Adversities In The Economic Field Of Micro And Small Enterprises: A Study Of Mortality In The Context Of Market Forces' Action

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Abstract:
This article investigates the adversities faced by Micro and Small Enterprises (MSEs) in the economic field, focusing on the mortality of these businesses during the COVID-19 pandemic. Market Forces understood as the actions of economic agents seeking homeostasis, play a crucial role in this context. Using the perspective of New Institutional Economics (NIE) and Bourdieu's theories of New Economic Sociology (NES), the study analyzes official data from the Federal Government for two years pre-pandemic and two years post-pandemic, encompassing all formal businesses in Brazil. The analysis reveals that mortality in MSEs was more pronounced in adverse times compared to larger enterprises. Furthermore, a significant increase in the emergence of new businesses, especially larger ones, is observed, indicating market dynamics seeking equilibrium. Regarding the generation of formal employment, a notable post-pandemic growth is recorded, suggesting that resilient enterprises strengthened their positions in the market. The data generated by the study are available for interested researchers, facilitating the production of scientific knowledge. The use of Big Data techniques provided a comprehensive approach and yielded valuable insights for future academic investigations.
Keywords: *Market forces, Economic field, Business mortality, Micro and small enterprises, COVID-19.*

I.   Introduction

The current scenario in the economy, characterized by constant transformation and paradigm shifts, demands a reconfiguration of business concepts and practices, highlighting fragmentation and personalization as distinctive elements of contemporary enterprises (MENDES; BUENO, 2019). This new mindset has fostered and stimulated entrepreneurship, in portuguese micro *e pequenas empresas* (MPEs), in the context of micro and small enterprises (MSEs).

MPEs have long been recognized as drivers of economic growth and development (SANTOS; DE LIMA, 2018). Their impact on the Brazilian economy is particularly relevant, playing a crucial role in constructing a society free from poverty. In addition to providing ample employment opportunities for various social strata, these enterprises also contribute to the flow of resources at different levels of society (JACOMETE, 2018).

However, the global COVID-19 pandemic has had direct and indirect repercussions, significantly influencing the landscape of MPEs. The high unemployment rate resulting from the pandemic has driven the opening of a considerable number of micro and small enterprises (DORION, 2021). This massive emergence of new ventures in various sectors has brought dynamism to the market, reflecting in tax revenue, the composition of the Brazilian Gross Domestic Product (GDP), Produto Interno Bruto (PIB), and economic activity (NASSIF, et al., 2020).

Nevertheless, the pandemic has also posed considerable challenges, manifesting primarily in the high mortality rate of MPEs, regardless of their longevity (BACKES, et al., 2020). Research conducted by Sebrae/Fundação Getúlio Vargas at the end of 2021 indicates that MPEs continued to face persistent effects of the pandemic, struggling to maintain their operations (SEBRAE, 2021).

From the perspective of the New Institutional Economics (NEI) and New Economic Sociology (NES), market forces operate on agents and institutions in constant pursuit of balance. In times of crisis, as evidenced by the COVID-19 pandemic, market agents, especially MPEs, are compelled to break paradigms and reinvent themselves to remain active, although many succumb in this process.

Within the context of market forces, the principle of optimization is observed, where demanders and suppliers seek to maximize their transaction goals, with price being a reflection of the interaction of these forces

(Velasco, 2012). Management, in turn, faces the challenge of minimizing internal transaction costs while maintaining the necessary dynamics to respond to market forces (Rainbird, 2004).

Institutions, as societal rules of the game, shape human interactions and structure incentives in political, social, and economic spheres (NORTH, 1990). The New Institutional Economics (NEI) emphasizes utility maximization and strategic calculations from game theory, recognizing that individuals pursue their interests cunningly (WILLIAMSON, 1996).

In the sociological realm, the study of social interactions in the economy by Economic Sociology opens new research avenues (DEQUECH, 2011), providing a more comprehensive understanding of market phenomena and their forces (FORJAS, 2000). Economic Sociology explores the relationships between material production and consumption and the underlying social processes, complementing the NEI approach (WILKINSON, 2002).

The COVID-19 pandemic intensified the need for many individuals to seek entrepreneurship as an alternative livelihood, increasing the opening of new businesses (DORION, 2021). Given this context, this study aims to comparatively analyze the mortality, birth, and job generation of MPEs in relation to larger enterprises in a unique moment of multi-sectoral economic adversity, aiming to understand the dynamics of MPEs under the influence of market forces.

II. Method

The research method was delineated based on the central problem question: "Does the size of companies in a time of economic adversity influence their survival capacity?" The answer to this inquiry seeks to highlight the thesis that, during periods of economic difficulty, Micro and Small Enterprises (MPEs) are more vulnerable to extinction due to market forces compared to larger enterprises.

The adopted methodological approach is characterized as post-positivist, quantitative, and oriented towards deductive reasoning with a reductionist perspective (CRESWELL, 2013). The research follows an ex-post-facto design, analyzing events to examine patterns of mortality, birth, and job generation in MSEs over time, utilizing secondary data in time series.

