004)
Constant	-0.063***	-0.086***	-0.090***
	(0.001)	(0.001)	(0.001)
Number of Observations	9,130,615	9,130,615	9,130,615

Note: $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

Appendix D – Industry–Occupation Group Classification Mapping

The mapping between the occupation code (CBO) and the firm economic activity code (CNAE) is presented in Table D.1 and Table D.2.

Table D.1 – Industry–Occupation Classification Mapping

Activity Group	CNAE	Industry Description	CBO	Occupation Description
Sales Promotion	4781400	Comércio de Vestuário e Acessórios	5241	Vendedores em domicílio
	5772500	Comércio de Cosméticos e Higiene Pessoal	5242	Vendedores em bancas, quiosques e barracas
	7319002	Promoção de Vendas	5243	Vendedores ambulantes
			5201	Supervisores de vendas
			5211	Operadores de comércio em lojas e mercados
			4223	Operadores de telemarketing
			3541	Técnicos de vendas especializadas
			2532	Comercialização serviços bancários
			1423	Gerentes de comercialização, marketing e comunicação
Construction	4399103	Obras de alvenaria	7152	Trabalhadores de estruturas de alvenaria
	4321500	Instalações elétricas	7156	Trabalhadores de instalações elétricas
	4330404	Serviços de pintura de edifícios em geral	7166	Pintores de obras e revestidores de interiores
			1413	Gerente de obras em empresas de construção
Food Service	5620104	Fornecimento de Alimentos - Domicílio	5132	Cozinheiros
	5611203	Fornecimento de Alimentos - Lanchonete	5134	Garçons, barmen, copeiros e sommeliers
	5611201	Fornecimento de Alimentos - Restaurante	5135	Trabalhadores auxiliares nos serviços de alimentação
	5612100	Fornecimento de Alimentos - Ambulante	5136	Churrasqueiros, pizzaiolos e sushimen
			2711	Chefes de cozinha e afins
			1415	Gerentes de operações em turismo, alojamento, alimentação

Source: Author's elaboration with IBGE and Ministry of Labor information.

Table D.2 – Industry–Occupation Classification Mapping

Activity Group	CNAE	Industry Description	CBO	Occupation Description
Beauty Service	9602501	Cabeleireiro, Manicure e Pedicure	5161	Trabalhadores nos serviços de embelezamento e higiene
	9602502	Atividades de Estética e Beleza	3221	Técnicos em terapia complementar e estética
Minimarkets	4712100	Minimercados, Mercearias e Armazéns	-	-
	4723700	Comércio Varejista de Bebidas	-	-
Clerk	8219998	Serviços Especializados de Apoio Admin.	4110	Agentes, assistentes e auxiliares administrativos
			4151	Auxiliares de serviços de docum., inform., e pesquisa
			1421	Gerentes admnistrativos, financeiros, de risco e afins
			1422	Gerentes de recursos humanos e relações do trabalho
			1424	Gerentes de suprimentos e afins
			1425	Gerentes de tecnologia da informação
			1427	Gerentes de manutenção
			2410	Advogados
			2521	Administradores
			2522	Contadores e afins
			2524	Profissionais recursos humanos
			2525	Profissionais adm. economico financeira
			3171	Técnicos de informática
			3542	Compradores
			4101	Supervisores administrativos
			4102	Supervisores financeiros e controle
Transport	4930201	Transporte Rodoviário de Carga: Municipal	7825	Motoristas de veículos de cargas em geral
	5320202	Entrega Rápida	5191	Motociclistas e ciclistas de entregas rápidas
	5229099	Motoristas Autônomos, entre outros	7823	Motoristas de veículos de pequeno e médio porte
			7824	Motorista de ônibus urbanos, metropolitanos e rodoviários
			1416	Gerentes de operações de transporte, comun. e logística

Source: Author's elaboration with IBGE and Ministry of Labor information.

Appendix E – Regression Results: iterative regression models

The regression results for occupational groups relative to the reference categories: year = 2013 and occupation group = "Other" as a proxy for the general labor market according to Equation 2.2 are presented in Table E.1.

