GPEARI
MINISTÉRIO DAS FINANÇAS • MINISTRY OF FINANCE

ARTIGO **02 • 2022**

The determinants of COVID Policy Support in Portugal

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Abstract

The COVID-19 pandemic brought a historical economic relapse. It was the first time our modern economy experienced a shock that simultaneously impacted supply and demand at a global level.

In response to this extraordinary moment in history, governments around the world implemented monetary, fiscal and prudential measures in order to safeguard their respective economies over the period of the COVID-19 recession.

This article intends to answer the following research questions: 1) Did the most affected firms benefited the most from the policies' support? 2) Which pre-pandemic characteristics affected the likelihood of adhering to a COVID policy?

We focused on moratoriums, loans and guarantees, tax suspensions and layoffs, and found that the bigger the loss of sales, the higher the probability to use each and every policy.

In what relates to firm characteristics previous to the COVID-19 crisis, we found a higher probability of policy support for all policies in what relates the *Accommodation and Food Service* sector, the most impacted sector. We also conclude that policy use was biased towards small and medium sized firms, firms with higher levels of indebtedness (except debt higher than 90%) and less liquid firms, which in part is strictly related with policy requirements. Moreover, firms with the highest within-sector productivity have a lower probably to adhere to COVID policies.

Keywords: *COVID-19; Moratoriums; Layoff; Policy evaluation; Policy use*

JEL Classification: H12; E61

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1. Introduction

The COVID-19 pandemic brought a historical economic relapse. It was the first time our modern economy experienced a shock that simultaneously impacted supply and demand at a global level. Both supply and demand were mostly affected by restrictions to economic activity, brought upon due to the pandemic and containment measures (total or partial suspension of activity and limitations to people's mobility). Supply was also influenced by the interruption of global supply chains, while demand was also conditioned by the population's effort to not contract the virus. The consequences in terms of the labor market were very much mitigated or lagged by public policies devoted to maintaining employment and guarantee firms' liquidity.

In 2020, as a result of these shocks the economic activity in Portugal decreased by 8.3%, largely driven by a significant contraction observed in the second quarter (17.8% year-on-year). The average impact on Euro Area was slightly lower, with GDP decreasing 6.1% in 2020, and 14.3% in the second quarter[3]. Around the world, companies suddenly found themselves short in liquidity, positioning the corporate bond market in a situation "under significant stress" (Kargar et al. 2021), that could also have put in risk the health of the banking sector. In response to this extraordinary moment in history, governments implemented monetary, fiscal and prudential measures in order to safeguard their respective economies over the period of the COVID-19 recession, to ensure social justice as a response to the restrictions to economic activity, to safeguard workers' incomes, and to maintain enterprises' liquidity, preventing massive unemployment, which would cause situations of extreme poverty.

In this regard, Portugal's productivity is a main issue since it has reportedly been much lower than its European counterparts and has been seen has a main driver of its relatively weak economic growth potential (Blanchard & Portugal 2017). Based on expectation reported on COVID surveys, Fernandes *et al.* (2021) estimated that during the first lockdown, labor productivity in Portugal fell by 5.9%, with micro-firms and non-exporting firms being the most affected ones. They also found that the most affected sectors were the *Transportation and Storage* and the *Accommodation and Food Service*, with projections for the fall of labor productivity of 21.2% and 21.9%, respectively, during the first lockdown. The *Industry and Energy* and the *Commerce* sectors, on the other hand, were the least affected in terms of labor productivity, with small decreases of 2.1% and 2.5%, respectively.

Accommodation and Food Service, which was the least productive sector pre-pandemic, was the most affected because hotels, restaurants and entertainment required direct contact between employees and customers. The heavy hit on the labor productivity of the *Transportation and Storage* sector, apart from the airline industry, was probably due to indirect effects: disruption in the value chain and a decrease of downstream demand. In comparison with the economies of Germany and Sweden, during the first lockdown, Portugal's dependence on tourism resulted in a stronger impact on consumption and exports (Amorim *et al.* 2021).

On average, during the second quarter of 2020, Euro Area employment decreased 2.9% year-on-year, which was much less than the fall in output (14.3%)[4]. The curbing of unemployment was a consequence of the strongly implemented job retention schemes, and it redirected the negative shock in labor to hours worked, which fell by more than 20% (Criscuolo 2021). However, in the UK and in some Euro Area countries, hourly labor productivity actually increased, because hours worked decreased by more than value added. In the UK, total factor productivity decreased 4%, but the stronger negative within-firm effect was somewhat offset by a positive between-firm effect, since less productive firms were disproportionately affected by the pandemic (Bloom *et al.* 2021).

An extensive detailing of the main policies enacted by the Portuguese Government in order to alleviate the damages caused by the restrictions to economic activity can be found in **Annex 1**[5]. These were:

- **Moratoriums**, which consisted of a legal authorization for debtors to postpone payments related to credit, aimed at preventing the increase of non-performing

[3] Source of data: Eurostat.
[4] Source of data: Eurostat.
[5] Compounded from Mamede *et al.* (2020) and Garrigues (2020) articles.

loans and their consequences over the financial sector. This policy had an impact on credit which amounted to 9 billion euros, about 4.24% of GDP until September 2020.

- **Extraordinary loans**, which consisted on either direct subventions to companies, or public guarantees over private lending. It was aimed at helping companies manage their investment needs and to support liquidity. This policy had several fronts and had an impact of about 13 billion euros, about 6.12% of GDP during 2020.
- **Suspension of taxes** or of Social Security contributions, which consisted on the prolongation of the deadline for companies to pay their fiscal and social obligations or in the restructuring of the payment plans. This policy had several fronts, with different criteria, but most had temporary or permanent closures of economic activities as eligibility criteria.
- Simplified **Lay-off** regime, which consisted of state support of the wages of workers unable to perform their activities due to restrictions to economic activity or other consequences of the pandemic. This involved 70% of the wage of a laid-off worker being financed by the state. A company could benefit from this policy on the condition of not firing any of its workers. This policy had a monthly impact of around 373 million euros.

Our research intends to answer the following research questions: 1) Did the most affected firms benefited the most from the policies' support? 2) Which pre-pandemic characteristics affected the likelihood of adhering to a policy? By answering both of these questions we will get a good picture of the distribution of policy benefits in Portugal during the first lockdown of the COVID-19 pandemic. To answer these questions, we will use *probit* regressions, analyze heteroskedasticity issues as well as goodness-of-fitness tests and also run several robustness checks.

2. Literature review

2.1. Financial crisis' impact

In the presence of a worldwide shock of unprecedent characteristics, there was the risk that viable companies were unable to perform their duties and default on their obligations, and thus, governments around the world had to enact policies such as moratoriums and extraordinary loans. A massive wave of defaults could lead to a banking crisis, which may lead to heavy short and long-term consequences for an economy.

Oulton & Sebastiá-Barriel (2013) infers that, out of the six types of financial crises distinguished by Reinhart and Rogoff, banking crises are the only ones found to have a long-run effect on productivity. They measure that a banking crisis can reduce the short-run growth rate of labor productivity by 0.6%-0.7%, while it can reduce the long-run growth rate by 0.84%-1.1% (range is between OLS and Arellano-Bond estimates). Part of this long-run effect is due to the reduction of capital per worker by 1%, which affects GDP per capita more than GDP per worker due to a decrease of the employment ratio. However, when excluding Latin American countries from the data, banking crises seem to have no effect on labor productivity on the long run. Nevertheless, Oulton & Sebastiá-Barriel (2013) does not consider a crisis like the COVID-19 crisis for the reasons described in the introduction.

On the other hand, for selected EU countries, although stock values of labor productivity before and after the Global Financial Crisis seem to have no effect on economic growth, the variation of labor productivity during the crisis seems to have a positive effect on economic growth after the transition period (Auzina-Emsina, 2014).

Moreover, there is strong evidence that negative credit shocks redirect firm's finances out of investments in productivity-enhancing activities (Duval *et al.* 2020), which affects medium and long-term labor productivity growth. This highlights the importance of the public policies which sought to contribute with liquidity for the deprived firms. For Portuguese small and medium firms specifically, there is some evidence that the total leverage ratio decreased during and after the financial crisis period of 2009-2014, with short-term debt being partially replaced by long-term debt, while profitable firms prefer internal funds to external funds and firms with high growth opportunities tend to have higher debt needs (Fachada, 2020).

2.2. Long-term effects of the COVID-19 crisis and policy response

On the long term, the pandemic will probably have a negative effect on productivity due to a number of factors like the disruption of global value chains, lower investment in R&D (Bloom *et al.* 2021) and lower efficiency of R&D, due to scientists not being able to physically access equipment (Eberly *et al.* 2021).

The Euro Area also experienced sectoral reallocation, although it is difficult to determine if it is structural or merely cyclical. If it is structural, it may introduce high adjustment costs, frictional unemployment, high inflationary pressures, and slower growth on the short to medium term, while it may lead to higher potential growth and reduced inflationary pressures on the long term. Sectoral reallocation may positively or negatively contribute to the increase of productivity depending on the creative destruction process, which is composed by the exits of lower productivity firms and entry of higher productivity firms. According to Criscuolo (2021), enterprise exit declined during the COVID-19 recession in the Euro Area, which may contribute for a creative destructive reallocation process, if it means that productive firms were able to survive, or it may hinder it, if it means that low-productivity companies were able to remain in business. Entry of firms was also extremely low throughout the Euro Area during 2020, although every country was able to recover or surpass entry levels in 2021, with the notable exception of Portugal (Criscuolo 2021). Understanding firms' and sectoral reallocation in Portugal is essential to understand the state of the economy as low firm entry levels decrease the economic recovery speed (Clementi and Palazzo 2016) and may long-term scar the welfare of an economy (Sedláček 2020).

Di Mauro and Syverson (2020) identify mainly four dynamics between the pandemic and labor productivity: 1) A negative effect on labor productivity from firing and then rehiring employees after the shutdown; 2) Small firms, which are normally less productive, are likely to suffer the most and have the higher probability to close permanently, resulting in a positive productivity effect; 3) Government interventions may sustain zombie companies, negatively affecting productivity; 4) Sector reallocation may increase or decrease labor productivity, depending on the country.

Using cross-country data from the UK, Australia and New Zealand, Andrews *et al.* (2021) reinforces dynamics 2) and 4). They found that firms with higher pre-COVID productivity were more probable to increase their workforce, while firms with lower pre-COVID productivity were more probable to decrease their workforce. They also found a strong positive link between worker reallocation and productivity, due to the asymmetric shock the restrictions to economic activity had on the *Hospitality* and *Arts & Recreation* sectors. This reallocation-productivity link was weakened in New Zealand, where job retention policies were heftier, impeding a creative destruction process in the labor market.

An important point of focus for the allocation of policy benefits is that, during the COVID-19 recession, firms from the most hit sectors were more probable to become illiquid, and also that enterprises with low solvency ratios are more likely to need policy support (Garcia & Ho 2021). This means that governments should aim their benefit programs to companies of sectors which were most affected by restrictions to economic activity and to companies in risk of becoming insolvent.

On the labor market side, in the U.S. during the COVID-19 shock, a third of laid-off workers were permanently laid off, while 30% to 40% were rehired. Rates of expected job and sales reallocation were 2 to 5 times higher during the first lockdown than before the pandemic (Barrero *et al.* 2021). The labor market reality was different in Europe since the stronger job retention schemes curbed the effect of labor market frictions over the economy (Fernandes 2022). Nonetheless, in Germany, 60% of the inflows to unemployment were due to shutdown measures.

In terms of telework and digital transformation, in the US, it is expected that, after the pandemic, 25% of all workdays will be executed from home, in comparison to 5% before the pandemic (Barrero *et al.* 2021). Firms which already were more digitally advanced were the ones which technologically adapted the best during the pandemic, which could lead to a dispersion of labor productivity during the next few years and consequently lead to increased wage inequality.

In terms of policy responses to the pandemic, in Europe, the impact of the pandemic-related restrictions on job loss seems to have been effectively

mitigated by job retention schemes. Tax deferrals and state loan guarantees were successful in alleviating business and consumers but resulted in increases in the debt-to-GDP ratio, which can increase budgetary constraints and restrain the ability of governments to intervene for the recovery of the economy in the future (Amorim *et al.* 2021). It is important to note that policy support expenses were significant, amounting to 4 to 11% in the Euro Area (Criscuolo 2021).

Harasztosi *et al.* (2021) runs an analysis on the drivers of policy allotment in the European Union and concludes that the main explanatory factor for a company to benefit from a policy was the variation of its sales due to the COVID-19 crisis. Indicators measuring the financial weakness of a company before the pandemic were not significant for the allotment of the loan policy. Nonetheless, being an exporting firm seems to have had a positive effect on the probability of benefiting from at least one policy, while productivity, liquidity ratio and financial constraint seem to have had a negative effect. Policy support seems to be a strengthening factor of firms' investment outlook and, combined with a relatively strong equity base, also seems to accelerate digital transformation. Since Harasztosi *et al.* (2021) holds very similar research questions to our study, its econometrical background will be the main point of reference for our methodology.

3. Methodology

3.1. Data

To conduct our study, we used two data sets: *Fast and Exceptional Enterprise Survey – COVID-19* (COVID-IREE), which is an exceptional survey to enterprises during the COVID-19 pandemic, and the *Balance Sheet – Harmonized Panel* (CBHP) database that includes financial and economic information of non-financial companies.

3.1.1. COVID-IREE

COVID-IREE is a survey conducted in partnership between *Banco de Portugal* and *Instituto Nacional de Estatística* (INE), the Portuguese central bank and the Portuguese national statistics institution respectively. This survey was exceptionally conducted during the COVID-19 pandemic, in order to understand the main effects of the restrictions to economic activity.

We only used data from the first lockdown, specifically from the first week of April 2020 to the first fortnight of July 2020. We did not use data from November 2020 and from the 1st fortnight of February 2021 due to data incompleteness, as the first does not include questions about the impact on sales and the last suffered a reformulation of the questions related with the utilization of policies. The full table addressing the used surveys and studied period can be found in **Annex 4**.

We considered the following group of questions:

Table 1: Questions from the IREE survey used in this exercise

Question	Answer
Question 1 – "What is the situation which best describes your company this period?	"The same, even if in partial production or functioning" / "Closed Temporarily" / "Closed Definitively".
Question 2 - "This period, is the Covid-19 pandemic having an impact in your company's sales?	"Yes, a reduction" / "Yes, an increase" / "No effect" / "I don't know/Won't answer"
Question 2.1/2.2 – "This period, indicate the best estimate of a reduction/increase of your company's sales"	"0-10%" / "10-25%" / "25-50%" / "50-75%" / "75-100%"
Question 6.0.1[1] – "Has the company utilized moratoriums to the payment of existing interest and credit capital?	""Already benefited" / "Is planning benefiting from" / "Hasn't benefited and isn't planning to" / "Doesn't know/Doesn't answer".
Question 6.0.2[1] – "Has the company utilized the new credits with bonified interest or State guarantees?	"Already benefited" / "Is planning benefiting from" / "Hasn't benefited and isn't planning to" / "Doesn't know/Doesn't answer".
Question 6.0.3[1] – "Has the company utilized the suspension of payment of fiscal and contributive obligations?	"Already benefited" / "Is planning benefiting from" / "Hasn't benefited and isn't planning to" / "Doesn't know/Doesn't answer".
Question 8.1.5[2] – "What is the impact of the alteration of the number of employees in layoff?	"Very positive impact" / "Positive impact"/ "No impact" / "Negative Impact" / "Very negative impact" / "Not applicable" / "Doesn't know/Won't answer".

[1] Not available in for the first fortnight of July. Questions on the impact of the policies was used to infer policy use (6.1.2/6.1.3/6.1.4).
[2] Not available in for the month of April and the first fortnight of July. For the first fortnight of July, a question on the impact of the policy was used to infer policy use (6.1.1).

We must consider that firms could only answer questions 2.1 and 2.2 if the company reported a negative or positive effect of the pandemic on their sales on Question 2. We excluded from our sample all firms with missing data for question 2 in, at least, three out of the seven sampled fortnights. For the questions regarding policy impact (*e.g.* Question 8.1.5), we assumed a reporting of impact as adhering to the policy and "Not applicable" as not adhering to the policy. We considered a firm as a benefiter of a policy if it reported adhering to the policy (or having any impact from it) in at least one of the surveys. Based on these questions we constructed the following variables:

Table 2: Created variables using the IREE survey data

Variable	Description
Closed	=1 if a company closed temporarily during the first quarantine or not (note: after filtering the data, there were no companies that permanently closed). =0 otherwise.
Var_Sales	Weighted average of the reported percentual variations of sales, in comparison with the pre-Covid era. Continuous variable.
Cat_Sales.	Weighted average of the reported percentual variations of sales, in comparison with the pre-Covid era grouped in 5 categories. Categorical variable.
D_Sales.	=1 if the enterprise reported a weighted average of losses in sales due to the pandemic. =0 otherwise.
p-moratorium	=1 if the enterprise benefited from moratorium programs. =0 otherwise.
p-loan	=1 if the enterprise benefited from exceptional loans or loan guarantees. =0 otherwise.
p-taxsusp.	=1 if the enterprise benefited from tax suspension. =0 otherwise.
p-layoff	=1 if the enterprise benefited from layoffs. =0 otherwise.