Data collection was carried out through queries to the official archives of the Federal Government, specifically in the records of the Ministry of Economy (CNPJ) and the Ministry of Labor, General Registry of Employed and Unemployed, *Cadastro Geral de Empregados e Desempregados* (CAGED). Given the magnitude of the data, the use of high-capacity computers, cloud storage, and the application of analytical intelligence tools and Big Data techniques were indispensable. Scripts were developed to extract, transform, and load the data according to the research requirements.

Data processing was conducted using Microsoft Power BI Desktop software, enabling the generation of graphs and a preliminary analysis to identify outliers and make operational adjustments. Microsoft Power BI also played a key role in consolidating the databases and facilitating the export of data for subsequent statistical analyses. This tool, integrated with a collection of services, software, and applications, transforms diverse data sources into cohesive information, with the software responsible for the Extract, Transform, Load (ETL) phase.

To analyze mortality as a substantive hypothesis and birth, as well as job generation, as subsidiary hypotheses, the databases were consulted as specified in Table 1.

Table 1 - Main indicators and data source of the research

Indicator	Database	Source
Mortality rate	Public data CNPJ	Ministry of Economy (Federal Revenue Service)
Birth Rate	Public data CNPJ	Ministério da Economia (Receita Federal)
Formal job creation	CAGED	Ministry of Labor

Source: Author (2022).

The technique employed for data collection and processing can be observed in Figure 2.

Figure 2 – Technique for data collection and architecture compilation
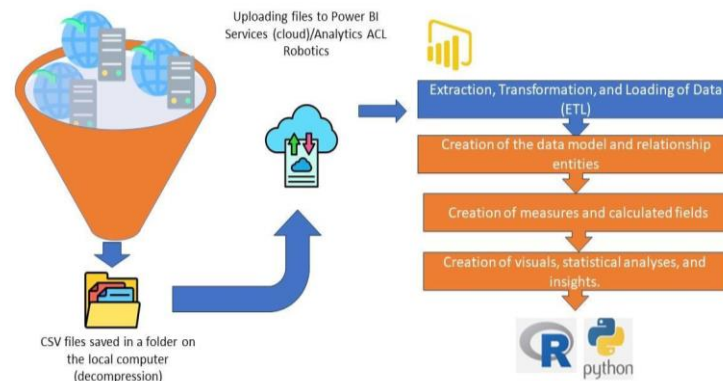
Source: Author (2022).

Research Procedures

The study aimed to assess the impact of market forces on the economic sphere through the analysis of time series related to mortality, births, and job generation within Micro and Small Enterprises (MPEs). The considered period spanned the years 2018 and 2019, preceding the occurrence of the COVID-19 Pandemic, and the years 2020 and 2021, subsequent to the event.

Procedures Adopted for Each Database
Public CNPJ Database

The Federal Revenue holds records of all formal companies with a National Registry of Legal Entities (CNPJ), updated quarterly. Access to this data is supported by the Access to Information Act (Law No. 12,527, of November 18, 2011), which allows society to obtain non-confidential information of collective or general interest, produced or held by the public authorities (BRAZIL, 2011).

After downloading the CNPJ database, lines of code were implemented to extract only the companies that met the research requirements, as described in section 1.1.3. From this database, data on the size of the companies, business segments, average lifespan, qualification of the person in charge of the company, and geographic location were obtained.

The registration status of the CNPJ represents the company's record with the Federal Revenue, allowing for the evaluation of the business's status at the time of the research. Various registration statuses were identified, with particular emphasis on:

Active: The company is duly registered and free from outstanding issues.

Suspended: Indicates issues such as non-compliance with obligations in foreign branches, data inconsistencies, or signs of fraud, necessitating further investigation.

Inactive: Companies that fail to submit financial statements and accounting declarations for ninety consecutive days may face sanctions, including inclusion in the Federal Public Credit Non-Settlement Information Registry (Cadin).

Deregistered: Companies that have requested the deregistration of their CNPJ and can be reactivated upon confirmation of their operations.

Void: Companies with dubious registration status, which may result from municipal or state registration duplication, waiver of the number, or illicit practices in the registry.

Figure 3 illustrates the interrelationships between the tables for the generation of the CNPJ database.