Table E.1 – Regression Results with Sector Interactions

Dependent variable: Formalization within 2 Years		
Variable	**Coefficient**	**Std. Error**
Year 2014	0.001	(0.001)
Year 2015	0.004***	(0.001)
Year 2016	0.020***	(0.002)
Year 2017	0.052***	(0.004)
Year 2018	0.056***	(0.001)
Year 2019	0.078***	(0.001)
Beauty Service	-0.008***	(0.001)
Clerk	0.003**	(0.002)
Construction	-0.003*	(0.002)
Food Service	-0.003	(0.002)
Sales Promotion	0.001	(0.002)
Transport	0.004	(0.003)
2014 x Beauty	0.082*	(0.046)
2015 x Beauty	0.139*	(0.076)
2016 x Beauty	0.147*	(0.076)
2017 x Beauty	0.510***	(0.124)
2018 x Beauty	0.264***	(0.004)
2019 x Beauty	0.207***	(0.029)
2014 x Clerk	0.006**	(0.003)
2015 x Clerk	0.010***	(0.003)
2016 x Clerk	0.021***	(0.006)
2017 x Clerk	0.026**	(0.011)
2018 x Clerk	0.016***	(0.002)
2019 x Clerk	0.032***	(0.003)
2014 x Construction	-0.0003	(0.002)
2015 x Construction	-0.002	(0.002)
2016 x Construction	-0.011***	(0.003)
2017 x Construction	-0.018**	(0.008)
2018 x Construction	-0.005***	(0.002)
2019 x Construction	-0.013***	(0.003)
2014 x Food	-0.002	(0.003)
2015 x Food	0.004	(0.004)
2016 x Food	-0.011**	(0.005)
2017 x Food	-0.005	(0.009)
2018 x Food	-0.005**	(0.002)
2019 x Food	-0.009**	(0.003)
2014 x Sales	0.003	(0.003)
2015 x Sales	0.010***	(0.004)
2016 x Sales	0.018***	(0.006)
2017 x Sales	0.010	(0.009)
2018 x Sales	0.018***	(0.002)
2019 x Sales	0.014***	(0.003)
2014 x Transport	-0.002	(0.004)
2015 x Transport	-0.001	(0.004)
2016 x Transport	0.003	(0.006)
2017 x Transport	-0.019**	(0.008)
2018 x Transport	0.006**	(0.003)
2019 x Transport	0.003	(0.005)
Constant	0.008***	(0.001)
Number of Observations	9134205	
Log Likelihood	-457,615.600	
Akaike Inf. Crit.	915,329.200	

Note: *p<0.1; **p<0.05; ***p<0.01

The regression results for the regions relative to the reference categories: year = 2013 and North region, according to Equation 2.2 are presented in Table E.2.

Table E.2 – Regression Results with Region Interactions

Dependent variable: Formalization within 2 Years		
Variable	**Coefficient**	Std. Error
Year 2014	0.009***	(0.003)
Year 2015	0.010***	(0.004)
Year 2016	0.020***	(0.005)
Year 2017	0.029***	(0.007)
Year 2018	0.044***	(0.002)
Year 2019	0.059***	(0.003)
NE	0.002	(0.002)
SE	0.001	(0.002)
S	-0.0001	(0.002)
MW	0.006**	(0.003)
Year 2014 x NE	-0.006*	(0.003)
Year 2015 x NE	-0.003	(0.004)
Year 2016 x NE	0.003	(0.006)
Year 2017 x NE	0.023**	(0.009)
Year 2018 x NE	0.001	(0.002)
Year 2019 x NE	0.003	(0.004)
Year 2014 x SE	-0.007**	(0.003)
Year 2015 x SE	-0.006*	(0.004)
Year 2016 x SE	-0.003	(0.006)
Year 2017 x SE	0.028***	(0.008)
Year 2018 x SE	0.022***	(0.002)
Year 2019 x SE	0.025***	(0.004)
Year 2014 x S	-0.008**	(0.003)
Year 2015 x S	-0.002	(0.004)
Year 2016 x S	0.007	(0.006)
Year 2017 x S	0.021**	(0.010)
Year 2018 x S	0.026***	(0.002)
Year 2019 x S	0.036***	(0.004)
Year 2014 x CW	-0.010**	(0.005)
Year 2015 x CW	-0.003	(0.006)
Year 2016 x CW	0.006	(0.008)
Year 2017 x CW	0.016	(0.011)
Year 2018 x CW	0.009***	(0.003)
Year 2019 x CW	0.017***	(0.005)
Constant	0.008***	(0.002)
Observations	9,133,664	
Log Likelihood	-464,955.600	
Akaike Inf. Crit.	929,981.100	