3.1.2. CBHP

The CBHP database is a firm-level database sourced from *Banco de Portugal*'s Microdata Research Laboratory (BPlim), which uses information reported in IES (*Informação Empresarial Simplificada*), and includes financial and economic information of all of the non-financial Portuguese companies between 2008 and 2019. Since, at the time of this research, there was no available data for 2020, it was not possible to analyze the effects of the policies enacted during the pandemic on the enterprises' productivity and financial wellbeing. We therefore propose to extend this research for when there is available data.

This database identifies each company by a nine-digit code, which allowed us to merge it with COVID-*IREE* database. Some of the output variables under analysis were company-specific characteristics, such as their sector, dimension, and age. Other variables address the leverage, debt structure and solvency risk of the company, such as the Collateral Ratio (which is closely linked with reduced risk of borrowing), the Long-Term Debt Ratio (which measures the company's dependence on debt to grow), and the Debt Ratio (which measures the percentage of the company's assets that are financed with debt). Moreover, variables measuring the liquidity of each firm, such as the Liquidity Ratio (which measures the ability to pay current debt without raising further capital) and the Interest Coverage Ratio (which measures the capacity to pay interest of its outstanding debt) were computed. Additionally, the profitability of the company was analyzed based on the EBITDA Ratio (which measures the gross turnover as percentage of total assets) and the Profit Margin (which represents the percentage of revenue that turned into profit). Finally, we computed efficiency variables, such as Labor Productivity (as real value added per worker) and Exporting Percentage (to proxy the competitiveness of the company). The formulas used in the calculation of our output variables, using the variables of the CBHP database, can be found in **Annex 5**.

To better understand the effects that different levels of Labor Productivity may have had on our dependent variables, we categorized it. For each category, we aggregated firms within a certain range of sector-specific percentiles of Labor Productivity. Then we grouped extreme-valued companies in categories and we created a category for companies in the first 5th percentile, one for companies between the 75th and 90th percentile, and another for companies in the last 10th percentile, due to the exponential nature of the variable (see **Annex 6**).

3.1.3. Data Summary

Before embarking in the econometrical analysis, which is the focus of this research, it would be helpful to undertake a surface level analysis of some of the characteristics of the used dataset and our sample.

Table 3: Summary statistics of firm-level statistics

	No Policy					1+ Policies				
Variables	Obs	Mean	Std. dev.	Min	Max	Obs	Mean	Std. dev.	Min	Max
Sales Variation	783	-0.17	0.23	-0.87	0.78	2852	-0.34	0.28	-0.87	0.38
Age	781	29.56	17.56	3	112	2844	29.52	17.90	2	148
Exporting Percentage	783	0.24	0.43	0	1	2852	0.29	0.46	0	1
Dimension	783	2.45	1.01	1	4	2852	2.43	0.95	1	4

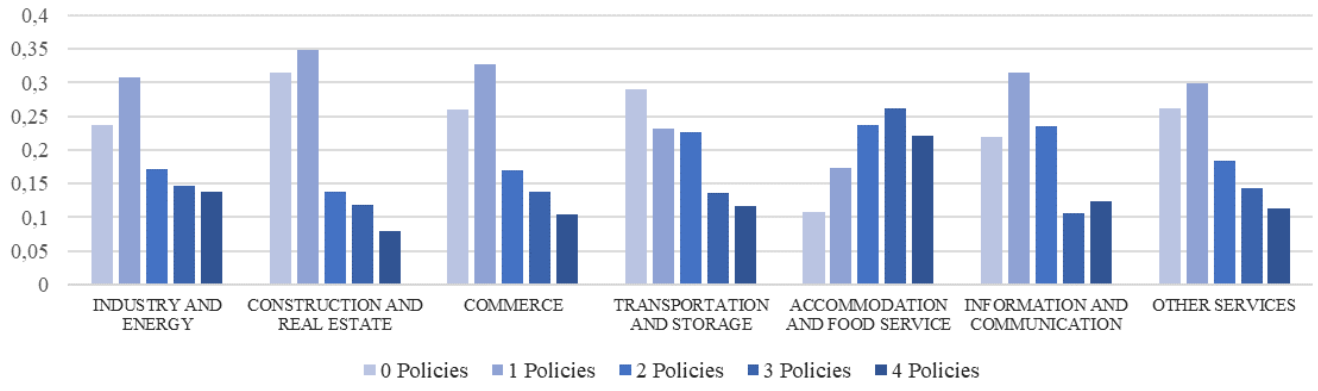
Note: Sector was not included, since the respective measurements of its categorical wouldn't be inferable. Excluding firms with missing observations for policy use.

In **Table 3**, we conclude that none of the firm-level characteristics we have considered are different between policy adhering and non-adhering enterprises. Policy adhering companies suffered, on average, stronger losses of sales, but this difference is not statistically significant. Moreover, firms with no state support seem to export less although this difference is not very expressive.

Furthermore, firms with the highest increase of sales seem to not have adhered to any policy, as the maximum value of sales variation for these firms was almost 40 p.p. higher than for the homologous value of firms adhering to at least one policy.

In **Graph 1**, we can see the percentage of companies of each sector that adhered to a certain number of policies. Policy adhesion varied widely, with 89% of firms in *Accommodation and Food Service* benefiting from at least one policy, but the same only applies to 69% of firms in *Construction and Real Estate*. All sectors, with the exception of *Transportation and Storage*, had a higher portion of companies that benefitted from just one policy when compared to companies that did not receive support. The *Accommodation and Food Service* sector had the highest percentage of companies using multiple policies, while the *Construction and Real Estate* sector had the lowest percentage.[6]

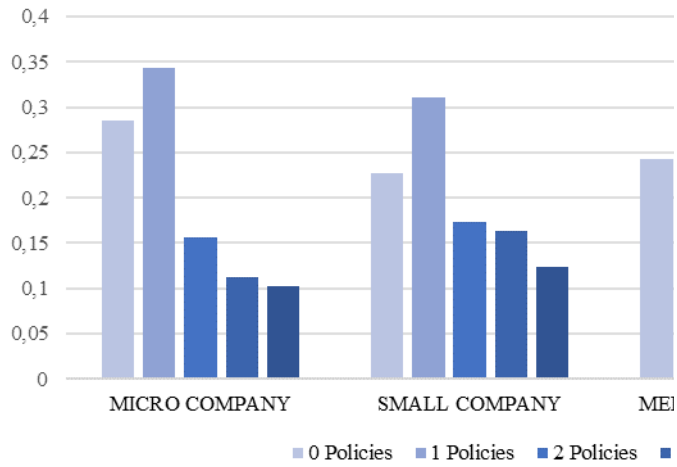
Graph 1: Number of Policies by Sector



[6] To see the labour distribution by percentiles, see **Annex 6.**

If we analyze the number of benefitting policies by dimension of the company, we can see that, even though micro-sized enterprises were the most affected by the restrictions to economic activity (Fernandes *et al.* 2021), they were the group of firms which benefited the least from multiple policies (**Graph 2**). This may be due to either the lower resources and policy knowledge that these companies hold, or due to the requirements of some policies, e.g. the need to have an adequate situation with the fiscal and social contribution authorities[7].

Graph 2: Number of Policies by Dimension



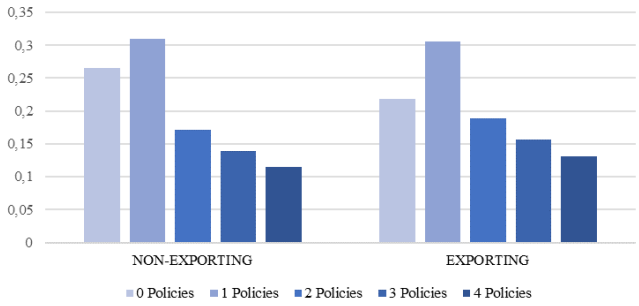
Looking to the correlation between sales variation and number of policies by dimension, we conclude that this correlation is higher for medium and large companies when compared to micro and small companies. This suggests that, in comparison with medium and large sized companies, micro and small enterprises which suffered bigger sales losses seem to have benefited from less policies. However, if instead, we use a simple model to estimate the probability of adhering to at least one policy considering the variation of sales experienced by those firms[8], and compare the fit of the models estimated for each firm size, we discover that, in comparison to medium and large sized companies, micro and small companies present a higher R^2, indicating that sales variation better explains the probability of benefitting from at least one policy (**Table 4 (B)**). This can be explained by the relatively higher number of micro and small sized enterprises benefitting from only one policy. We can therefore infer that, in relation to other firms, a sales loss had a stronger effect on the probability of micro and small companies to benefit from a policy, but it had a weaker effect on the quantity of benefiting policies.

Table 4: Correlation sales variation and number of policies (A) and R^2 of regression of policy adhesion to at least one policy on sales variation (B)

Dimension	Correlation (A)	R^2 (observations) (B)
Micro Firms	-0.39***	0.0671 (2966)
Small Firms	-0.38***	0.0792 (2348)
Medium Firms	-0.44***	0.0565 (2532)
Large Firms	-0.47***	0.0591 (3059)

Analyzing the companies' exporting status (**Graph 3**), we can see that there isn't a big discrepancy of policy benefits between companies that export and companies that don't export. Nonetheless, exporting companies had a lower portion of enterprises benefiting from no policies and a higher portion of enterprises benefitting from multiple policies. We can then conclude that exporting companies benefited, on average, of more policies.

Graph 3: Number of Policies by Exporting Character

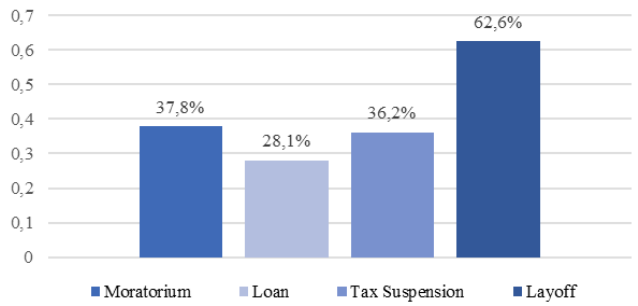


We can also conclude from **Graph 4**, that the most popular policy was the layoff of employees, with 63% of sampled companies adhering to it. Moratorium and tax suspension policies fought over a far-off second place, both around 37%. Finally, exceptional loans were the policy with the lower percentage of companies benefitting from, a percentage around 28%.

[7] See **Annex 1**.

[8] Simple *probit* regression that measures the probability of a firm adhering to a policy (using a dummy that is equal to 1 if the firm benefited from at least one policy) and with a continuous variables for sales variation as a determinant of policy' benefit, controlling for some firm-level characteristics (simplification of the regressions presented in section 3.2).

Graph 4: Percentage of Companies with Policy



3.2. Methodology

With this research we mainly want to answer two questions. First, were the firms most affected by the pandemic also the ones that benefited the most from the support of policies? And second, which pre-pandemic characteristics affected the likelihood of adhering to a policy? Since our policy adhesion variables are binary, we can use *probit*, which will calculate non-linear effects on adhesion. In the *probit* model, we assume that the probability of benefiting from a policy is equal to the cumulative distribution function of a standard normal distribution, ranging from 0 to 1:

Equation 1: Probability function of the *probit* model

$$p = pr[y = 1|x] = F(x'\beta) = \int_{-\infty}^{x'\beta} \phi(z)dz,$$

with y being the dependent variable, x being a vector of independent variables, β being a vector of coefficients and $\phi(z)$ being the standard normal distribution function. The model is estimated using the maximum likelihood method. However, since the coefficients of the *probit* model reflect the effect of a factor on the z-value, they are not inferable in magnitude, only in signal and statistical significance.

Nonetheless, we can calculate marginal effects, which measure the effect of a one-unit increase of a factor on the probability of adherence. Since marginal effects depend on x, we will first calculate the partial effects using the observed covariates, and average them afterwards:

Equation 2: Average marginal effects

$$Marginal\ effects^{AME} = \frac{\sum_{i=1}^{N} F'(x'\beta)\beta_j}{N}.$$

with x_j being a specific factor, β_j being its coefficient and N the number of observations. This way, we can interpret both the sign and magnitude of the impact of our independent variables.

To answer the first research question, we constructed the following group of *probit* regressions:

Equation 3.1: Simple regression of the determinants of policy' benefit (using a sales loss dummy)

$$D\_policy_i = probit(\alpha.D\_Sales_i + \beta.Sector_i + \delta.Dimension_i + \theta.Age_i)$$

Equation 3.2: Simple regression of the determinants of policy' benefit (using a sales loss categorical)

$$D\_policy_i = probit(\alpha.Cat\_Sales_i + \beta.Sector_i + \delta.Dimension_i + \theta.Age_i)$$

The dummy $policy$ is a dummy variable which equals 1 if a firm benefited either from a specific policy or at least one policy, and 0 otherwise. D_Sales_i is a dummy variable, which equals 1 if a firm suffered a loss in sales during the first lockdown and 0 otherwise, while Cat_Sales_i is a categorical variable measuring the average percentual impact of COVID-19 on the sales of a firm. This way, we can study the average impact that sales losses have on the probability of a firm benefiting from the policies, as well as infer if companies suffering from stronger losses had a higher probability of benefiting from a policy. $Sector_i$, $Dimension_i$ and Age_i are categorical variables working as control variables. To answer the second question, we constructed the following group of *probit* regressions:

Equation 4: Regression of the determinants of policy' benefit, including pre-COVID firm-level characteristics

$$D\_policy_i = probit(\alpha.Sales_i + \beta.Sector_i + \delta.Dimension_i + \theta.Age_i + \mu.Closed_i + \gamma.Firms\_characteristics_i)$$

The main differences between **Equation 4** and **Equation 3** are the switch to a continuous Sales Variations variable, the addition of the variable $Closed_i$, which is a dummy variable that equals 1 if a firm closed temporarily during the first lockdown and 0 otherwise, and the addition of pre-COVID firm-level characteristics. These pre-COVID characteristics include our measures of profitability, leverage,

liquidity, and efficiency, previously described in **Section 3.1.2**. We also included an interaction term between the debt ratio and a dummy which equals one if the debt ratio is higher than 90%.

Since heteroskedasticity may affect the performance of a maximum likelihood estimation method like a *probit* model, we partook heteroskedasticity tests (using the *hetprobit* command) and use clustered errors for regressions found to be heteroscedastic. Furthermore, we also run a Pearson goodness-of-fit test, which is a test that measures the quality of the regression by comparing estimated values of the dependent variable against the observed ones, using the following function:

Equation 5: Pearson goodness-of-fit test statistic

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i}$$

where O_i are the observed values, χ^2 follows a chi-square distribution function and E_i is measured by:

Equation 6: Estimated values of the dependent variable

$$E_i = np_i$$

where n is the number of observations in a category, p is the average probability of the estimates in a category, and i is a category which is composed by firms between two certain quantiles of expected values.

We incurred robustness tests. First, we substituted the *Exports* and *Sectoral Labor Productivity* firm characteristics with *EBITDA*, not only to avoid multicollinearity problems between these variables, but also, to infer which group of variables better predicts policy participation.

For our second robustness test, we assume missing information on policy participation to mean that the firm did not participate in that policy (meaning if $p\_policy = .$, we assume $p\_policy = 0$). Firms with these missing observations either did not answer the respective questions in the *IREE* survey or answered, "Doesn't know/Doesn't answer". These companies most probably did not adhere to the policies, but we still did not include them in the sample for our main regression to avoid data contamination issues. Nonetheless, the increase in observations can affect the statistical significance of some of our estimations, so we found important to run this robustness test.

Finally, we calculate the marginal effects at the mean for all regressions, including the robustness ones. While average marginal effects calculate the partial effect of a covariate for each observation first, and average the results later, marginal effects at the mean calculate the partial effect of a covariate assuming the mean for all covariates:

Equation 7: Marginal effects at the mean

$$Marginal\ effects^{MEM} = F'(\bar{x}'\beta)\beta_j,$$

Due to the non-linear nature of the *probit* model, average marginal effects and marginal effects at the mean may differ slightly. We will compare the results as major deviations may suggest real-life interaction between covariates.

To compare the quality between our main regressions and our robustness tests, we will also calculate the pseudo-R^2 for each regression using the McFadden's R^2:

Equation 8: McFadden's Pseudo-R^2

$$Pseudo - R^2 = 1 - \frac{L_{ur}}{L_r},$$

where L_{ur} is the log-likelihood estimation for our regression and L_r is the log-likelihood estimation for a version of our regression where only the intercept is included. For probabilities, log-likelihoods are always negative, and since a higher log-likelihood means a better fit of the model, the closest $\frac{L_{ur}}{L_r}$ is from 0, the better is the fit of the model. A McFadden's pseudo-R^2 between 0.2 and 0.4 represent an excellent fit (McFadden & Domencich 1975).

4. Results

4.1. Factors explaining the probability of policy use

Firstly, we will focus on the results of the regressions in **Equation 3.1** and **Equation 3.2**, presented on **Table 5**.

We can conclude that firms that suffer from sales losses during the first lockdown have a higher probability to apply and benefit from at least one COVID-19 public support policy, by about 19.2 p.p., on average. Moreover, firms that experienced higher reductions of their sales volume had a higher

probability to benefit from any of the studied policies, since the coefficients for sales losses stronger than 50% are always higher than the ones for losses between 26% and 50%, which in turn are always higher than the ones for losses between 1% and 25%[9].

On a policy-by-policy basis, we can conclude that all categories of sales losses seem to have a positive and statistically significant effect in the probability to adhere to state support policies, except in the case of the layoff policies which is not significant when a smaller sales' loss (between -1% and -25%) is involved.