Figure 3 - Entity-Relationship Diagram (ERD)
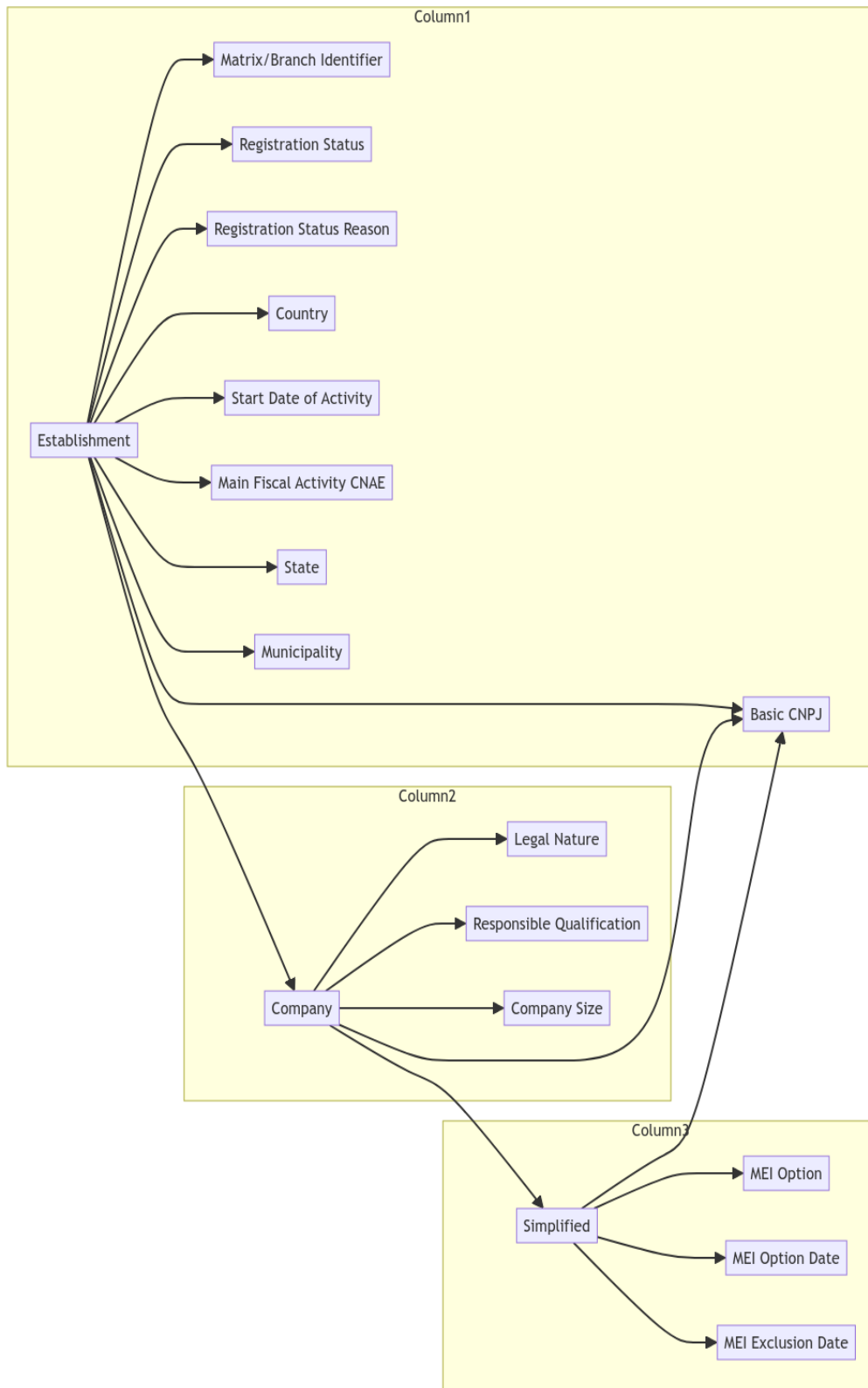
Source: Author (2022).

To enhance the analysis and to ensure the acquisition of reliable data in the CNPJ database, encompassing all legal entity records in Brazil, it was necessary to exclude specific elements. Firstly, companies classified as Individual Microentrepreneurs (MEI) were removed, purged by the Federal Revenue in February 2018 due to the non-regularization of their registration status, as per the Executive Declaratory Act COCAD 01

of October 1, 2017 (BRAZIL, 2018). These companies were considered closed before the analysis period. Additionally, CNPJs with the National Classification of Economic Activities (CNAE) under code 9492-8/00 were excluded, whose main activity description encompasses political organizations, auxiliary organizations, and associations linked to political parties. Such entities aim to influence decisions of public authorities and position members in political offices, thus not aligning with the concept of Micro and Small Enterprises (MPEs), the focus of this research.

Figure 4 elucidates the ETL technique employed to extract data from the CNPJ database.