Note: *p<0.1; **p<0.05; ***p<0.01

Appendix F – Dependent variables descrition

Table F.1 – Financial variables description

Financial Variables	**Definition**[a]
Credit portfolio balance or outstanding portfolio	Includes both overdue and not yet due installments in BRL, excluding operations accrued as losses. The outstanding portfolio encompasses not only credit concessions performed on the reference date, but also the outstanding credit stock on that date, regardless of the date the loan was granted.
Credit card	Payment instrument that enables the acquisition of products and services with future settlement, according to predetermined requirements, such as credit limit and validity. Also called postpaid card, the payment of the value corresponding to the products and services acquired will be made to the credit card issuer on a previously agreed date.
Credit card revolving credit	Debit balance remaining after the due date of the invoice. The amount of revolving credit is the difference between the total amount of the invoice and the amount paid by the borrower, including interest calculated up to the end of the month.
Delinquency	Any credit operation – including overdue and not yet due installments – is deemed to be delinquent if there are installments overdue for more than 90 days. This process, called “hauling” (arrasto), assumes that the debtor in such a situation will not pay the not-yet-due installments while there are installments overdue for more than 90 days
Credit Limit	Credit commitments classified as "limits" include contracted but unused credit lines, such as overdraft facilities, credit card limits, and working capital lines. This category does not include managerial limits—that is, pre-approved credit offers that are not backed by formal contracts.
Monthly income	Estimated monthly income of clients as reported by Central Bank supervised entities (SEs). Since the information may differ when coming from different SEs , the following procedure was adopted: i) if there is more than one monthly income range of individuals for each borrower, the mode is used to define the single monthly income range of the client and, as a tie-breaker criterion, the range that presents in the aggregate the largest value of active portfolio; ii) among the SEs that report the single monthly income range of the client, the largest income value is considered, respecting the lower and upper limits of the range in question; and iii) an estimate of the social security contribution and income tax is discounted from the value obtained.

[a] Source (BCB, 2021)

Appendix G – Entrepreneurship determinants among formal workers.

Figure G.1 – Worker Profile and Entrepreneurship

	Dependent variable:		
	MARC_PJ Model 1 (1)	Cluster (2)	MARC_PJ Model 2 (3)
ESCOLARIDADE	0.007***	0.007***	0.002***
	(0.0005)	(0.0005)	(0.0005)
ESCOLARIDADE2	0.0004***	0.0004***	0.001***
	(0.00005)	(0.0001)	(0.00005)
PRETO_PARDO	-0.044***	-0.044***	-0.023***
	(0.0003)	(0.0003)	(0.0003)
IDADE_2017	0.013***	0.013***	0.014***
	(0.0001)	(0.0001)	(0.0001)
IDADE2	-0.0002***	-0.0002***	-0.0002***
	(0.00000)	(0.00000)	(0.00000)
REMUNERACAO_MEDIA	-0.00000***	-0.00000***	-0.00000***
	(0.00000)	(0.00000)	(0.00000)
CARTEIRA_ATIVA_2017	0.00000***	0.00000***	0.00000***
	(0.000)	(0.00000)	(0.000)
DEFAULT_2017	0.00000***	0.00000	0.00000***
	(0.00000)	(0.00000)	(0.00000)
CRED_CARD_2017	0.00000***	0.00000***	0.00000***
	(0.00000)	(0.00000)	(0.00000)
NORDESTE			-0.001
			(0.0005)
SUDESTE			0.057***
			(0.0004)
SUL			0.118***
			(0.001)
CO			0.051***
			(0.001)
Constant	-0.145***	-0.145***	-0.204***
	(0.002)	(0.002)	(0.002)
Observations	5,458,037		5,458,037
Log Likelihood	-1,548,646.000		-1,510,198.000
Akaike Inf. Crit.	3,097,312.000		3,020,424.000
Note:			*p<0.1; **p<0.05; ***p<0.01


UnB