Moreover, firms with positive sales growth do not have a significant effect on the probability of adopting a policy, with two exceptions: i) layoff for firms with a small increase of sales (negative and significant effect); ii) moratoriums for firms with a high increase of sales (positive and significant effect). In the first case, the outcome is driven by the design of the policy since firms with a sales increase cannot apply to layoff In this last case, this can be consistent with the fact that those firms may want to continue their investment strategy and therefore prefer to postpone loans' payments as a precautionary measure to continue investing.

Table 5: Marginal effect at the mean of Sales Variation on policy use[10]

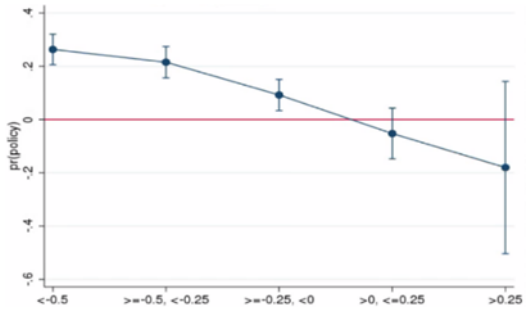
	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Sales: Dummy	**-0.192*** **				
	(-8.29)				
		0.263* **	**0.280*** **	**0.223*** **	**0.385*** **	**0.298*** **
Sales: less than -50%		**(8.98)**	**(11.30)**	**(8.90)**	**(14.59)**	**(9.57)**
		0.215* **	**0.210*** **	**0.213*** **	**0.289*** **	**0.173*** **
Sales: -26% to -50%		**(7.16)**	**(8.62)**	**(8.45)**	**(11.01)**	**(5.32)**
		0.0923 **	**0.148*** **	**0.0994*** **	**0.119*** **	0.0206
Sales: -1% to -25%		**(3.09)**	**(6.93)**	**(4.58)**	**(5.28)**	(0.65)
		-0.0526	0.0535	0.0439	0.00426	**-0.104***
Sales: 1% to 25%		(-1.08)	(1.58)	(1.27)	(0.13)	**(-2.12)**
		-0.180	**0.361***	0.115	0.225	-0.214
Sales: more than 25%		(-1.09)	**2.22)**	(0.79)	(1.39)	(-1.36)

[9] Exception being firms with sales decrease between 1% and 25% in what relates to the layoff policy.

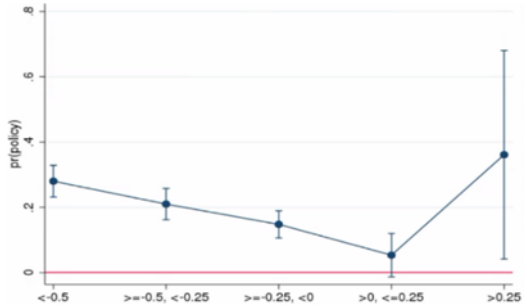
[10] The full version is on Annex 8.

Graph 5: Probability of policy use by Sales Variation (baseline: Sales Variation = 0)

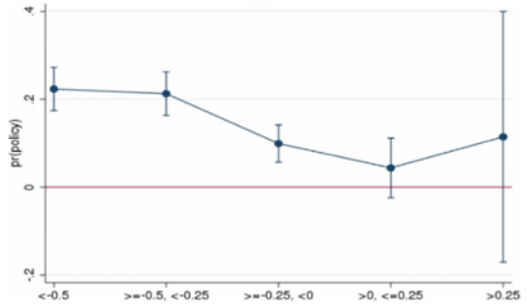
a) At least one policy (sales categorical)



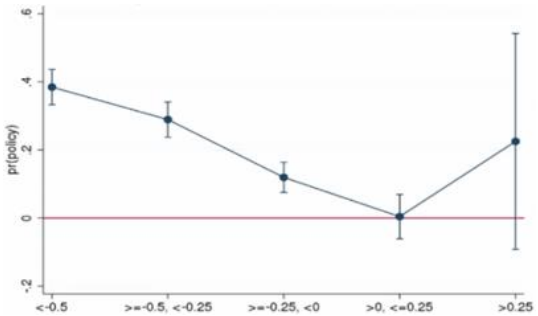
b) Moratorium



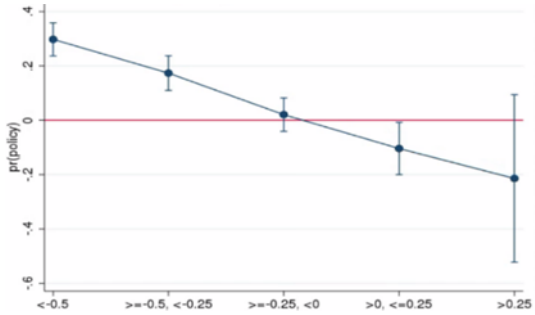
c) Loan



d) Tax Suspension



e) Layoff



Therefore, out of all policies under analysis, there is an indication that sales growth during COVID-19 pandemic did not affect the probability of using tax suspensions and neither the recourse to loans guarantees, which may be related with keeping their activity and obligations at a regular level. To wrap up, the results seem to suggest that the firms most affected by the pandemic, assuming these correspond to the firms with the largest drops in sales during the first lockdown, were indeed the ones that benefited the most from the support of the policies.

Overall, **Graph 5** that predicts the probability of policy use by Sales Variation (assuming as baseline sales equal to 0) suggests that sales changes have two types of effects. The first would be a downright negative relation between sales variation and the probability of policy adhesion, best exemplified by the use of at least one policy (**Graph 5.a**) and the use of the layoff policy (**Graph 5.e**). The second would be a modular relation between sales and policy use, with a null variation of sales having the lowest probability of adherence. This is best exemplified by the liquidity-targeting policies (**Graph 5. b, c, d**). Nonetheless, we have to take in mind that the *probit* coefficients and margins for most of the positive sales categories are neither significantly positive nor negative, due to their high standard errors.

Furthermore, we can also conclude, from the set of *probit* regressions (Annex 8) that the only sector that seems to have had a positive probability of using all the policies, in comparison with the baseline *Other Services*, was *Accommodation and Food Service*. This is in line with the sectoral impact of COVID-19, as *Accommodation and Food Service* was the sector with the highest fall of sales[11] as a result of being subjected to several restrictions to its

[11] See **Annex 6**.

activity as part of the package of measures implemented by the state to contain the spread of the virus.

Moreover, a few highlights may still be mentioned: the *Industry and Energy* and the *Construction and Real Estate* sectors had a negative probability of benefiting from the tax suspension policy when compared to the *Other Services* sector, by around 6 p.p. and 8 p.p., respectively; the *Industry and* Energy sector and *Commerce* sectors have a positive probability to use the loan and layoff programs, respectively. In what relates to the recourse to tax suspension policies, firms may prefer not to defer payments that could add to future taxes in case they anticipate an increase of earnings.

In comparison to micro companies, small and medium companies had a higher probability of adherence to all policies, except the layoff program. This may be due to the fact that the micro enterprises' have lower resources and expertise to apply, since micro and small sized companies were the main target of several policies, such as the Line of Support to Micro and Small Firms.

For this set of regressions, only tax suspension had a goodness-of-fit which fails the null hypothesis of the fitted values being equal to observed values. Nonetheless, all regressions presented a below-optimal McFadden's pseudo-R^2, with none of them surpassing 10%. However, the regressions following **Equation 4** (results presented in **Section 4.2**) have much better McFadden's pseudo-R^2, with the moratorium and loan regressions having a respective pseudo-R^2 of 18.69% and 15.57%. Even so, none of them surpassed the benchmark of 20%. For these regressions, only the moratorium one fails the goodness-of-fit test[12].

4.2. Probability of policy use across pre-COVID firm-level characteristics

In this section, we will now focus on the regression results of equation 4 presented in **Table 6**. As previously mentioned, **Equation 4** differs from **Equation 3.1** and **Equation 3.2** (**Section 4.1**) as it includes pre-COVID firm-level characteristics and the variable *Closed* as explanatory variables. Moreover, it also considers a continuous variable for Sales Variation.

Overall, the results are consistent with few differences when compared to the ones obtained in the first set of regressions, specifically: i) the *Industry and Energy* sector is no longer associated with a positive probability to receive exceptional loans or guarantees, while the being from the *Commerce* sector does, by 5.31 p.p.; ii) the *Transportation and Storage* sector, in line with the industry and construction, has now a negative probability to adhere to the use tax suspensions; iii) having a medium dimension doesn't increase the probability to use tax suspensions.

The average marginal effect of continuous sales variations has influence over the use of every policy. A 1% decrease of sales increases the probability to benefit from moratoriums, loans, tax suspension and layoffs by 0.27 p.p., 0.22 p.p., 0.44 p.p. and 0.44 p.p., respectively.

The age of the firms and the characteristic of being temporarily closed does not seem to have any effect on the probability of using any policy.

Other important conclusions are: i) firms with higher levels of Labor Productivity had a negative probability to apply to all policies except tax suspension; ii) a higher debt ratio seems to increase the probability to apply to all policies, except layoff. Nonetheless, according to **Table 7**, when the debt ratio is too high (above 90%) there is a negative effect on the probability to have support from moratoriums and layoffs; iii) in another dimension, firms with a higher long-term debt ratio have a stronger probability to apply to both moratorium and loans (**Table 6**), which suggests that firms with more time to pay their liabilities were benefited; firms with a higher liquidity ratio have a negative probability to receive support, except for layoff.

[12] See **Annex 7** and **Annex 10**.

Table 6: Average marginal effects for Equation 4 (all factors on probability of benefiting from a policy)

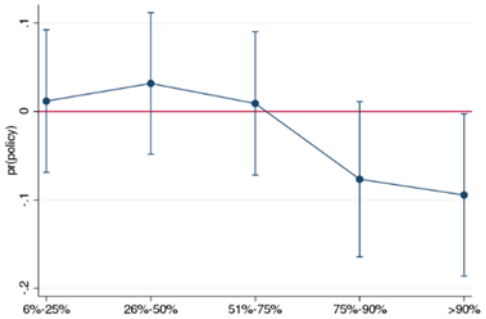
	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Sales Variation	**-0.356*** **	**-0.269*** **	**-0.215*** **	**-0.438*** **	**-0.441*** **
	(-11.64)	**(-9.50)**	**(-7.56)**	**(-14.95)**	**(-13.65)**
Sector: Industry and Energy	0.00133	-0.0262	0.0481	**-0.0618***	0.0390
	(0.05)	(-1.00)	(1.91)	**(-2.16)**	(1.32)
Sector: Construction and Real Estate	-0.0139	-0.0548	-0.0122	**-0.0768***	0.0229
	(-0.45)	(-1.73)	(-0.41)	**(-2.26)**	(0.65)
Sector: Commerce	0.0363	-0.0210	**0.0531***	-0.0119	**0.0604***
	(1.52)	(-0.81)	**(2.13)**	(-0.43)	**(2.16)**
Sector: Transportation and Storage	**-0.107***	-0.0326	-0.0127	**-0.103***	-0.0565
	(-2.19)	(-0.77)	(-0.30)	**(-2.17)**	(-1.07)
Sector: Accommodation and Food Service	0.0608	**0.160*** **	**0.246*** **	**0.107***	**0.129** **
	(1.43)	**(3.43)**	**(5.29)**	**(2.20)**	**(2.64)**
Sector: Information and Communications	0.0373	-0.0586	0.0543	0.00578	-0.0674
	(0.85)	(-1.26)	(1.15)	(0.11)	(-1.23)
Dimension: Small	**0.0667** **	**0.0915*** **	**0.0941*** **	**0.0573***	0.0332
	(2.89)	**(3.98)**	**(4.18)**	**(2.34)**	(1.26)
Dimension: Medium	0.0388	**0.101*** **	**0.102*** **	0.0398	0.0322
	(1.54)	**(4.17)**	**(4.20)**	(1.52)	(1.13)
Dimension: Large	0.0104	0.00269	-0.00676	0.0197	0.0611
	(0.35)	(0.10)	(-0.25)	(0.65)	(1.86)
Labor Productivity: 6^{h} to 25th percentile	0.0117	-0.00998	-0.00259	0.0263	-0.0170
	(0.29)	(-0.24)	(-0.06)	(0.59)	(-0.37)
Labor Productivity: 26th to 50th percentile	0.0317	0.0347	0.0146	-0.00115	-0.0280
	(0.78)	(0.83)	(0.33)	(-0.03)	(-0.61)
Labor Productivity: 51th to 75th percentile	0.00906	-0.00193	-0.0344	-0.00679	-0.0219
	(0.22)	(-0.05)	(-0.78)	(-0.15)	(-0.48)
Labor Productivity: 76th to 90th percentile	-0.0766	**-0.0948***	**-0.115***	**-0.0921***	-0.0650
	(-1.71)	**(-2.16)**	**(-2.52)**	**(-1.96)**	(-1.32)
Labor Productivity: 91th to 100th percentile	**-0.0945***	**-0.155*** **	**-0.214*** **	-0.0894	**-0.136** **
	(-2.02)	**(-3.56)**	**(-4.82)**	(-1.84)	**(-2.63)**
Collateral	0.0403	**0.0897***	0.0217	0.0300	0.00919
	(1.11)	**(2.53)**	(0.59)	(0.75)	(0.22)
Long-term Debt Ratio	**0.0762***	**0.202*** **	**0.126*** **	0.0513	0.0634
	(2.24)	**(6.52)**	**(3.89)**	(1.43)	(1.63)
Temporarily Closed	0.0101	-0.0169	-0.0442	-0.0186	-0.0416
	(0.26)	(-0.48)	(-1.21)	(-0.46)	(-1.00)
Profit Ratio	-0.00303	**-0.00274** **	0.00200	**-0.00320** **	-0.00301
	(-0.82)	**(-3.12)**	(1.84)	**(-2.68)**	(-1.26)
Debt Ratio	**0.0919** **	**0.293*** **	**0.263*** **	**0.167*** **	-0.0276
	(2.64)	**(8.49)**	**(7.41)**	**(4.33)**	(-0.68)
Dummy Debt Ratio > 90%	0.0414	0.0623	-0.0215	**0.0904***	0.0424
	(1.24)	(1.39)	(-0.41)	**(2.07)**	(1.04)
Investment Ratio	-0.0001	-0.0006	-0.0004	**-0.00001** **	**-0.00003*** **
	(-0.22)	(-0.61)	(-0.36)	**(-2.85)**	**(-4.66)**
Liquidity Ratio	**-0.127** **	**-0.374*** **	**-0.308*** **	**-0.242*** **	-0.0450
	(-2.98)	**(-6.30)**	**(-5.65)**	**(-4.41)**	(-0.87)
Interest Coverage Ratio	0.0153	0.00113	**-0.0644***	0.0315	0.0305
	(0.51)	(0.04)	**(-2.34)**	(1.08)	(0.94)
Age: less than 15	-0.0222	-0.0165	-0.0193	-0.00608	0.0269
	(-1.15)	(-0.83)	(-0.97)	(-0.29)	(1.20)
Exports: : 1th to 10th percent	0.0326	**0.0419***	0.0157	**0.0476***	0.0191
	(1.61)	**(2.07)**	(0.78)	**(2.17)**	(0.85)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Exports: : 11th to 90th percent	**0.0618****	**0.0596****	**0.0582***	0.0124	0.00434
	(2.87)	**(2.58)**	**(2.49)**	(0.50)	(0.17)
Exports: : 91th to 100th percent	**0.0836***	-0.00514	-0.0106	-0.0622	0.0562
	(2.56)	(-0.15)	(-0.31)	(-1.69)	(1.42)

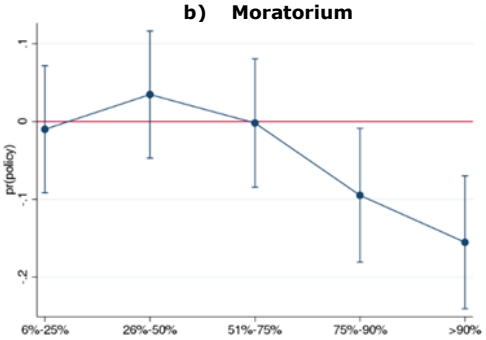
t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Graph 6: Average Marginal Effects of Labor Productivity (baseline: Labor Productivity < 6%)

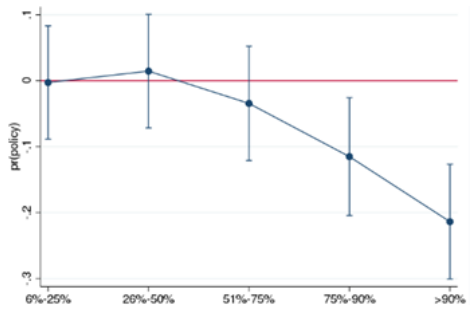
a) At least on policy



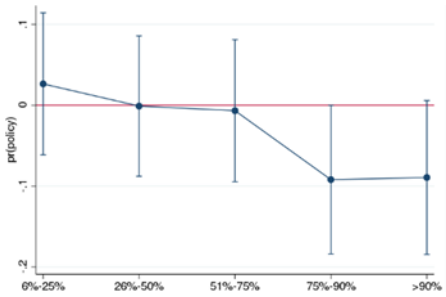
b) Moratorium



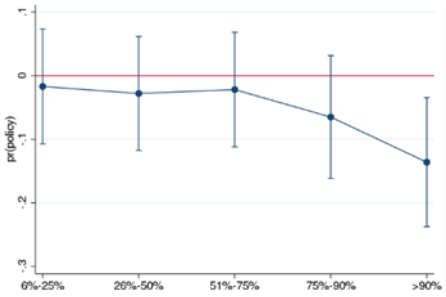
c) Loan



d) Tax Suspension



e) Layoff



The fact that higher productivity firms received less support than low and medium productivity firms may have several simultaneous causes. Since the restrictions to economic activity hit more aggressively the service sectors that required physical proximity (Battistini & Stoevsky 2021), and despite our calculation of the labor productivity percentile being made separately within-sector, firms with low or medium within-sector productivity may still need higher physical proximity. Additionally, higher productivity firms correlate with better management, human capital, and adoption of digital technologies, which may explain a quicker and stronger adaptation period to the new health safety requirements, and a reduced need to adhere to support policies.