Figure 4 – ETL Technique for extracting data from the Brazilian Federal Revenue Service CNPJ Database
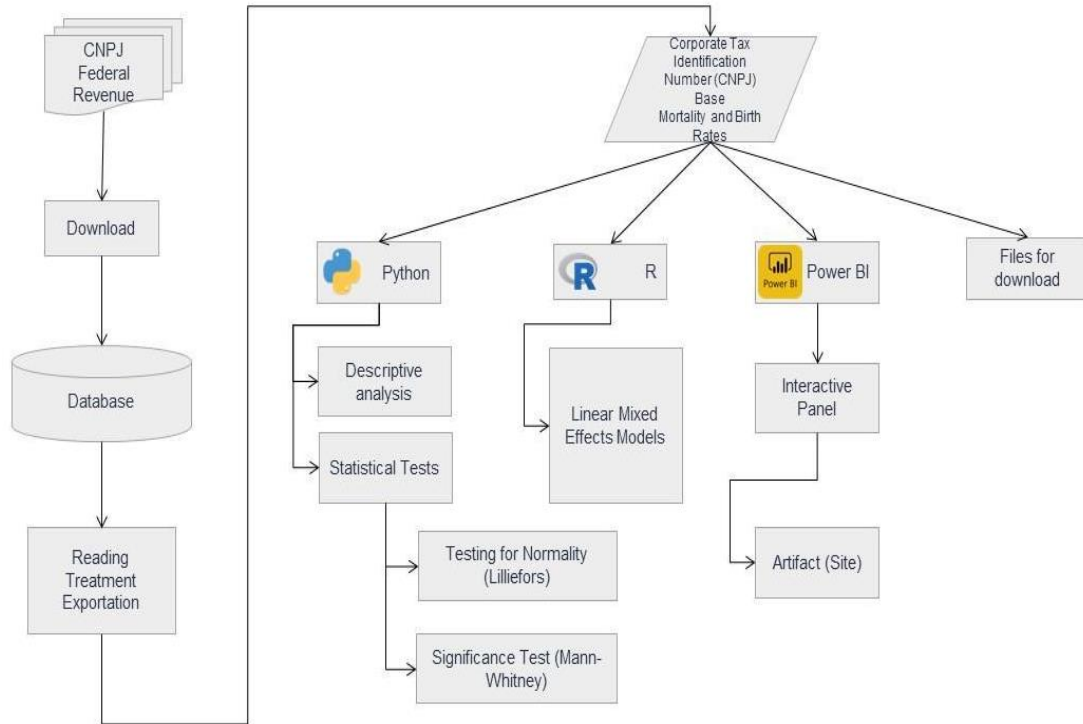
Source: Author (2022).

CAGED Database (General Registry of Employed and Unemployed)

To assess the generation of formal employment in Micro and Small Enterprises (MPEs), the CAGED database from the Ministry of Labor, Government of Brazil, established by Law No. 4923 of 1965, was consulted. CAGED is an administrative record of the Ministry of Labor and Social Security that quantifies the number of hirings and terminations of employees under the CLT (Consolidation of Labor Laws) regime.

Table 2 - Microdata provided by CAGED

Layout of Unidentified Microdata from the New CAGED – Establishment Database.		
Variable	**Description**	**Code**
Competence	Competence of establishment movements	<AAAAMM>
Region	Geographical region according to the IBGE code	<99>
Uf	Federal unit according to the IBGE code	<99>
Municipality	Municipality code	<999999>
Section	Code of the section in the National Classification of Economic Activities (CNAE 2.0)	<N>
Subclass	Code of the subclass in the National Classification of Economic Activities (CNAE 2.0)	<9999999>

Hired	Quantity of hirings/admissions	<99999>
Dismissed	Quantity of dismissals	<99999>
Source_dismissal	Source of dismissal data	<9>
Movement_balance	Difference between total hirings and dismissals	<99999>
Employer_type	Type of employer	<9>
Establishment_type	Type of establishment	<9>
Tamestabjan	Size range of the establishment at the beginning of the year	<99>

Source: Author (2022).

As can be observed above, the CAGED data does not segregate admissions and dismissals by company size. However, it does segregate by the number of employees per establishment, and by employing the SEBRAE methodology for classifying company size based on the number of employees, it becomes possible to categorize the size of the companies. Table 4 illustrates how SEBRAE performs this classification:

Table 3 - Definition of establishment size according to the number of employees source:

Size	Commerce and Services	Industry
Microenterprise (ME)	Up to 9 employees	Up to 19 employees
Small and Medium Enterprise	10 to 49 employees	20 to 99 employees
Medium-sized Enterprise	50 to 99 employees	100 to 499 employees
Large Enterprises	100 or more employees	500 or more employees

Source: SEBRAE-NA/Dieese. Yearbook of Labor in Micro and Small Enterprises 2013, p. 17.

How the number of employees in Micro and Small Enterprises (MSEs) depends on the segment, it becomes necessary to use an additional classification criterion according to Table 5, and from this criterion classify whether it is industry or trade/services.

Table 4 - Company operational section

Code	Description
A	Agriculture, Livestock, Forestry Production, Fishing, and Aquaculture
B	Extractive Industries
C	Manufacturing Industries
D	Electricity and Gas
E	Water, Sewage, Waste Management, and Decontamination Activities
F	Construction
G	Trade, Repair of Motor Vehicles and Motorcycles
H	Transportation, Storage, and Mail Services
I	Accommodation and Food Service Activities
J	Information and Communication
K	Financial and Insurance Activities and Related Services
L	Real Estate Activities
M	Professional, Scientific, and Technical Activities

N	Complementary Administrative Activities
O	Public Administration, Defense, and Social Security
P	Education
Q	Human Health and Social Services
R	Arts, Culture, Sports, and Recreation
S	Other Activities and Services
T	Domestic Services
U	International Organizations and Other Extraterritorial Institutions
Z	Not Identified

Source: Author (2022).

As occupational area data is presented across 22 divisions, the databases will be regrouped, thereby obtaining macro categories: Industry, Commerce, Services, Agriculture, and NI (Not Informed). Figure 5 illustrates the data extraction technique for job generation from the CAGED.

Figure 5 – ETL Technique for extracting data from the CAGED database.
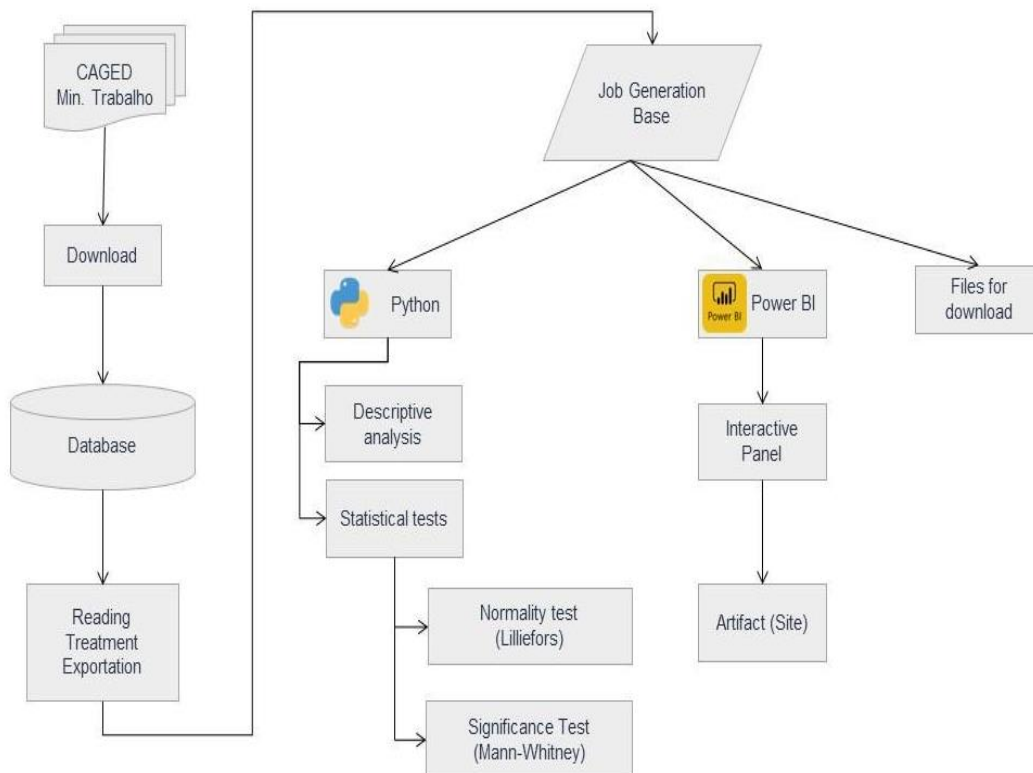
Source: Author (2022).

Hypotheses to be tested
Considering the adverse economic conditions and the economic fragility of Micro and Small Enterprises (MPEs) in the context of market forces compared to larger and more structured companies, the following alternative hypotheses are formulated:

Hypothesis H_{a1}: The mortality rate of MSEs increases during periods of economic adversity at a significance level of 0.05.

Hypothesis H_{b1}: The mortality rate of larger companies increases during periods of economic adversity at a significance level of 0.05.

Given that during economic adversities, micro-entrepreneurs seek to reinvent their businesses to adapt and overcome difficulties, the following hypothesis can be formulated:

Hypothesis H_{c1}: The birth rate of MSEs increases during periods of economic adversity at a significance level of 0.05.

Hypothesis H_{d1} : The birth rate of larger companies increases during periods of economic adversity at a significance level of 0.05.

Considering that MPEs are significant job creators, the following hypotheses can be formulated:

Hypothesis H_{e1}: The quantity of jobs generated in MSEs increases during periods of economic adversity at a significance level of 0.05.

Hypothesis H_{f1}: The quantity of jobs generated in larger companies increases during periods of economic adversity at a significance level of 0.05.

The subsidiary hypotheses related to birth and job generation expand the analyzed framework, enriching and supporting the scenario for a comprehensive understanding of the role of market forces in the economic field of MPEs.

Operational Definitions

This study aims to establish fundamental definitions for a precise understanding. Among these definitions, the following are highlighted:

Economic adversity: Refers to the unfavorable, contrary, or adverse nature of a situation, especially during economic crises. During such crises, a decline in economic activity, a decrease in consumer demand, a reduction in corporate profit rates, layoffs, and an increase in unemployment are observed. This cycle tends to reproduce and intensify during crisis moments.

Economic field: It is a structured social subsystem where agents occupy various positions in the pursuit of appropriating specific capital within the field. The unequal distribution of capital generates relationships of dominance and subordination. According to Weberian analysis, all rational exchange results from a struggle of interests. Bourdieu conceptualizes the economic field as a space of struggles, where agents with diverse resources confront each other.

Classification of companies by size: In this study, the sizes of companies are classified according to annual revenue criteria established by the Federal Revenue Service and widely used by official agencies. Companies are grouped into Micro and Small Enterprises (MSEs) and Larger Companies, according to the specified parameters.