Table 7: Average marginal effects of interaction of Debt Ratio with Debt Ratio Dummy (for Equation 4)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Debt Ratio when:					
Debt Ratio <= 90%	**0.105****	**0.342*****	**0.306*****	**0.193*****	-0.0216
	(2.86)	**(9.02)**	**(7.85)**	**(4.56)**	(-0.49)
Debt Ratio > 90%	**-0.0572***	**-0.149****	-0.146	-0.0655	**-0.0824***
	(-2.03)	**(-2.71)**	(-1.81)	(-1.39)	**(-2.30)**

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

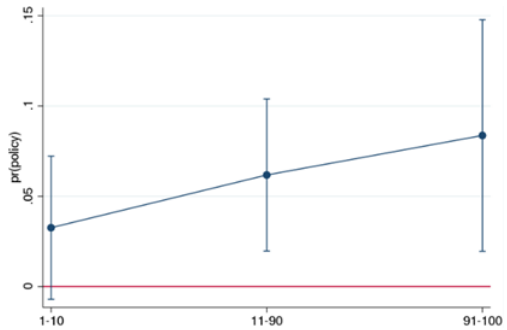
Exports as a percentage of sales also affected the use of every policy with the exception of layoffs, although heterogeneously. Considering **Graph 7**, we reach the conclusion that medium exporters are the most benefited by the support policies. Since exporters are competing with other high-efficiency firms in other countries, exports can be considered as proxies of efficiency. Converging this with our inferences on the influence of Labor Productivity, we can infer that, at the mean, medium efficiency firms have a higher probability of policy support, although high efficiency firms have a lower probability. However, efficiency does not affect layoff adherence.

The null or not significant effect of the Long-term Debt Ratio, the Profit Ratio, the Liquidity Ratio and the Exporting Percentage on the probability of adhesion to the layoff policy is an indication of the broad scope of the policy. While the other support policies either had the target of increasing the liquidity of firms, or had financial performance filters, layoffs aimed at stabilizing the country's employment level and could be used by any firm whose activities had been directly or indirectly affected by the pandemic, on the condition of maintaining all permanent employment until the end of 2020.

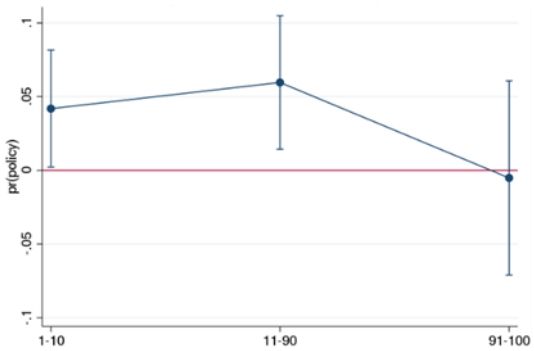
The Investment Ratio can be considered the factor with the lowest significant impact, since, on average, a 1% increase of it decreases the probability of using the moratorium policy by only 0.00002 p.p. and of using the layoff policy by 0.00003 p.p. These margins suggest that a historical of diminished investment improves the probability of being supported by these two policies. Nonetheless, the values are very low, enough to consider them negligible.

Graph 7: – Probability of policy use by Exports percentage (baseline: Exports = 0%)

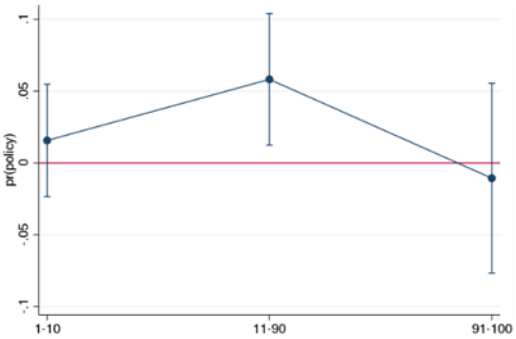
a) Any policy



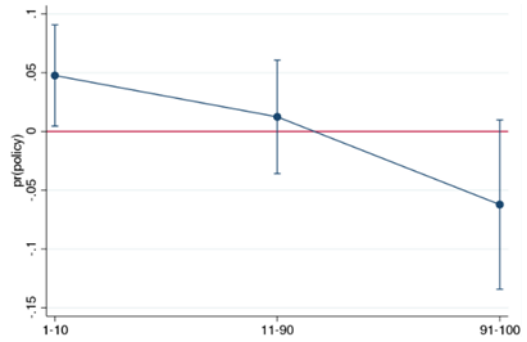
b) Moratorium



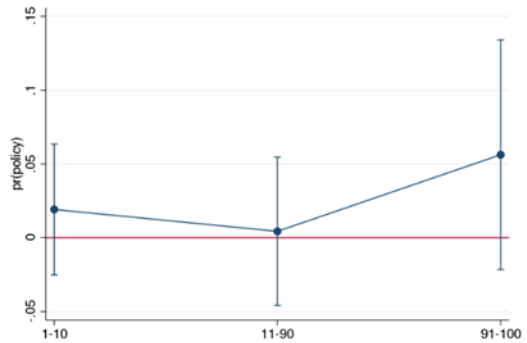
c) Loan



e) Tax Suspension



f) Layoff



Another variable with an overall minimal effect was the Profit Ratio, as a 1% increase only decreases the adherence probability of moratoriums by 0.0027 p.p. and of tax suspensions by 0.003 p.p.. This indicates that enterprises with a lower ability to turn in profit were relatively less probable of being supported with the moratoriums and tax suspension policies, but just as with the Investment Ratio, its influence is small enough to be considered negligible.

The Interest Coverage Ratio is only statistically significant for the loan policy and on average, a company with a worse debt coverage (higher ratio) has a higher probability to benefit from exceptional loans and guarantees. The Collateral Ratio seems to have had a positive effect on the adherence to moratoriums. Since the loan policy is aimed to support the most vulnerable firms, it is expected that firms that are under an investment plan, and started to face difficulties to pay their debt during the pandemic, to be the ones to need public assistance. But these firms are also the ones that are more likely to have more assets, which simultaneously a guarantee for the banking system and may explain the positive coefficient.

4.3 Robustness Analysis

For our first robustness check, we compared our second set of regressions (**Table 6**) with **Annex 14,** that substitutes Labor Productivity and Exports by EBITDA. EBITDA was found to have no statistically significant influence over any of the dependent variables. However, the results of all other overlapping variables were similar, with a few contrasting differences. In this regression, firms from the *Industry and Energy* sector are 6.9 p.p. more probable to use the loan program when compared to the *Other Services* sector, while firms from the *Commerce* sector lost their advantage over the same policy. Furthermore, the Long-term Debt Ratio no longer increases the probability to adhere to at least one policy and the Collateral Ratio has a null effect on every policy. In terms of the quality of fit statistics, this set of regressions performed worse than the original compound regressions, with both the moratorium and loan regressions failing to pass the goodness-of-fit test and every regression presenting a lower McFadden's pseudo-R^2.

The second robustness check, which assumes that missing values for policy use is an indication of non-adherence (**Annex 17)** presents more differences with the main set of regressions (**Table 6**). In fact, the regression related with the probability of benefiting from at least one policy, lost statistical significance for the majority of the coefficients, including being a small company, having a Labor Productivity among its sector highest 10 percentiles, the Long-term Debt Ratio, and the Liquidity Ratio. The impact of sales variation on the probability to adhere to at least one policy and to tax suspensions decreased. Additionally, being in the *Industry and Energy* sector rises adherence to loans by 4.6 p.p. The *Transportation and Storage* and *Accommodation and Food Service* sectors lost their influence over using tax suspensions. In addition, in comparison with micro firms, every dimension has positive influence over joining the layoff program. Moreover, the Investment Ratio no longer has an effect over layoffs, while the Dummy Debt Ratio no longer has an effect over tax suspensions. Finally, exporting more than 90% of production and having a Labor Productivity among its sector highest 10 percentiles increase the probability to benefit from layoffs and tax suspensions, respectively.

Between these regressions, only the loan one failed the goodness-of-fit test failed the null hypothesis. The values for McFadden's R^2 were very similar to the original compound regressions, with the exception for the probability to benefit from at least one policy, which fell from 10.05% to 1.23%, due to loss of significance for the majority of its factors.

Marginal effects at the mean (**Annex 19** to **Annex 22)** portray very similar in terms of significance. Despite some variations of the power of certain factors in the robustness tests, mainly regarding with the probability to benefit from at least one policy or the layoff policy, most of our main conclusions remained the same, with some even being reinforced. Nonetheless, the robustness tests casted uncertainty on the effect of dimensions on the layoff policy.

5. Conclusion

In this paper we studied the impact of several factors on the probability of Portuguese firms using one or any of the policies which were made available by the Portuguese government during the first lockdown of the COVID-19 pandemic. Based on 2019 data, we studied firm-specific indicators associated with efficiency, profitability, solvency, and liquidity, as well as some indicators related to the firm's response to the pandemic available in the COVID-19 inquiry. The policies under study were the moratorium program, the exceptional loans and state loan guarantees, tax suspensions and the layoff program. We additionally created a dummy variable which measures whether a company benefited from at least one policy.

This paper has two goals. The first is to understand if the most hurt enterprises were, in fact, the ones which received more support. The second was to infer which firm-level characteristics previous to the COVID-19 crisis were determinant in the use of policy support considering policy requirements. Both of these questions are relevant for the recovery outlook of the Portuguese economy during the post-COVID period, since it was important for the policy programs to target the companies which needed the most, while simultaneously not bias their support towards unproductive companies or firms in financial distress even before the COVID-19 recession.

In terms of our first intent, we concluded that the bigger the hit of COVID-19 on sales, the higher would be the probability of receiving support.

In terms of our second question, which is related with firms' characteristics previous to the COVID-19 crisis, we found a higher probability of policy support for all policies in what relates the Accommodation and Food Service sector, the most impacted sector. We also conclude that policy use was biased towards small and medium sized firms, firms with higher levels of indebtedness (except debt higher than 90%) and less liquid firms, which in part is strictly related with policy requirements. Moreover, firms with the highest within-sector productivity have a lower probably to adhere to COVID policies.

We also discovered two interesting patterns, one regarding the layoff policy and one regarding the moratorium policy. First, the layoff policy was the only policy were the liquidity and solvency variables seem not to be significant. This is indicative of the transversality of the policy, since it was made available to stabilize employment and not targeted at companies with liquidity needs, as the other policies were. The opposite occurs with the moratorium policy, since this is the policy most affected by variables in the liquidity and solvency scopes, namely the Debt Ratio, Long-term Debt Ratio, Collateral Ratio and Liquidity Ratio.

Nonetheless, this study has a few limitations. First, it only uses data from the first lockdown, from the beginning of April until mid-July, so its conclusions should be restricted to this time period. Second, variables such as sales variation and temporary closure rely on survey data which may suffer from self-report bias, as can be seen with the age and sector distributions of the population of firms and our used sample in **Annex 23** and **Annex 24**.

This research's main goal was to understand how policy allocation was influenced by a myriad of firm-level factors. To add to the literature, we suggest that further research should be done on the impact of policy and policy allocation on these same firm-level factors, as to evaluate the quality of its results and understand how it affects the recovery process posterior to the pandemic, and consequently, the Portuguese economic growth during the following years. Furthermore, we also suggest studying whether if COVID-19 related sectoral reallocation had a positive or a negative impact on the Portuguese labor productivity, and consequently, if there was a creative destruction process.

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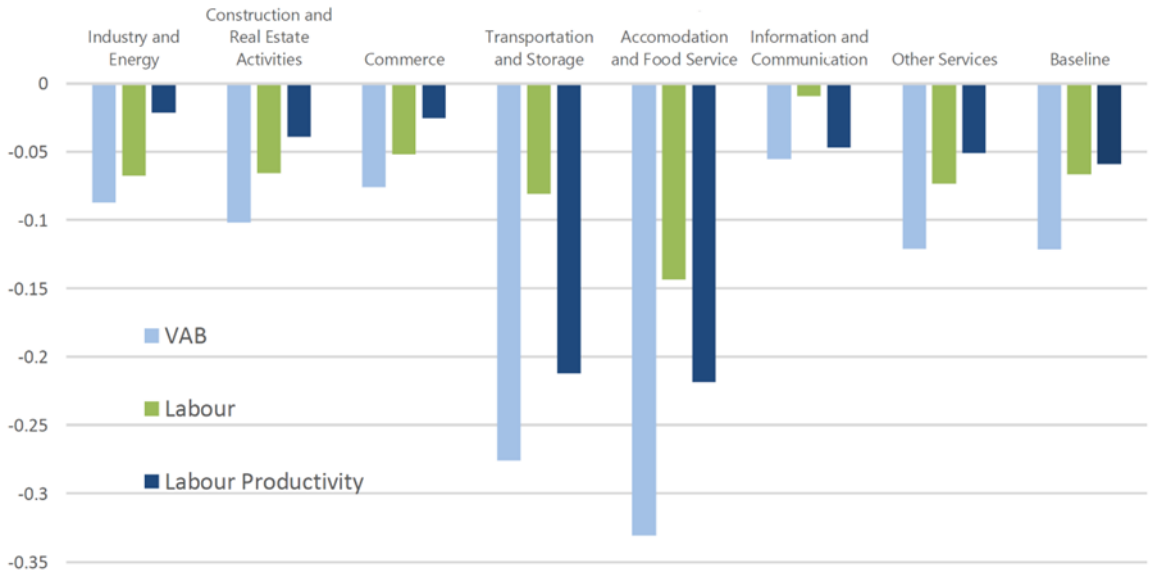
7. ANNEXES

Annex 1: Extensive description of the studied policies

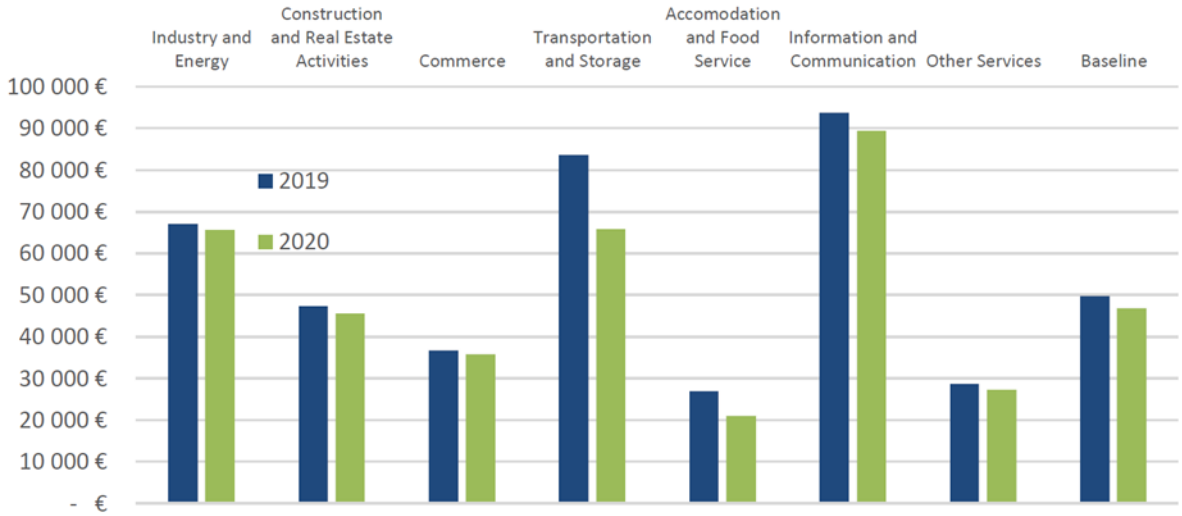
Policy	Explanation	Law	Criteria
Moratoriums and prorogations of credit	• Prohibition of a total or a partial rescission of lines of credit, during the valid period. • Delay, during the valid period, of all credits with payment of capital at the end of the contract, as well as the respective interest and guarantees. • Suspension of credits with installment reimbursement or payment during the valid period, and the respective installments of capital, rent, interest, commissions, guarantees and other automatic charges during the same period.	Decreto-Lei n.º 10-J/2020	• Micro, small, or medium firms, or large firms not in the financial sector (considering the definitions in *Recommendation 2003/361/CE*), *that:* 1. Firms not in default of credit for longer than 90 days as in 18th of March of 2020, or firms in default longer than 90 days that are covered by *Aviso do Banco de Portugal nº2/2019* and in BCE's *Regulation 2018/1845, 21st of November of 2018*. 2. Firms not in a situation of insolvency, suspension, or stoppage of payment, or being executed by a financial institution. 3. Firms with an adequate situation with the fiscal and social contribution authorities. • Not applicable credit: 1. Credit over the purchase of stocks or other similar financial assets. 2. Credit conceded to benefactors of fiscal regimes or grants for the fixation of headquarters in Portugal. 3. Credit over individual utilization of credit cards of members of the administration, of supervision or employees.
Extraordinary loans and state guarantees (Lines of Credit for Support of the Economy)	Loans and guarantees to the banking system. Directed at micro, small and medium-sized firms. Distributed on a first come, first served basis. Composed by the lines: • Line of credit for the support of the most severely impacted firms (400M) • Line of credit for the support of the social economy (165M) • Line of credit for the support of tourism (900M + 60M managed by *Turismo de Portugal*) • Line of credit directed at the fishing and a aquaculture sectors (20M) • Line of credit for the support of restaurants (600M) • Line of credit for the support of travelling agencies (200M) • Line of credit for the support of industry (4500M) • Line of credit insurance with state guarantees for exporting enterprises: metallurgic, metalmecanic and molding (100M); exterior construction (100M); short-term exportation (50M)	Lei n.º 7/2020, de 10 de abril Decreto-Lei n.º 10-I/2020, de 26 de março; Decisions SA.56755 and SA.56873 of the European Commission	1. Had a positive profit in the last approved fiscal year. 2. Assumes the compromise of maintaining all permanent employees until the end of 2020. 3. Does not have incidents within the banking system. 4. Presents an adequate situation with the fiscal and social contribution authorities. 5. Was not in financial distress in 31 of December of 2019.