Table 5 - Definition of establishment size based on Annual Gross Revenue

THESIS SIZE	FEDERAL REVENUE SIZE	REVENUE	REFERENCE LAW
MPE's	Individual Microentrepreneur (MEI)	To a maximum of R$ 81,000.	Law No. 128/2008
	Small and Medium-sized Enterprise (ME)	To a maximum of R$ 360.000	Law No. 123/2006
Small and medium-sized enterprises	Small and Medium-sized Enterprise (EPP)	From R$ 360,000 to 4,800,000 Brazilian Reais.	Law No. 123/2006
	Medium and large enterprises	Above R$ 4,800,000.	Law No. 123/2006

Source: BRAZIL, 2006/2008

Small Businesses: 1. Individual Microentrepreneur (MEI) is the legal classification for individuals working independently with annual revenue less than R$ 81,000; 2. Microenterprise (ME) is considered for companies with annual income equal to or less than R$ 360,000. 3. MEI+ME collectively refers to Micro and Small Enterprises (MSEs).

Other Business Sizes: 1. Small Business (EPP): a company with annual revenue greater than R$ 360,000 and less than or equal to R$ 4.8 million. 2. Medium-sized Enterprise: a company with annual revenue greater than R$ 4.8 million and less than or equal to R$ 300 million. 3. Large Enterprise: a company with annual revenue greater than R$ 300 million. (BRAZIL, 2006/2008).

CNAE: 1. National Classification of Economic Activities selected for a productive establishment in the CNPJ must reflect only the activities that will effectively be carried out in this establishment and be compatible with the Social Object stated in the respective act registered in the Registration Authority. 2. Based on CNAE,

the fiscal classification of your company is defined, i.e., which taxes need to be paid, which ancillary obligations transmitted, and which fiscal incentives may benefit it. 3. See CNPJ.

CNPJ: 1. It is the National Registry of Legal Entities and is the unique identity of a company before the law and the state. The CNPJ has the format XX.XXX.XXX/XXXX-XX, where the first eight digits are the base number, the next four are the branch order number of the company, and the penultimate is the verification digit.

Open Companies: 1. Start date of a company's activity through registration in the CNPJ. 2. See CNPJ.

Closed Companies: 1. Date on which the company has its CNPJ registration deactivated through a formal request to the competent authority. 2. Companies that fail to submit financial statements and accounting declarations for ninety consecutive days are classified as inactive. If the company does not regularize its registration status after 180 days of being considered inactive, its CNPJ will be automatically deactivated according to Law No. 14,195, Article 81-A of August 26, 2021. (BRAZIL, 2021). 3. See CNPJ.

Companies: 1. In legal conception, from commercial law, business activity, or a company, is an economic activity carried out professionally by the entrepreneur through the coordination of productive factors for the production or circulation of goods or services.

State: 1. Federative unit. 2. The Federative Units of Brazil are autonomous subnational entities (self-government, self-legislation, and self-collection) with their government and constitution, which together form the Federative Republic of Brazil. 3. Example: In research, designation for companies with subsidiaries outside the Brazilian territory.

Market Forces: 1. They are the various actions of market agents seeking homeostasis in the field of the economy (from the Greek homeo: similar/equal and stasis: static), i.e., they are the various actions of economic agents that tend toward the stable condition of the market to perform their functions properly, to maintain equilibrium.

Job Generation: 1. The movement of formal wage employment. Therefore, it describes a portion of the total number of people working. This portion, of its coverage includes the entire national territory. 2. The annual variation is calculated by the sum of the balance of movement in the reference year ÷ Initial stock of January of the same year) x 100. 3. The variation can be positive (job creation) or negative (unemployment).

Age: 1. Number of years that a company has since its CNPJ registration until the present moment. 2. The calculation of age is the elapsed time in years between the opening of the CNPJ and the moment studied. 3. See CNPJ.

Age Groups: 1. Grouping of the age of companies categorized as follows: Up to 1 year, 2 years, 3 years, 4 years, 5 years, 6 to 10 years, 11 to 20 years, and more than 20 years.

Sector: 1. The business sector is the definition of which segment a company operates in. Divided into four main categories: agriculture, industry, commerce, and services, within each there are various possibilities of operation, such as manufacturing products, sales, or provision of services. 2. In addition to defining which company can be opened, it is also necessary to choose the correct CNAE (National Classification of Economic Activities) code. This code identifies the products manufactured and/or marketed, as well as the services provided by a business. 3. See CNAE.

Mortality Rate: 1. The mortality rate is calculated by dividing the sum of companies with deactivated and null (extinct) registration status in the period by the total number of companies in the CNPJ database in the same period (SEBRAE, 2021).

Birth Rate: 1. The birth rate is calculated by dividing the number of companies with CNPJ opening dates in the stipulated period by the total number of companies in the CNPJ database in the same period.