Policy		Explanation	Law	Criteria
Tax Suspension	Increase of the payment deadline for fiscal contributions	General delay of the deadline for: delivery of company fiscal contributions declaration; special payment per account; first and additional payments per account; declaration of the enterprise accounting and fiscal information; delivery of the preparation of the fiscal documentation process	Despacho do SEAF n.º 104/2020.XXII, de 9 de março; Despacho do SEAF n.º 153/2020. XXII, de 24 de abril	No eligibility criteria
	Restructuration of the payment of fiscal contribution and VAT to 3 to 6 installments	Possibility for company and individual fiscal tax and value-added tax payments to be restructured into three to six installments.	Decreto-Lei n.º 10-F/2020 de 26 de março; Declaração de Retificação n.º 13/2020, de 28 de março	• Firms and individuals with a business volume inferior to 10 million euros. • Firms or individuals who have started or restarted activities by the beginning of 2019. • Firms or individuals whose activities are belong to the closed sectors (as in *artigo 7.º do Decreto n.º 2-A/2020, de 20 de março*). • Firms or individuals with a sales break of at least 20% over the previous three months.
	Exemption of social contributions	Exemption of payment of the totality of social contributions of employees covered by *Decreto-Lei n.º 10-F/2020 de 26 de março*.		• Employers whose company was total or partially closed due to *Decreto n.º 2-A/2020, de 20 de março* or by *Decreto-Lei n.º 10-A/2020, de 13 de março, due to the interruption of supply chains, or due to the suspension or cancellation of orders.* • Employers with a reduction of sales of at least 40% in the 30 days prior to the support request.
	Restructuration of the payment of 2 thirds of social contributions installments	Social contributions due to pay between March and May of 2020, for enterprises, or April and June of 2020, for independent workers, can be paid during the second semester of 2020, be it in 3 installments (July through September) or 6 installments (July through December)		• Independent workers. • Employing entities with less than 50 employees. • Employing entities with 50 to 249 employees and suffered a sales break due to COVID-19 equal or higher than 20% or started activities less than one year ago. • Employing entities with more than 249 employees and suffered a sales break due to COVID-19 equal or higher than 20%, or started activities less than one year ago, that is a social solidarity institution, from a sector which was closed as a consequence of *Decreto n.º 2-A/2020, de 20 de março*, or a suspended activity as a consequence of *Decreto-Lei n.º 10-A/2020, de 13 de março*.
Layoff		Support of 70% of the remuneration of an employee, which is two thirds of the usual employee salary. The remuneration has a minimum value of a minimum salary and maximum value of three minimum salaries. It has the duration of one month and can exceptionally be extended monthly, to a maximum of six months.	Decreto-Lei n.º 23-A/2021, de 24 de março; Decreto-Lei n.º 10-G/2020 de 26 de março	• Firms undergoing a total or partial stoppage of activities due to the interruption of global supply chains, cancelation or suspension of orders. • Firms with a fall in sales of at least 40% in the 60 days prior to the support request, in comparison with the homologous period of 2019. • Firms created less than 12 months prior to the support request. In addition, firms need to: 1. Have an adequate situation with the fiscal and social contribution authorities. 2. Compromise to maintain all permanent employment until the end of 2020.

Annex 2: Labor productivity variations per sector



Annex 3: Labor productivity per sector



Annex 4: Availability of IREE survey data per period

January 2020	No Data	June 2020, 1st fortnight	Available Data
February 2020	No Data	July 2020, 1st fortnight	Available Data[2]
March 2020	No Data	July 2020, 2nd fortnight	No Data
April 2020, 1st week	Available Data[1]	August 2020	No Data
April 2020, 2nd week	Available Data[1]	September 2020	No Data
April 2020, 3rd week	Available Data[1]	October 2020	No Data
April 2020, 4th week	Available Data[1]	November 2020	Incomplete Data
May 2020, 1st fortnight	Available Data	December 2020	No Data
May 2020, 2nd fortnight	Available Data	January 2021	No Data
June 2020, 1st fortnight	Available Data	February 2021, 1st fortnight	Incomplete Data

[1]Data not available for question 8.1.5. Layoff policy use was calculated without data from April.
[2]Data not available for questions 6.0.1, 6.0.2, 6.0.3, 6.0.4. Questions 6.1.1, 6.1.2, 6.1.3, 6.1.4 were used instead.

Annex 5: Financial ratios

$$\boldsymbol{Labor\ Productivity} = \frac{Value\ Added}{Number\ of\ Employees}$$

$$\boldsymbol{Debt\ Ratio} = \frac{Total\ Liabilities}{Total\ Assets}$$

$$\boldsymbol{Value\ Added} = Sales\ and\ Services\ Provided + Work\ for\ Own\ Company + Variation\ in\ Production\ Inventory + Suplementary\ Income + Exploration\ Subsitdies - Supply\ and\ External\ Services - Indirect\ Taxes - Cost\ of\ Sold\ Merchandise\ and\ Consumed\ Materials$$

$$\boldsymbol{Collateral\ Ratio} = \frac{Total\ Tangible\ Fixed\ Assets}{Total\ Assets}$$

$$\textbf{Long Term Debt } \boldsymbol{Ratio} = \frac{Long - Term\ Liabilities}{Total\ Liabilities}$$

$$\boldsymbol{Profit\ on\ Revenue\ Ratio} = \frac{EBITDA}{Total\ Assets}$$

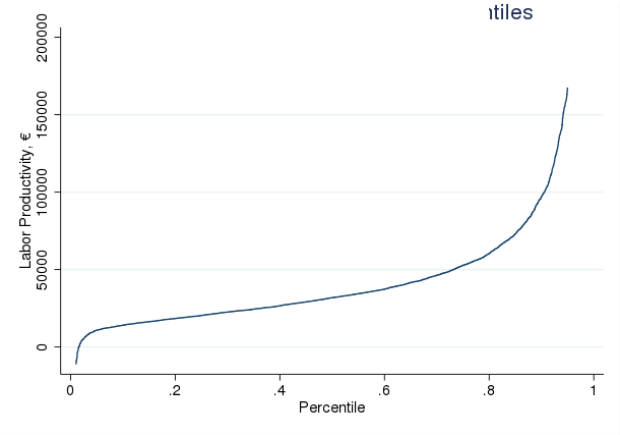
$$\boldsymbol{Investment\ Ratio} = \frac{Financial\ Investments}{Total\ Assets}$$

$$\boldsymbol{Liquidity\ Ratio} = \frac{Cash\ and\ Bank\ Deposits}{Total\ Assets}$$

$$\boldsymbol{Interest\ Coverage\ Ratio} = \frac{Earnings\ Before\ Interest\ and\ Taxes}{Interest\ and\ Similar\ Costs}$$

$$\boldsymbol{Average\ Wage} = \frac{Employee\ Remuneration}{Total\ Fulltime\ Payed\ Employees}$$

Annex 6: Effect of Sales Variation on policy use



Note: This graph only shows the 1th percentile to the 95th percentile

Annex 7: Coefficients for Equation 3 (abridged factors on probability of benefiting from a policy)

	At least one policy		Moratorium	Loan	Tax Suspension	Layoff
Constant	**0.677*** (7.42)**	0.0475 (0.43)	**-1.558*** (-12.03)**	**-1.651*** (-12.74)**	**-1.249*** (-10.48)**	-0.0656 (-0.62)
Sales: Dummy	**-0.578*** (-9.00)**					
Sales: less than -50%		**0.914*** (9.60)**	**0.984*** (9.18)**	**0.796*** (7.58)**	**1.181*** (11.65)**	**0.888*** (9.88)**
Sales: -26% to -50%		**0.688*** (7.51)**	**0.790*** (7.32)**	**0.767*** (7.27)**	**0.938*** (9.22)**	**0.466*** (5.38)**
Sales: -1% to -25%		**0.260** (3.17)**	**0.602*** (5.79)**	**0.414*** (4.06)**	**0.459*** (4.64)**	0.0524 (0.66)
Sales: 1% to 25%		-0.138 (-1.09)	0.259 (1.65)	0.203 (1.32)	0.0204 (0.13)	**-0.264* (-2.10)**
Sales: more than 25%		-0.462 (-1.10)	**1.196** (2.80)**	0.466 (0.94)	0.768 (1.72)	-0.557 (-1.27)
Sector: Industry and Energy	0.0321 (0.39)	0.0849 (1.01)	0.0281 (0.36)	**0.210* (2.56)**	**-0.174* (-2.20)**	0.125 (1.62)
Sector: Construction and Real Estate	-0.163 (-1.65)	-0.0722 (-0.71)	-0.178 (-1.72)	-0.0305 (-0.29)	**-0.231* (-2.28)**	0.0307 (0.32)
Sector: Commerce	0.0279 (0.35)	0.0916 (1.12)	-0.0986 (-1.25)	0.108 (1.32)	-0.0341 (-0.45)	**0.161* (2.13)**
Sector: Transportation and Storage	-0.291 (-1.95)	-0.269 (-1.79)	0.00969 (0.07)	-0.0285 (-0.18)	-0.227 (-1.47)	-0.124 (-0.87)
Sector: Accommodation and Food Service	**0.485** (3.16)**	0.302 (1.91)	**0.439*** (3.63)**	**0.642*** (5.24)**	**0.332** (2.68)**	**0.460** (3.13)**
Sector: Information and Communication	0.127 (0.84)	0.125 (0.82)	-0.177 (-1.19)	0.0913 (0.61)	0.0813 (0.57)	-0.188 (-1.37)
Dimension: Small	**0.202** (2.78)**	**0.240** (3.25)**	**0.303*** (4.07)**	**0.332*** (4.42)**	**0.180* (2.54)**	0.0911 (1.31)
Dimension: Medium	0.137 (1.80)	**0.199* (2.56)**	**0.420*** (5.46)**	**0.404*** (5.16)**	**0.167* (2.26)**	0.111 (1.52)
Dimension: Large	0.0410 (0.47)	0.0889 (1.01)	0.130 (1.44)	0.0277 (0.30)	0.0969 (1.13)	0.129 (1.53)
Age: less than 15	0.0635 (1.00)	0.0824 (1.28)	0.0600 (0.96)	0.0824 (1.30)	0.0608 (1.00)	-0.0362 (-0.60)
Pearson's **Goodness-of-fit**	39,50%	16,37%	16,70%	18,98%	4,6%	6,48%

	At least one policy		Moratorium	Loan	Tax Suspension	Layoff
(prob > chi-square)						
Pseudo-R^2	3,7%	6,51%	5,85%	5,83%	8,66%	6,84%
N			3063			

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Annex 8: Average marginal effects for Equation 3 (abridged factors on probability of benefiting from a policy)

	At least one policy		Moratorium	Loan	Tax Suspension	Layoff
Sales: Dummy	**-0.192*** (-8.29)**					
Sales: less than -50%		**0.263*** (8.98)**	**0.280*** (11.30)**	**0.223*** (8.90)**	**0.385*** (14.59)**	**0.298*** (9.57)**
Sales: -26% to -50%		**0.215*** (7.16)**	**0.210*** (8.62)**	**0.213*** (8.45)**	**0.289*** (11.01)**	**0.173*** (5.32)**
Sales: -1% to -25%		**0.0923** (3.09)**	**0.148*** (6.93)**	**0.0994*** (4.58)**	**0.119*** (5.28)**	0.0206 (0.65)
Sales: 1% to 25%		-0.0526 (-1.08)	0.0535 (1.58)	0.0439 (1.27)	0.00426 (0.13)	**-0.104* (-2.12)**
Sales: more than 25%		-0.180 (-1.09)	**0.361* (2.22)**	0.115 (0.79)	0.225 (1.39)	-0.214 (-1.36)
Sector: Industry and Energy	0.00939 (0.39)	0.0242 (1.00)	0.00920 (0.36)	**0.0641** (2.63)**	**-0.0581* (-2.17)**	0.0439 (1.62)
Sector: Construction and Real Estate	-0.0509 (-1.64)	-0.0217 (-0.71)	-0.0548 (-1.74)	-0.00857 (-0.29)	**-0.0762* (-2.30)**	0.0109 (0.32)
Sector: Commerce	0.00818 (0.35)	0.0261 (1.10)	-0.0311 (-1.24)	0.0317 (1.34)	-0.0117 (-0.44)	**0.0558* (2.11)**
Sector: Transportation and Storage	-0.0945 (-1.86)	-0.0853 (-1.72)	0.00315 (0.07)	-0.00801 (-0.18)	-0.0750 (-1.53)	-0.0449 (-0.87)
Sector: Accommodation and Food Service	**0.117*** (3.60)**	**0.0794* (2.05)**	**0.156*** (3.54)**	**0.217*** (5.02)**	**0.119** (2.65)**	**0.150*** (3.39)**
Sector: Information and Communication	0.0357 (0.87)	0.0351 (0.84)	-0.0545 (-1.23)	0.0268 (0.60)	0.0284 (0.57)	-0.0686 (-1.35)
Dimension: Small	**0.0592** (2.73)**	**0.0695** (3.18)**	**0.0906*** (4.23)**	**0.0974*** (4.62)**	**0.0585** (2.58)**	0.0316 (1.30)
Dimension: Medium	0.0413 (1.78)	**0.0584* (2.53)**	**0.130*** (5.70)**	**0.121*** (5.39)**	**0.0543* (2.29)**	0.0384 (1.52)
Dimension: Large	0.0127 (0.47)	0.0270 (1.01)	0.0366 (1.43)	0.00725 (0.30)	0.0310 (1.13)	0.0445 (1.53)
Age: less than 15	0.0187 (0.99)	0.0236 (1.26)	0.0188 (0.97)	0.0248 (1.32)	0.0200 (1.01)	-0.0124 (-0.60)

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Annex 9: Summary statistics of sales variation by sector and policy use

	No Policy					1+ Policies				
Sector	Obs	Mean	Std. dev.	Min	Max	Obs	Mean	Std. dev.	Min	Max
Industry and Energy	211	-0.174	0.225	-0.875	0.536	736	-0.286	0.253	-0.875	0.382
Construction and Real Estate	97	-0.151	0.205	-0.875	0.005	238	-0.244	0.253	-0.875	0.053
Commerce	220	-0.141	0.236	-0.875	0.780	733	-0.323	0.263	-0.875	0.266
Transportation and Storage	32	-0.198	0.213	-0.839	0.036	68	-0.414	0.292	-0.875	0
Accommodation and Food Service	15	-0.529	0.278	-0.875	0	142	-0.622	0.249	-0.875	0.039
Information and Communication	25	-0.261	0.333	-0.875	0	91	-0.332	0.281	-0.875	0.134
Other Services	110	-0.226	0.245	-0.875	0.175	345	-0.393	0.306	-0.875	0.246

Note: Excluding firms with missing observations for policy use.

Annex 10: Coefficients for Equation 4 (all factors on probability of benefiting from a policy)

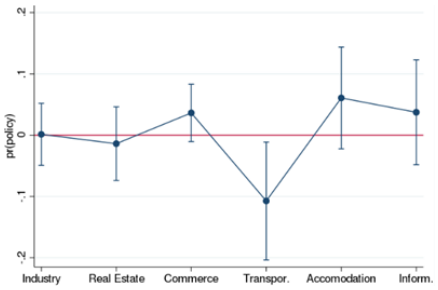
	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Constant	-0.0585 (-0.25)	**-1.784***** **(-7.60)**	**-1.535***** **(-6.58)**	**-1.086***** **(-5.05)**	0.0481 (0.22)
Sales Variation	**-1.329***** **(-11.04)**	**-0.983***** **(-9.07)**	**-0.779***** **(-7.36)**	**-1.381***** **(-13.53)**	**-1.296***** **(-12.56)**
Sector: Industry and Energy	0.00483 (0.05)	-0.0938 (-1.00)	0.178 (1.87)	**-0.192*** **(-2.18)**	0.112 (1.32)
Sector: Construction and Real Estate	-0.0498 (-0.46)	-0.201 (-1.72)	-0.0483 (-0.41)	**-0.241*** **(-2.24)**	0.0654 (0.65)
Sector: Commerce	0.138 (1.54)	-0.0750 (-0.82)	**0.196*** **(2.09)**	-0.0358 (-0.43)	**0.176*** **(2.17)**
Sector: Transportation and Storage	**-0.353*** **(-2.28)**	-0.117 (-0.76)	-0.0504 (-0.30)	**-0.331*** **(-2.06)**	-0.157 (-1.07)
Sector: Accommodation and Food Service	0.240 (1.35)	**0.518***** **(3.50)**	**0.801***** **(5.50)**	**0.310*** **(2.23)**	**0.393*** **(2.48)**
Sector: Information and Communications	0.142 (0.83)	-0.216 (-1.22)	0.200 (1.18)	0.0173 (0.11)	-0.187 (-1.24)
Dimension: Small	**0.247**** **(2.98)**	**0.343***** **(3.79)**	**0.350***** **(3.97)**	**0.182*** **(2.30)**	0.0964 (1.26)
Dimension: Medium	0.138 (1.56)	**0.377***** **(3.98)**	**0.377***** **(4.01)**	0.128 (1.50)	0.0934 (1.14)
Dimension: Large	0.0361 (0.35)	0.0110 (0.10)	-0.0283 (-0.25)	0.0642 (0.65)	0.180 (1.86)
Labor Productivity: 6^{h} to 25th percentile	0.0450 (0.29)	-0.0346 (-0.24)	-0.00845 (-0.06)	0.0791 (0.58)	-0.0515 (-0.37)
Labor Productivity: 26th to 50th percentile	0.125 (0.80)	0.117 (0.82)	0.0471 (0.33)	-0.00350 (-0.03)	-0.0842 (-0.60)
Labor Productivity: 51th to 75th percentile	0.0346 (0.22)	-0.00663 (-0.05)	-0.115 (-0.79)	-0.0207 (-0.15)	-0.0662 (-0.47)
Labor Productivity: 76th to 90th percentile	-0.265 (-1.62)	**-0.356*** **(-2.25)**	**-0.418**** **(-2.66)**	**-0.297*** **(-2.03)**	-0.192 (-1.29)
Labor Productivity: 91th to 100th percentile	-0.321 (-1.92)	**-0.634***** **(-3.79)**	**-0.926***** **(-5.25)**	-0.288 (-1.88)	**-0.389*** **(-2.54)**
Collateral	0.151 (1.11)	**0.328*** **(2.52)**	0.0788 (0.59)	0.0947 (0.75)	0.0270 (0.22)
Long-term Debt Ratio	**0.284*** **(2.24)**	**0.737***** **(6.39)**	**0.455***** **(3.87)**	0.162 (1.43)	0.187 (1.63)
Temporarily Closed	0.0374 (0.27)	-0.0608 (-0.48)	-0.155 (-1.25)	-0.0582 (-0.47)	-0.125 (-0.97)
Profit Ratio	-0.0113 (-0.82)	**-0.00999**** **(-3.11)**	0.00724 (1.84)	**-0.0101**** **(-2.68)**	-0.00885 (-1.26)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Debt Ratio	**0.401****	**1.249*****	**1.084*****	**0.612*****	-0.0635
	(2.80)	**(8.59)**	**(7.56)**	**(4.48)**	(-0.49)
Dummy Debt Ratio > 90%	**0.511***	**1.209*****	**0.854****	**0.727*****	0.236
	(2.36)	**(5.33)**	**(2.78)**	**(3.65)**	(1.22)
Debt Ratio # Dummy Debt Ratio > 90%	**-0.644****	**-1.707*****	**-1.583*****	**-0.798*****	-0.192
	(-3.24)	**(-7.97)**	**(-5.60)**	**(-4.22)**	(-1.08)
Investment Ratio	-0.0005	-0.0021	-0.0013	**-0.0001****	**-0.0001*****
	(-0.22)	(-0.61)	(-0.36)	**(-2.85)**	**(-4.66)**
Liquidity Ratio	**-0.474****	**-1.365*****	**-1.117*****	**-0.762*****	-0.132
	(-2.98)	**(-6.09)**	**(-5.54)**	**(-4.37)**	(-0.87)
Interest Coverage Ratio	0.0570	0.00412	**-0.233***	0.0992	0.0898
	(0.51)	(0.04)	**(-2.33)**	(1.08)	(0.94)
Age: less than 15	-0.0828	-0.0603	-0.0698	-0.0192	0.0792
	(-1.15)	(-0.83)	(-0.96)	(-0.29)	(1.20)
Exports: : 1^{th} to 10^{th} percent	0.118	**0.154***	0.0577	**0.148***	0.0563
	(1.60)	**(2.07)**	(0.78)	**(2.17)**	(0.84)
Exports: : 11^{th} to 90^{th} percent	**0.232****	**0.216****	**0.207***	0.0393	0.0127
	(2.81)	**(2.60)**	**(2.51)**	(0.50)	(0.17)
Exports: : 91^{th} to 100^{th} percent	**0.325***	-0.0197	-0.0401	-0.208	0.169
	(2.33)	(-0.15)	(-0.31)	(-1.63)	(1.38)
Pearson's **Goodness-of-fit** (prob > chi-square)	10,05%	0%	5,11%	33,08%	32,91%
Pseudo-R^2	8,04%	17,81%	15,19%	12,10%	7,29%
N			2825		

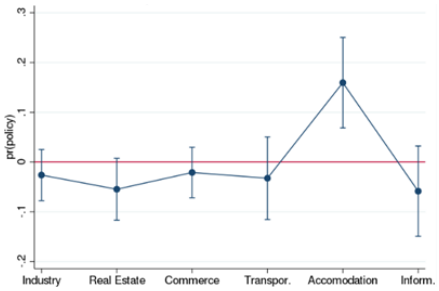
t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.0$

Annex 11: Probability of policy use by Sector (baseline: Sector = Other)

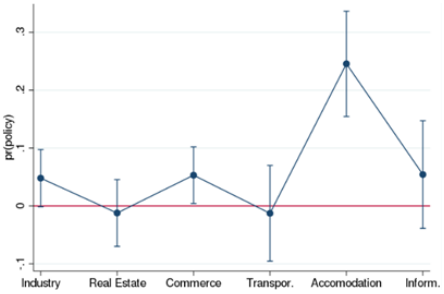
a) Any Policy



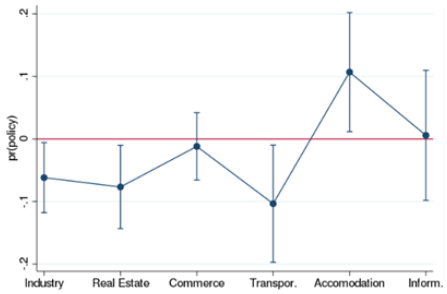
b) Moratorium



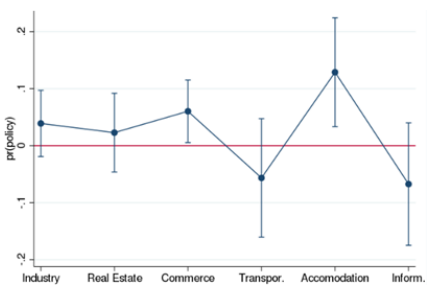
c) Loans



d) Tax Suspension

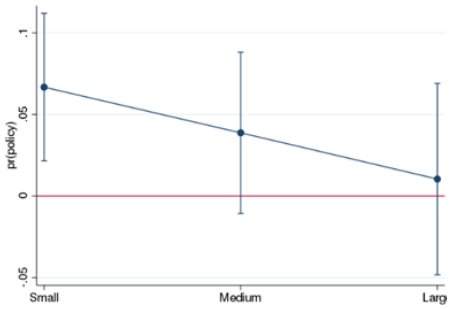


e) Layoff

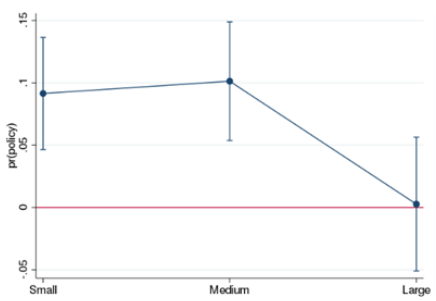


Annex 12: Probability of policy use by Firm Size (baseline: Dimension = Micro)

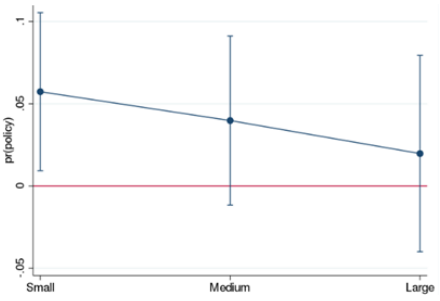
a) Any Policy



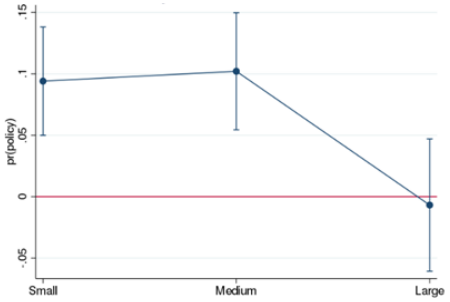
b) Moratorium



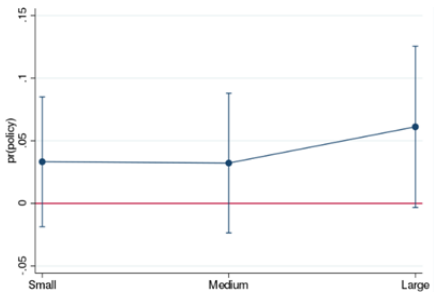
c) Loans



d) Tax Suspension



e) Layoff



Annex 13: Coefficients of the first robustness check (EBITDA instead of Labor Productivity and Exports)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Constant	0.00471 (0.02)	**-1.729***** **(-9.01)**	**-1.585***** **(-8.22)**	**-1.110***** **(-6.15)**	-0.0250 (-0.14)
Sales Variation	**-1.381***** **(-11.55)**	**-1.020***** **(-9.63)**	**-0.840***** **(-8.15)**	**-1.399***** **(-13.86)**	**-1.329***** **(-12.96)**
Sector: Industry and Energy	0.0944 (1.04)	-0.0265 (-0.30)	**0.245**** **(2.66)**	**-0.191*** **(-2.25)**	0.138 (1.67)
Sector: Construction and Real Estate	-0.0761 (-0.70)	**-0.234*** **(-2.03)**	-0.0692 (-0.60)	**-0.257*** **(-2.40)**	0.0528 (0.53)
Sector: Commerce	0.109 (1.24)	-0.0869 (-0.97)	0.162 (1.76)	-0.0176 (-0.21)	**0.172*** **(2.16)**
Sector: Transportation and Storage	**-0.315*** **(-2.01)**	-0.0788 (-0.49)	-0.0127 (-0.07)	**-0.320*** **(-1.98)**	-0.152 (-1.04)
Sector: Accommodation and Food Service	0.213 (1.21)	**0.497***** **(3.53)**	**0.774***** **(5.48)**	**0.296*** **(2.17)**	**0.391*** **(2.48)**
Sector: Information and Communications	0.194 (1.14)	-0.164 (-0.93)	0.231 (1.38)	0.0372 (0.24)	-0.174 (-1.16)
Dimension: Small	**0.237**** **(2.90)**	**0.336***** **(3.82)**	**0.312***** **(3.65)**	**0.163*** **(2.08)**	0.0821 (1.09)
Dimension: Medium	0.128 (1.48)	**0.366***** **(4.05)**	**0.320***** **(3.59)**	0.0772 (0.94)	0.0631 (0.80)
Dimension: Large	-0.0175 (-0.18)	-0.0828 (-0.78)	-0.177 (-1.63)	-0.0474 (-0.50)	0.112 (1.21)
Collateral	0.0594 (0.44)	0.215 (1.72)	0.0161 (0.13)	0.0354 (0.29)	-0.0107 (-0.09)
Long-term Debt Ratio	0.214 (1.69)	**0.651***** **(5.74)**	**0.371**** **(3.20)**	0.148 (1.32)	0.150 (1.33)
EBITDA Ratio	0.0591 (0.41)	-0.0357 (-0.28)	-0.109 (-0.86)	-0.0497 (-0.40)	-0.124 (-0.96)
Temporarily Closed	-0.143 (-0.66)	-0.318 (-1.43)	-0.434 (-1.94)	0.0420 (0.22)	-0.100 (-0.51)
Profit Ratio	-0.0139 (-0.84)	**-0.0117**** **(-2.97)**	0.00541 (1.62)	**-0.0109**** **(-2.62)**	-0.00989 (-1.15)
Debt Ratio	**0.476***** **(3.37)**	**1.318***** **(9.30)**	**1.166***** **(8.40)**	**0.703***** **(5.21)**	-0.0159 (-0.12)
Dummy Debt Ratio > 90%	0.535* (2.48)	**1.239***** **(5.38)**	**0.917**** **(2.96)**	**0.765***** **(3.87)**	0.250 (1.29)
Debt Ratio # Dummy Debt Ratio > 90%	**-0.728***** **(-3.71)**	**-1.794***** **(-8.30)**	**-1.683***** **(-5.93)**	**-0.864***** **(-4.62)**	-0.231 (-1.31)
Investment Ratio	-0.00123 (-0.54)	-0.00281 (-1.00)	-0.00222 (-0.84)	**-0.0001**** **(-2.60)**	**-0.0001***** **(-3.94)**
Liquidity Ratio	**-0.545***** **(-3.39)**	**-1.435***** **(-6.59)**	**-1.166***** **(-5.94)**	**-0.816***** **(-4.72)**	-0.167 (-1.11)
Interest Coverage Ratio	0.104 (0.91)	0.0139 (0.14)	**-0.205*** **(-2.00)**	0.158 (1.67)	0.119 (1.21)
Age: less than 15	-0.106 (-1.50)	-0.104 (-1.45)	-0.107 (-1.53)	-0.0693 (-1.05)	0.0641 (0.99)
Pearson's **Goodness-of-fit** (prob > chi-square)	18,83%	0%	2,93%	37,11%	33,52%
Pseudo-R^2	8,58%	15,73%	12,39%	11,15%	6,75%
N			2825		

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Annex 14: Average marginal effects of the first robustness check (EBITDA instead of Labor Productivity and Exports)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Sales Variation	**-0.376*** (-12.26)**	**-0.286*** (-10.15)**	**-0.239*** (-8.42)**	**-0.448*** (-15.41)**	**-0.455*** (-14.18)**
Sector: Industry and Energy	0.0260 (1.03)	-0.00767 (-0.30)	**0.0690** (2.75)**	**-0.0619* (-2.23)**	0.0481 (1.67)
Sector: Construction and Real Estate	-0.0222 (-0.70)	**-0.0641* (-2.05)**	-0.0176 (-0.60)	**-0.0823* (-2.42)**	0.0187 (0.53)
Sector: Commerce	0.0299 (1.22)	-0.0248 (-0.97)	0.0444 (1.80)	-0.00589 (-0.21)	**0.0599* (2.14)**
Sector: Transportation and Storage	-0.0979 (-1.93)	-0.0225 (-0.50)	-0.00329 (-0.08)	**-0.101* (-2.08)**	-0.0551 (-1.03)
Sector: Accommodation and Food Service	0.0563 (1.28)	**0.157*** (3.44)**	**0.244*** (5.26)**	**0.103* (2.14)**	**0.129** (2.64)**
Sector: Information and Communications	0.0517 (1.19)	-0.0458 (-0.96)	0.0647 (1.33)	0.0126 (0.24)	-0.0632 (-1.15)
Dimension: Small	**0.0647** (2.82)**	**0.0924*** (4.00)**	**0.0883*** (3.82)**	**0.0524* (2.11)**	0.0283 (1.09)
Dimension: Medium	0.0362 (1.46)	**0.101*** (4.23)**	**0.0907*** (3.73)**	0.0244 (0.94)	0.0219 (0.79)
Dimension: Large	-0.00519 (-0.18)	-0.0202 (-0.78)	-0.0427 (-1.63)	-0.0146 (-0.50)	0.0384 (1.22)
Collateral	0.0162 (0.44)	0.0604 (1.72)	0.00458 (0.13)	0.0113 (0.29)	-0.00365 (-0.09)
Long-term Debt Ratio	0.0582 (1.70)	**0.183*** (5.84)**	**0.106** (3.21)**	0.0475 (1.32)	0.0514 (1.33)
EBITDA Ratio	-0.0389 (-0.66)	-0.0893 (-1.43)	-0.124 (-1.94)	0.0135 (0.22)	-0.0343 (-0.51)
Temporarily Closed	0.0164 (0.40)	-0.0101 (-0.28)	-0.0318 (-0.84)	-0.0161 (-0.40)	-0.0416 (-0.98)
Profit Ratio	-0.00378 (-0.84)	**-0.00328** (-2.98)**	0.00154 (1.62)	**-0.00351** (-2.63)**	-0.00339 (-1.15)
Debt Ratio	**0.112** (3.20)**	**0.317*** (9.26)**	**0.292*** (8.29)**	**0.196*** (5.10)**	-0.0127 (-0.32)
Dummy Debt Ratio > 90%	0.0373 (1.09)	0.0592 (1.27)	-0.0189 (-0.35)	**0.0921* (2.09)**	0.0402 (0.97)
Investment Ratio	-0.00034 (-0.54)	-0.0008 (-1.00)	-0.0006 (-0.84)	**-0.00002** (-2.60)**	**-0.00003*** (-3.95)**
Liquidity Ratio	**-0.149*** (-3.40)**	**-0.402*** (-6.82)**	**-0.332*** (-6.07)**	**-0.262*** (-4.78)**	-0.0572 (-1.11)
Interest Coverage Ratio	0.0284 (0.91)	0.00389 (0.14)	**-0.0582* (-2.01)**	0.0505 (1.68)	0.0406 (1.21)
Age: less than 15	-0.0288 (-1.50)	-0.0291 (-1.45)	-0.0304 (-1.53)	-0.0222 (-1.05)	0.0219 (0.99)

t statistics in parentheses $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Annex 15: Average marginal effects of interaction of Debt Ratio with Debt Ratio Dummy (First Robustness Test)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Debt Ratio when:					
Dummy Debt Ratio <= 90%	**0.105****	**0.342*****	**0.306*****	**0.193*****	-0.0216
	(2.86)	**(9.02)**	**(7.85)**	**(4.56)**	(-0.49)
Dummy Debt Ratio > 90%	**-0.0572***	**-0.149****	-0.146	-0.0655	**-0.0824***
	(-2.03)	**(-2.71)**	(-1.81)	(-1.39)	**(-2.30)**