Limitations and Delimitations of the Research:

The research will have national scope, and the data will be collected from official databases of the Federal Government; therefore, no data from informal companies or workers will be collected. The sizes of companies, according to Supplementary Law No. 123 of December 14, 2006 (BRAZIL, 2006), and Supplementary Law No. 128 of December 19, 2008 (BRAZIL, 2008), adopt the following classification:

Table 6 - Definition of establishment size by Annual Gross Revenue

Size	Revenue	Reference Law
Microentrepreneur Individual (MEI)	Up to R$ 81,000	Law No. 128/2008
Microenterprise (ME)	Up to R$ 360,000	Law No. 123/2006
Small Business (EPP)	From R$ 360,000 to 4,800,000	Law No. 123/2006
Medium and Large Enterprises	Above R$ 4,800,000	Law No. 123/2006

Source: BRAZIL, 2006/2008 RESULTS

The initial presentation will encompass the descriptive statistical analysis of the dataset containing information about companies registered in the CNPJ (National Register of Legal Entities) and the generation of formal employment by companies registered in the CAGED (General Register of Employees and Unemployed) between the years 2018 and 2021. Analyses were conducted to study the mortality rate, birth rate, and job generation of Brazilian companies, comparing these variables across two defined periods: the first spanning 2018 to 2019, before the economic adversity triggered by the pandemic; and the second, between 2020 and 2021, after the economic adversity. It is noteworthy that the historical milestone between these periods was the COVID-19 pandemic.

Following the descriptive statistical analysis, hypotheses will be tested to statistically verify their validity. Finally, regression models of the data will be presented to determine which explanatory variables are related to the dependent variable, understanding the relationship between dependent and explanatory variables, and predicting unknown values of the dependent variable.

All descriptive statistical analyses and regression models were conducted using the R statistical software (R CORE TEAM, 2018). For hypothesis validation through normality and significance tests, the Python programming language (PYTHON SOFTWARE FOUNDATION, 2022) along with the SCIPY library (THE SCIPY COMMUNITY, 2022) were employed.

Marginal Descriptive Analysis

This section presents the Marginal Descriptive Analysis of each variable in the CNPJ dataset. For each variable, data is presented containing the percentage of observations for each category of the variable. To facilitate data analysis, the age variable was stratified into the following categories: Up to 1 year, 2 years, 3 years, 4 years, 5 years, 6 to 10 years, 11 to 20 years, and more than 20 years. Port size segmentation was based on the information provided in Table 2. To compare moments before and after economic adversity, variables were created to represent companies that were active in each period, i.e., those that conducted business during the respective periods. Variables were also created for companies opened in the periods, i.e., companies that were established at those specific moments. Finally, variables were created to represent companies that were closed in each of the two periods.

Table 6 – Frequency of the variable size

Size	Before		After	
	Quantity	%	Quantity	%
Microenterprises	17,227,857	71.2%	21,460,988	81.4%
Others	6,957,310	28.8%	4,901,521	18.6%
Total	24,185,167	100.0%	26,362,509	100.0%

Source: Author (2022).

Of the total of 24,185,167 companies at the given moment, 71.2%, or 17,227,857, are microenterprises, and 6,957,310 are companies of other sizes, representing 28.8% of the total. In the subsequent period, this proportion increased to 81.4% of the total number of companies in the country, underscoring the significance of the Micro and Small Enterprises (MPE`S) segment for the national economy. According to SEBRAE (2022), these enterprises contribute to 29.5% of the Gross Domestic Product (GDP) and account for 54% of formal employment.

Table 7 - Frequency of the state variable

State (UF)	Before		After	
	Quantity	%	Quantity	%
SP	7.114.585	29,4%	7.789.074	29,5%
MG	2.488.564	10,3%	2.765.838	10,5%
RJ	2.192.705	9,1%	2.487.163	9,4%
PR	1.647.521	6,8%	1.793.720	6,8%
RS	1.655.814	6,8%	1.716.829	6,5%
BA	1.245.730	5,2%	1.321.716	5,0%

SC	1.068.629	4,4%	1.222.073	4,6%
GO	834.749	3,5%	903.323	3,4%
CE	711.043	2,9%	764.281	2,9%
PE	720.794	3,0%	750.785	2,8%
ES	517.466	2,1%	581.051	2,2%
PA	478.571	2,0%	524.455	2,0%
DF	444.082	1,8%	471.911	1,8%
MT	441.204	1,8%	471.036	1,8%
MA	357.081	1,5%	362.594	1,4%
MS	312.346	1,3%	342.200	1,3%
PB	298.231	1,2%	325.556	1,2%
RN	283.241	1,2%	306.749	1,2%
AM	238.478	1,0%	258.884	1,0%
AL	220.450	0,9%	238.958	0,9%
PI	209.946	0,9%	224.556	0,9%
RO	159.704	0,7%	164.250	0,6%
TO	157.901	0,7%	165.007	0,6%
SE	148.846	0,6%	165.443	0,6%
EX	85.257	0,4%	91.909	0,3%
AC	57.107	0,2%	56.260	0,2%
AP	54.299	0,2%	53.997	0,2%
RR	40.823	0,2%	42.891	0,2%
Total	24.185.167	100,0%	26.362.509	100,0%

Source: Author (2022).

Out of the total of 24,185,167 companies at the given moment, 29.4%, that is, 7,114,585, are located in the state of São Paulo, which boasts the highest number of businesses in the country. When we combine the figures for the top 3 states, we find that 48.8% of the country's businesses are concentrated in these regions, indicating significant expansion opportunities and the 'EX' (foreign) includes domestic companies with subsidiaries outside Brazil, underscoring the potential for a more equitable distribution of wealth in the country. The category is represented by limited penetration and visibility of Brazilian businesses beyond national borders.