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Annex 16: Coefficients of the second robustness test (including missing observations)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Constant	-0.246	**-1.837*****	**-1.706*****	**-0.971*****	-0.138
	(-1.52)	**(-9.66)**	**(-9.00)**	**(-5.65)**	(-0.79)
Sales Variation	**-0.213****	**-0.861*****	**-0.617*****	**-1.180*****	**-1.167*****
	(-2.80)	**(-9.82)**	**(-7.17)**	**(-14.39)**	**(-14.30)**
Sector: Industry and Energy	0.0173	-0.0153	**0.170***	**-0.237****	0.0533
	(0.25)	(-0.20)	**(2.15)**	**(-3.28)**	(0.76)
Sector: Construction and Real Estate	-0.0403	-0.135	-0.0510	**-0.260****	-0.00267
	(-0.49)	(-1.36)	(-0.51)	**(-2.89)**	(-0.03)
Sector: Commerce	0.0350	0.0112	**0.187***	-0.0656	**0.173****
	(0.54)	(0.15)	**(2.40)**	(-0.96)	**(2.58)**
Sector: Transportation and Storage	**-0.246***	-0.0764	-0.0141	-0.215	-0.235
	(-2.08)	(-0.60)	(-0.10)	(-1.72)	(-1.94)
Sector: Accommodation and Food Service	0.0233	**0.394****	**0.680*****	0.215	0.436***
	(0.22)	**(3.26)**	**(5.79)**	(1.93)	(3.48)
Sector: Information and Communications	-0.0335	-0.270	0.192	0.0138	-0.0194
	(-0.29)	(-1.87)	(1.42)	(0.11)	(-0.16)
Dimension: Small	0.108	**0.312*****	**0.291*****	**0.174****	**0.144***
	(1.81)	**(4.17)**	**(3.98)**	**(2.65)**	**(2.28)**
Dimension: Medium	0.0379	**0.331*****	**0.322*****	0.0922	**0.167***
	(0.58)	**(4.21)**	**(4.12)**	(1.30)	**(2.43)**
Dimension: Large	0.00323	-0.0337	-0.0466	0.0220	**0.250****
	(0.04)	(-0.36)	(-0.49)	(0.26)	**(3.09)**
Labor Productivity: 6^{h} to 25th percentile	0.0394	-0.0734	-0.0211	0.0133	0.00147
	(0.38)	(-0.63)	(-0.18)	(0.12)	(0.01)
Labor Productivity: 26th to 50th percentile	0.145	0.106	0.0683	-0.0218	-0.104
	(1.40)	(0.91)	(0.58)	(-0.20)	(-0.93)
Labor Productivity: 51th to 75th percentile	0.124	-0.115	-0.149	-0.0765	-0.0873
	(1.18)	(-0.96)	(-1.25)	(-0.70)	(-0.77)
Labor Productivity: 76th to 90th percentile	-0.0962	**-0.346****	**-0.345****	**-0.334****	-0.162
	(-0.87)	**(-2.70)**	**(-2.69)**	**(-2.83)**	(-1.36)
Labor Productivity: 91th to 100th percentile	-0.0771	**-0.689*****	**-0.923*****	**-0.390****	**-0.336****
	(-0.66)	**(-4.89)**	**(-6.24)**	**(-3.11)**	**(-2.70)**
Collateral	-0.0308	**0.320****	0.0218	0.00482	0.0515
	(-0.32)	**(3.00)**	(0.20)	(0.05)	(0.50)
Long-term Debt Ratio	0.0840	**0.672*****	**0.379*****	0.110	0.147
	(0.96)	**(7.02)**	**(3.88)**	(1.18)	(1.57)
Temporarily Closed	0.0255	-0.0546	-0.00986	-0.0699	-0.0847
	(0.27)	(-0.53)	(-0.10)	(-0.71)	(-0.83)
Profit Ratio	-0.0134	**-0.00905****	0.00728	**-0.0099***	-0.0071
	(-0.94)	**(-2.89)**	(1.90)	**(-2.45)**	(-1.27)
Debt Ratio	**0.260***	**1.273*****	**1.122*****	**0.642*****	0.0503
	(2.54)	**(10.60)**	**(9.53)**	**(5.76)**	(0.46)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Dummy Debt Ratio > 90%	**0.302***	**1.149*****	**0.849****	**0.513****	-0.0341
	(1.97)	**(5.77)**	**(2.86)**	**(3.13)**	(-0.21)
Debt Ratio # Dummy Debt Ratio > 90%	**-0.301***	**-1.707*****	**-1.625*****	**-0.679*****	-0.0973
	(-2.13)	**(-9.18)**	**(-5.96)**	**(-4.42)**	(-0.65)
Investment Ratio	-0.00026	-0.00297	-0.00299	**-0.00005****	-0.00011
	(-0.13)	(-1.22)	(-1.07)	**(-2.85)**	(-0.59)
Liquidity Ratio	-0.101	**-1.166*****	**-0.810*****	**-0.641*****	-0.0392
	(-0.84)	**(-6.38)**	**(-5.05)**	**(-4.53)**	(-0.31)
Interest Coverage Ratio	-0.0351	-0.0234	**-0.248****	0.0861	0.0609
	(-0.49)	(-0.30)	**(-3.05)**	(1.17)	(0.80)
Age: less than 15	-0.0592	-0.0292	-0.0549	0.0169	0.0569
	(-1.16)	(-0.49)	(-0.92)	(0.31)	(1.05)
Exports: : 1th to 10th percent	0.0292	**0.158****	0.111	**0.172****	0.0503
	(0.54)	**(2.58)**	(1.81)	**(3.04)**	(0.91)
Exports: : 11th to 90th percent	0.0873	**0.319*****	**0.300*****	0.0997	0.0711
	(1.46)	**(4.65)**	**(4.38)**	(1.55)	(1.14)
Exports: : 91th to 100th percent	**0.215***	0.0746	0.116	-0.0944	**0.211***
	(2.26)	(0.69)	(1.08)	(-0.91)	**(2.08)**
Pearson's **Goodness-of-fit** (prob > chi-square)	37,37%	0%	23,76%	39,11%	31,06%
Pseudo-R^2	1,23%	16,03%	12,63%	10,21%	6,71%
N			4028		

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Annex 17: Average marginal effects of the second robustness test (including missing observations)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Sales Variation	**-0.0834****	**-0.238*****	**-0.171*****	**-0.384*****	**-0.406*****
	(-2.81)	**(-10.15)**	**(-7.27)**	**(-15.54)**	**(-15.43)**
Sector: Industry and Energy	0.00678	-0.00427	**0.0459***	**-0.0780****	0.0190
	(0.25)	(-0.20)	**(2.19)**	**(-3.25)**	(0.76)
Sector: Construction and Real Estate	-0.0158	-0.0366	-0.0128	**-0.0852****	-0.000959
	(-0.49)	(-1.37)	(-0.51)	**(-2.92)**	(-0.03)
Sector: Commerce	0.0137	0.00313	**0.0506***	-0.0223	**0.0606***
	(0.54)	(0.15)	**(2.45)**	(-0.95)	**(2.56)**
Sector: Transportation and Storage	**-0.0965***	-0.0210	-0.00357	-0.0712	-0.0863
	(-2.09)	(-0.60)	(-0.10)	(-1.76)	(-1.92)
Sector: Accommodation and Food Service	0.00909	**0.119****	**0.207*****	0.0755	**0.144*****
	(0.22)	**(3.17)**	**(5.54)**	(1.91)	**(3.73)**
Sector: Information and Communications	-0.0131	**-0.0704***	0.0520	0.00474	-0.00698
	(-0.29)	**(-1.96)**	(1.37)	(0.11)	(-0.16)
Dimension: Small	0.0424	**0.0846*****	**0.0791*****	**0.0566****	**0.0510***
	(1.80)	**(4.35)**	**(4.15)**	**(2.70)**	**(2.27)**
Dimension: Medium	0.0149	**0.0903*****	**0.0881*****	0.0295	**0.0589***
	(0.58)	**(4.37)**	**(4.28)**	(1.31)	**(2.42)**
Dimension: Large	0.00127	-0.00826	-0.0113	0.00695	**0.0871****
	(0.04)	(-0.36)	(-0.49)	(0.26)	**(3.11)**
Labor Productivity: 6^{h} to 25th percentile	0.0155	-0.0216	-0.00650	0.00458	0.000494
	(0.38)	(-0.62)	(-0.18)	(0.12)	(0.01)
Labor Productivity: 26th to 50th percentile	0.0568	0.0325	0.0214	-0.00745	-0.0357
	(1.39)	(0.92)	(0.59)	(-0.20)	(-0.94)
Labor Productivity: 51th to 75th percentile	0.0485	-0.0335	-0.0444	-0.0259	-0.0298
	(1.17)	(-0.95)	(-1.22)	(-0.69)	(-0.78)
Labor Productivity: 76th to 90th percentile	-0.0380	**-0.0953****	**-0.0969***	**-0.107****	-0.0561
	(-0.87)	**(-2.60)**	**(-2.57)**	**(-2.74)**	(-1.38)
Labor Productivity: 91th to 100th percentile	-0.0305	**-0.170*****	**-0.209*****	**-0.124****	**-0.119****
	(-0.66)	**(-4.64)**	**(-5.73)**	**(-3.04)**	**(-2.77)**
Collateral	-0.0120	**0.0886****	0.00605	0.00157	0.0179
	(-0.32)	**(3.01)**	(0.20)	(0.05)	(0.50)
Long-term Debt Ratio	0.0328	**0.186*****	**0.105*****	0.0358	0.0512
	(0.96)	**(7.15)**	**(3.90)**	(1.18)	(1.57)
Temporarily Closed	0.00996	-0.0153	-0.00275	-0.0230	-0.0291
	(0.27)	(-0.53)	(-0.10)	(-0.71)	(-0.84)
Profit Ratio	-0.00523	**-0.00250****	0.00202	**-0.00321***	-0.00247
	(-0.94)	**(-2.89)**	(1.90)	**(-2.45)**	(-1.27)
Debt Ratio	**0.0912***	**0.306*****	**0.278*****	**0.187*****	0.0144
	(2.50)	**(10.60)**	**(9.39)**	**(5.76)**	(0.42)
Dummy Debt Ratio > 90%	0.0515	0.0446	-0.0285	0.0413	-0.0310
	(1.36)	(1.15)	(-0.58)	(1.15)	(-0.84)
Investment Ratio	-0.0001	-0.0008	-0.0008	**-0.00001****	-0.000039
	(-0.13)	(-1.22)	(-1.07)	**(-2.84)**	(-0.59)
Liquidity Ratio	-0.0396	**-0.322*****	**-0.225*****	**-0.209*****	-0.0136
	(-0.84)	**(-6.53)**	**(-5.10)**	**(-4.56)**	(-0.31)
Interest Coverage Ratio	-0.0137	-0.00648	**-0.0688****	0.0280	0.0212
	(-0.49)	(-0.30)	**(-3.06)**	(1.17)	(0.80)
Age: less than 15	-0.0231	-0.00807	-0.0152	0.00551	0.0198
	(-1.16)	(-0.49)	(-0.92)	(0.31)	(1.05)
Exports: : 1th to 10th percent	0.0114	**0.0429***	0.0299	**0.0566****	0.0176

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
	(0.54)	**(2.57)**	(1.80)	**(3.03)**	(0.91)
Exports: : 11th to 90th percent	0.0341	**0.0900*** **	**0.0853*** **	0.0323	0.0248
	(1.46)	**(4.60)**	**(4.33)**	(1.55)	(1.15)
Exports: : 91th to 100th percent	**0.0831***	0.0198	0.0313	-0.0294	**0.0717***
	(2.30)	(0.68)	(1.05)	(-0.92)	**(2.15)**

Annex 18: Average marginal effects of interaction of Debt Ratio with Debt Ratio Dummy (Second Robustness Test)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Debt Ratio when:					
Dummy Debt Ratio <= 90%	**0.102***	**0.354*** **	**0.321*** **	**0.208*** **	0.0174
	(2.57)	**(11.19)**	**(9.91)**	**(5.87)**	(0.46)
Dummy Debt Ratio > 90%	-0.0155	**-0.140** **	-0.146	-0.0129	-0.0167
	(-0.42)	**(-2.83)**	(-1.78)	(-0.35)	(-0.46)

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Annex 19: Margins at the mean for Equation 3 (abridged factors on probability of benefiting from a policy)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Sales: Dummy	**-0.194*** **				
	(-8.28)				
Sales: less than -50%	**0.264*** **	**0.283*** **	**0.226*** **	**0.387*** **	**0.299*** **
	(8.97)	**(11.40)**	**(8.97)**	**(14.72)**	**(9.58)**
Sales: -26% to -50%	**0.217*** **	**0.211*** **	**0.215*** **	**0.291*** **	**0.175*** **
	(7.16)	**(8.66)**	**(8.49)**	**(11.05)**	**(5.32)**
Sales: -1% to -25%	**0.0930** **	**0.148*** **	**0.0995*** **	**0.120*** **	0.0208
	(3.09)	**(6.97)**	**(4.61)**	**(5.29)**	(0.65)
Sales: 1% to 25%	-0.0530	0.0532	0.0437	0.00425	**-0.105***
	(-1.08)	(1.57)	(1.27)	(0.13)	**(-2.12)**
Sales: more than 25%	-0.182	**0.365***	0.115	0.226	-0.216
	(-1.09)	**(2.19)**	(0.78)	(1.39)	(-1.36)
Sector: Industry and Energy	0.00954	0.0249	0.00946	**0.0655** **	**-0.0617***	0.0464
	(0.39)	(1.00)	(0.36)	**(2.64)**	**(-2.17)**	(1.61)
Sector: Construction and Real Estate	-0.0519	-0.0224	-0.0560	-0.00867	**-0.0807***	0.0116
	(-1.64)	(-0.71)	(-1.75)	(-0.29)	**(-2.31)**	(0.32)
Sector: Commerce	0.00831	0.0268	-0.0319	0.0323	-0.0125	**0.0590***
	(0.35)	(1.10)	(-1.24)	(1.34)	(-0.44)	**(2.11)**
Sector: Transportation and Storage	-0.0965	-0.0889	0.00324	-0.00811	-0.0794	-0.0478
	(-1.86)	(-1.71)	(0.07)	(-0.18)	(-1.54)	(-0.86)
Sector: Accommodation and Food Service	**0.118*** **	**0.0807***	**0.162*** **	**0.224*** **	**0.128** **	**0.156*** **
	(3.63)	**(2.07)**	**(3.53)**	**(5.01)**	**(2.66)**	**(3.44)**
Sector: Information and Communication	0.0362	0.0360	-0.0556	0.0272	0.0305	-0.0730
	(0.87)	(0.84)	(-1.23)	(0.60)	(0.57)	(-1.35)
Dimension: Small	**0.0604** **	**0.0716** **	**0.0928*** **	**0.0997*** **	**0.0629** **	0.0337
	(2.72)	**(3.17)**	**(4.25)**	**(4.64)**	**(2.58)**	(1.30)
Dimension: Medium	0.0422	**0.0603***	**0.134*** **	**0.124*** **	**0.0584***	0.0408
	(1.78)	**(2.52)**	**(5.71)**	**(5.40)**	**(2.29)**	(1.52)
Dimension: Large	0.0130	0.0280	0.0372	0.00733	0.0332	0.0474
	(0.47)	(1.01)	(1.43)	(0.30)	(1.13)	(1.53)
Age: less than 15	0.0191	0.0243	0.0195	0.0257	0.0215	-0.0131
	(0.99)	(1.26)	(0.97)	(1.33)	(1.01)	(-0.60)