Table 8 – Frequency of the age variable

	Before		After	
Age	Quantity	%	Quantity	%
Up to 1 year	1.369.386	5,7%	7.472.868	28,3%
2 years	2.952.963	12,2%	2.973.657	11,3%
3 years	2.465.004	10,2%	2.265.699	8,6%
4 years	1.936.464	8,0%	1.767.307	6,7%
5 years	1.707.775	7,1%	1.540.944	5,8%
6 to 10 years	5.775.579	23,9%	4.915.997	18,6%
11 to 20 years	4.454.857	18,4%	3.217.987	12,2%
More than 20 years	3.523.139	14,6%	2.208.050	8,4%
Total	24.185.167	100,0%	26.362.509	100,0%

Source: Author (2022).

Of the total of 26,362,509 companies currently in existence, 28.3%, or 7,472,868, have been operational for up to 1 year, presenting a profile of young and immature businesses in their respective markets. As we will see later on, the high rates of mortality and births contribute to this figure. The entrepreneurial profile of Brazilians

also contributes to this statistic. According to the Global Entrepreneurship Monitor (GEM) 2020 report, in Brazil, the total entrepreneurship rate in 2019 was 38.7%, representing approximately 53 million Brazilian adults engaged in entrepreneurial activities. This involvement includes participation in the creation or consolidation of a new business or the maintenance of an already established enterprise.

Table 9 - Frequency of the branch variable

Branch	Before		After	
	Quantity	%	Quantity	%
Services	13.104.862	54,2%	15.253.166	57,9%
Commerce	8.303.486	34,3%	8.154.395	30,9%
Industry	2.125.615	8,8%	2.321.776	8,8%
Agriculture	572.430	2,4%	617.384	2,3%
Not Specified	78.774	0,3%	15.788	0,1%
Total	24.185.167	100,0%	26.362.509	100,0%

Source: Author (2022).

Of the total of 26,362,509 companies currently in operation, over half, 57.9%, or 15,253,166, are engaged in the service sector. According to the Brazilian Institute of Geography and Statistics (IBGE) in 2022, the service sector is characterized by activities that vary significantly in terms of company size, average compensation, and the intensity of technology utilization. In recent decades, the performance of activities within this sector has been noteworthy due to its dynamism and the increasing contribution to the Brazilian`s economic production.

Table 10 - Frequency of the variable open companies before and after the economic adversity moment.

Size	Before		After		Total	
	Quantity	%	Quantity	%	Quantity	%
Microenterprises	5.303.243	91,6%	6.750.858	91,8%	12.054.101	91,7%
Others	486.397	8,4%	601.231	8,2%	1.087.628	8,3%
Total	5.789.640	44,1%	7.352.089	55,9%	13.141.729	100,0%

Source: Author (2022).

During the entire period, a total of 13,141,729 companies were established. Of these, 44.1%, or 5,789,640, commenced operations before the onset of economic adversity. However, the remaining 55.9% of companies, equivalent to 7,352,089, initiated their activities after the onset of economic adversity. The economic adversity induced by the pandemic compelled many businesses to close their doors; nonetheless, it created opportunities that entrepreneurs seized through the significant birth of new enterprises. The market is gradually seeking to rebalance, a dynamism evident in the surge of new companies that, capitalizing on the adverse circumstances, undertook entrepreneurship by adapting to the current reality. It is imperative to acknowledge that entrepreneurship driven by necessity tends to escalate during times of crisis. As asserted by Nassif (2009), in an economic scenario like that of Brazil, replete with adversities and discontinuities, a substantial portion of the impetus for entrepreneurial behavior arises from necessity—the survival instinct of Brazilians who must adapt to adverse conditions in an economically unstable environment characterized by rapid and intense changes, amid fluctuating levels of unemployment.

Table 11 – Frequency of the variable companies closed before and after the economic adversity moment.

Size	Before		After		Total	
	Quantity	%	Quantity	%	Quantity	%
Microenterprises	2.517.727	48,7%	5.327.992	90,1%	7.845.719	70,8%
Others	2.657.018	51,3%	583.407	9,9%	3.240.425	29,2%
Total	5.174.745	46,7%	5.911.399	53,3%	11.086.144	100,0%

Source: Author (2022).

Of the total of 11,086,144 closed companies, 46.7%, representing 5,174,744, ceased their activities before the onset of economic adversity. Historically, the annual number of closed companies in Brazil has consistently been high, particularly among Micro and Small Enterprises (MPEs). A study conducted in 2013 by

the Brazilian Support Service for Micro and Small Enterprises (Sebrae) indicated that 24.4% of these enterprises shut down within the first two years of existence, thus supporting the findings of this research.

Out of the total of 11,086,144 closed companies, 53.3%, equivalent to 5,911,399, terminated their activities after the onset of economic adversity. When considering the overall number of companies without distinguishing their size, the mortality rates before and after the economic adversity are comparable.

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