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Annex 20: Margins at the mean for Equation 4 (all factors on probability of benefiting from a policy)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Sales Variation	**-0.357*** **	**-0.321*** **	**-0.249*** **	**-0.504*** **	**-0.467*** **
	(-10.72)	**(-8.84)**	**(-7.20)**	**(-13.52)**	**(-12.64)**
Sector: Industry and Energy	0.00135	-0.0308	0.0542	**-0.0698***	0.0413
	(0.05)	(-1.00)	(1.91)	**(-2.16)**	(1.31)
Sector: Construction and Real Estate	-0.0142	-0.0639	-0.0134	**-0.0866***	0.0243
	(-0.45)	(-1.74)	(-0.41)	**(-2.27)**	(0.65)
Sector: Commerce	0.0362	-0.0248	**0.0600***	-0.0135	**0.0637***
	(1.51)	(-0.81)	**(2.13)**	(-0.43)	**(2.15)**
Sector: Transportation and Storage	**-0.112***	-0.0383	-0.0140	**-0.116***	-0.0604
	(-2.15)	(-0.77)	(-0.30)	**(-2.18)**	(-1.06)
Sector: Accommodation and Food Service	0.0600	**0.195*** **	**0.286*** **	**0.121***	**0.135*** **
	(1.46)	**(3.42)**	**(5.24)**	**(2.21)**	**(2.68)**
Sector: Information and Communications	0.0372	-0.0682	0.0613	0.00656	-0.0720
	(0.86)	(-1.28)	(1.14)	(0.11)	(-1.23)
Dimension: Small	**0.0671** **	**0.107*** **	**0.107*** **	**0.0658***	0.0354
	(2.85)	**(4.00)**	**(4.19)**	**(2.34)**	(1.25)
Dimension: Medium	0.0394	**0.119*** **	**0.116*** **	0.0456	0.0343
	(1.53)	**(4.19)**	**(4.21)**	(1.52)	(1.13)
Dimension: Large	0.0107	0.00303	-0.00743	0.0225	0.0649
	(0.35)	(0.10)	(-0.25)	(0.65)	(1.86)
Labor Productivity: 6^{h} to 25th percentile	0.0116	-0.0119	-0.00299	0.0300	-0.0177
	(0.28)	(-0.24)	(-0.06)	(0.59)	(-0.37)
Labor Productivity: 26th to 50th percentile	0.0310	0.0416	0.0169	-0.00131	-0.0292
	(0.77)	(0.83)	(0.33)	(-0.03)	(-0.61)
Labor Productivity: 51th to 75th percentile	0.00894	-0.00229	-0.0395	-0.00773	-0.0229
	(0.22)	(-0.05)	(-0.78)	(-0.15)	(-0.48)
Labor Productivity: 76th to 90th percentile	-0.0777	**-0.110***	**-0.131***	**-0.104***	-0.0683
	(-1.73)	**(-2.14)**	**(-2.50)**	**(-1.96)**	(-1.33)
Labor Productivity: 91th to 100th percentile	**-0.0963***	**-0.176*** **	**-0.235*** **	-0.101	**-0.144** **
	(-2.04)	**(-3.46)**	**(-4.66)**	(-1.84)	**(-2.65)**
Collateral	0.0405	**0.107***	0.0251	0.0345	0.00974
	(1.11)	**(2.52)**	(0.59)	(0.75)	(0.22)
Long-term Debt Ratio	**0.0765***	**0.240*** **	**0.145*** **	0.0589	0.0673
	(2.23)	**(6.34)**	**(3.87)**	(1.43)	(1.63)
Temporarily Closed	0.0102	-0.0202	-0.0515	-0.0214	-0.0438
	(0.26)	(-0.47)	(-1.20)	(-0.46)	(-1.00)
Profit Ratio	-0.00304	**-0.00326** **	0.00231	**-0.00368** **	-0.00319
	(-0.82)	**(-3.10)**	(1.84)	**(-2.68)**	(-1.26)
Debt Ratio	**0.0915** **	**0.355*** **	**0.299*** **	**0.196*** **	-0.0294
	(2.66)	**(7.75)**	**(6.73)**	**(4.25)**	(-0.69)
Dummy Debt Ratio > 90%	0.0374	0.0843	-0.0129	**0.105***	0.0447
	(1.10)	(1.69)	(-0.24)	**(2.14)**	(1.04)
Investment Ratio	-0.00014	-0.00070	-0.00041	**-0.00002** **	**-0.00003*** **
	(-0.22)	(-0.62)	(-0.36)	**(-2.85)**	**(-4.66)**
Liquidity Ratio	**-0.127** **	**-0.445*** **	**-0.357*** **	**-0.278*** **	-0.0477
	(-2.93)	**(-6.20)**	**(-5.61)**	**(-4.40)**	(-0.87)
Interest Coverage Ratio	0.0153	0.00134	**-0.0745***	0.0362	0.0324
	(0.51)	(0.04)	**(-2.34)**	(1.08)	(0.94)
Age: less than 15	-0.0222	-0.0197	-0.0223	-0.00699	0.0285
	(-1.15)	(-0.83)	(-0.96)	(-0.29)	(1.20)
Exports: : 1th to 10th percent	0.0329	**0.0497***	0.0180	**0.0547***	0.0203
	(1.61)	**(2.05)**	(0.78)	**(2.16)**	(0.85)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Exports: : 11th to 90th percent	**0.0617****	**0.0711***	**0.0676***	0.0142	0.00461
	(2.88)	**(2.56)**	**(2.48)**	(0.50)	(0.17)
Exports: : 91th to 100th percent	**0.0828****	-0.00601	-0.0121	-0.0707	0.0592
	(2.61)	(-0.15)	(-0.32)	(-1.71)	(1.43)

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Annex 21: Margins at the mean of the first robustness test (EBITDA instead of Labor Productivity and Exports)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Sales Variation	**-0.376*****	**-0.337*****	**-0.273*****	**-0.512*****	**-0.479*****
	(-11.28)	**(-9.50)**	**(-8.04)**	**(-13.84)**	**(-13.04)**
Sector: Industry and Energy	0.0261	-0.00893	**0.0772****	**-0.0696***	0.0505
	(1.02)	(-0.29)	**(2.74)**	**(-2.23)**	(1.66)
Sector: Construction and Real Estate	-0.0225	**-0.0735***	-0.0194	**-0.0923***	0.0197
	(-0.70)	**(-2.06)**	(-0.60)	**(-2.43)**	(0.53)
Sector: Commerce	0.0299	-0.0287	0.0495	-0.00663	**0.0628***
	(1.22)	(-0.97)	(1.80)	(-0.21)	**(2.14)**
Sector: Transportation and Storage	-0.101	-0.0261	-0.00363	**-0.113***	-0.0584
	(-1.90)	(-0.50)	(-0.08)	**(-2.10)**	(-1.03)
Sector: Accommodation and Food Service	0.0558	**0.187*****	**0.277*****	**0.116***	**0.134****
	(1.30)	**(3.44)**	**(5.26)**	**(2.15)**	**(2.68)**
Sector: Information and Communications	0.0513	-0.0528	0.0723	0.0142	-0.0671
	(1.20)	(-0.97)	(1.32)	(0.24)	(-1.15)
Dimension: Small	**0.0647****	**0.107*****	**0.0997*****	**0.0598***	0.0299
	(2.78)	**(4.01)**	**(3.82)**	**(2.11)**	(1.08)
Dimension: Medium	0.0365	**0.118*****	**0.102*****	0.0278	0.0231
	(1.45)	**(4.25)**	**(3.74)**	(0.94)	(0.79)
Dimension: Large	-0.00530	-0.0226	-0.0468	-0.0166	0.0405
	(-0.18)	(-0.78)	(-1.63)	(-0.50)	(1.22)
Collateral	0.0162	0.0712	0.00523	0.0129	-0.00384
	(0.44)	(1.71)	(0.13)	(0.29)	(-0.09)
Long-term Debt Ratio	0.0582	**0.215*****	**0.120****	0.0542	0.0542
	(1.69)	**(5.74)**	**(3.20)**	(1.32)	(1.33)
EBITDA Ratio	0.0165	-0.0119	-0.0364	-0.0184	-0.0436
	(0.40)	(-0.28)	(-0.84)	(-0.40)	(-0.99)
Temporarily Closed	-0.0389	-0.105	-0.141	0.0154	-0.0361
	(-0.66)	(-1.43)	(-1.93)	(0.22)	(-0.51)
Profit Ratio	-0.00378	**-0.00386****	0.00176	**-0.00400****	-0.00357
	(-0.84)	**(-2.98)**	(1.62)	**(-2.63)**	(-1.15)
Debt Ratio	**0.111****	**0.380*****	**0.328*****	**0.228*****	-0.0135
	(3.24)	**(8.44)**	**(7.55)**	**(4.98)**	(-0.32)
Dummy Debt Ratio > 90%	0.0322	0.0783	-0.0109	**0.105***	0.0422
	(0.91)	(1.54)	(-0.20)	**(2.15)**	(0.97)
Investment Ratio	-0.0003	-0.0009	-0.0007	**-0.00002****	**-0.00003*****
	(-0.54)	(-1.02)	(-0.85)	**(-2.60)**	**(-3.95)**
Liquidity Ratio	**-0.149*****	**-0.474*****	**-0.379*****	**-0.299*****	-0.0602
	(-3.33)	**(-6.74)**	**(-6.05)**	**(-4.76)**	(-1.10)
Interest Coverage Ratio	0.0284	0.00458	**-0.0665***	0.0577	0.0428
	(0.91)	(0.14)	**(-2.00)**	(1.67)	(1.21)
Age: less than 15	-0.0288	-0.0342	-0.0347	-0.0254	0.0231
	(-1.50)	(-1.45)	(-1.52)	(-1.05)	(0.99)

t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Annex 22: Margins at the mean of the second robustness test (including missing observations)

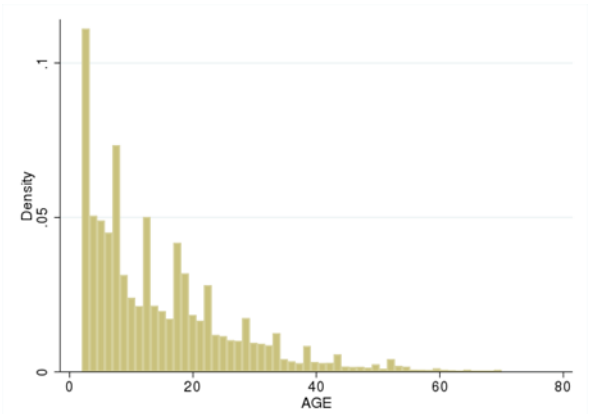
	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Sales Variation	**-0.0844****	**-0.278*****	**-0.193*****	**-0.431*****	**-0.430*****
	(-2.80)	**(-9.71)**	**(-7.09)**	**(-14.37)**	**(-14.34)**
Sector: Industry and Energy	0.00685	-0.00494	0.0507*	**-0.0862****	0.0201
	(0.25)	(-0.20)	(2.19)	**(-3.25)**	(0.76)
Sector: Construction and Real Estate	-0.0160	-0.0419	-0.0139	**-0.0941****	-0.00101
	(-0.49)	(-1.38)	(-0.51)	**(-2.93)**	(-0.03)
Sector: Commerce	0.0138	0.00363	**0.0559***	-0.0247	**0.0638***
	(0.54)	(0.15)	**(2.45)**	(-0.95)	**(2.55)**
Sector: Transportation and Storage	**-0.0978***	-0.0242	-0.00388	-0.0788	-0.0917
	(-2.09)	(-0.61)	(-0.10)	(-1.77)	(-1.92)
Sector: Accommodation and Food Service	0.00919	**0.142****	**0.235*****	**0.0839**	**0.150*****
	(0.22)	**(3.14)**	**(5.47)**	**(1.91)**	**(3.78)**
Sector: Information and Communications	-0.0133	**-0.0796***	0.0574	0.00526	-0.00739
	(-0.29)	**(-2.00)**	(1.36)	(0.11)	(-0.16)
Dimension: Small	0.0428	**0.0972*****	**0.0877*****	**0.0634****	**0.0544***
	(1.80)	**(4.40)**	**(4.18)**	**(2.70)**	**(2.26)**
Dimension: Medium	0.0150	**0.104*****	**0.0979*****	0.0329	**0.0627***
	(0.58)	**(4.41)**	**(4.31)**	(1.31)	**(2.41)**
Dimension: Large	0.00129	-0.00918	-0.0122	0.00775	**0.0924****
	(0.04)	(-0.36)	(-0.49)	(0.26)	**(3.10)**
Labor Productivity: 6^{h} to 25th percentile	0.0156	-0.0253	-0.00730	0.00509	0.000517
	(0.38)	(-0.62)	(-0.18)	(0.12)	(0.01)
Labor Productivity: 26th to 50th percentile	0.0572	0.0382	0.0241	-0.00828	-0.0375
	(1.39)	(0.93)	(0.59)	(-0.20)	(-0.95)
Labor Productivity: 51th to 75th percentile	0.0488	-0.0390	-0.0496	-0.0287	-0.0313
	(1.17)	(-0.95)	(-1.21)	(-0.69)	(-0.78)
Labor Productivity: 76th to 90th percentile	-0.0383	**-0.109****	**-0.108***	**-0.119****	-0.0591
	(-0.87)	**(-2.58)**	**(-2.56)**	**(-2.74)**	(-1.38)
Labor Productivity: 91th to 100th percentile	-0.0307	**-0.190*****	**-0.226*****	**-0.137****	**-0.126****
	(-0.66)	**(-4.57)**	**(-5.64)**	**(-3.04)**	**(-2.78)**
Collateral	-0.0122	**0.104****	0.00680	0.00176	0.0190
	(-0.32)	**(3.00)**	(0.20)	(0.05)	(0.50)
Long-term Debt Ratio	0.0332	**0.217*****	**0.118*****	0.0401	0.0543
	(0.96)	**(7.03)**	**(3.90)**	(1.18)	(1.57)
Temporarily Closed	0.0101	-0.0179	-0.00309	-0.0258	-0.0307
	(0.27)	(-0.52)	(-0.10)	(-0.71)	(-0.84)
Profit Ratio	-0.00529	**-0.00292****	0.00227	**-0.00360***	-0.00262
	(-0.94)	**(-2.89)**	(1.90)	**(-2.45)**	(-1.27)
Debt Ratio	**0.0922***	**0.361*****	**0.304*****	**0.212*****	0.0153
	(2.50)	**(9.80)**	**(8.61)**	**(5.62)**	(0.42)
Dummy Debt Ratio > 90%	0.0517	0.0622	-0.0213	0.0482	-0.0333
	(1.34)	(1.47)	(-0.44)	(1.22)	(-0.84)
Investment Ratio	-0.0001	-0.00096	-0.0009	**-0.00002****	-0.00004
	(-0.13)	(-1.23)	(-1.09)	**(-2.84)**	(-0.59)
Liquidity Ratio	-0.0401	**-0.377*****	**-0.253*****	**-0.234*****	-0.0145
	(-0.84)	**(-6.49)**	**(-5.08)**	**(-4.55)**	(-0.31)
Interest Coverage Ratio	-0.0139	-0.00757	**-0.0773****	0.0314	0.0225
	(-0.49)	(-0.30)	**(-3.05)**	(1.17)	(0.80)
Age: less than 15	-0.0234	-0.00943	-0.0171	0.00618	0.0210
	(-1.16)	(-0.49)	(-0.92)	(0.31)	(1.05)
Exports: : 1th to 10th percent	0.0116	**0.0496***	0.0332	**0.0634****	0.0187
	(0.54)	**(2.56)**	(1.80)	**(3.03)**	(0.91)

	At least one policy	Moratorium	Loan	Tax Suspension	Layoff
Exports: : 11th to 90th percent	0.0345	**0.105*** **	**0.0960*** **	0.0362	0.0263
	(1.46)	**(4.56)**	**(4.30)**	(1.54)	(1.15)
Exports: : 91th to 100th percent	**0.0839***	0.0227	0.0348	-0.0327	**0.0756***
	(2.31)	(0.68)	(1.05)	(-0.92)	**(2.16)**

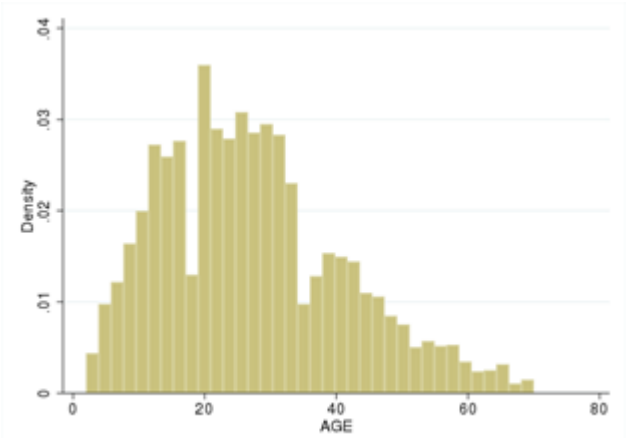
t statistics in parentheses * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Annex 23: Firm age distribution

a) CBHP database

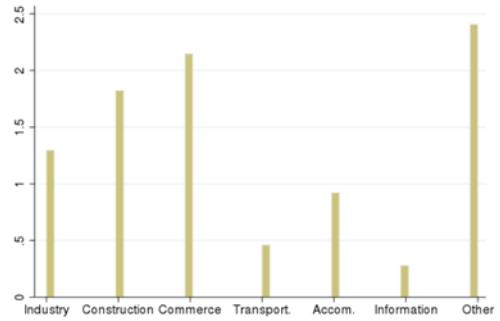


b) Used Sample

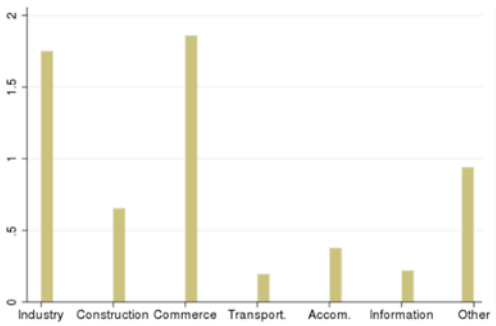


Annex 24: Firm sector distribution

a) CBHP database



b) IREE database



c) Used Sample